
PROJECT MANUAL



ONTEORA CENTRAL SCHOOL DISTRICT BUILDING & SITE IMPROVEMENTS

Phoenicia Elementary School
School Lane, Phoenicia, NY 12464
SED Project No: 62-12-01-06-0-011-017

Woodstock Elementary School
8 West Hurley Road, Woodstock, NY 12498
SED Project No: : 62-12-01-06-0-009-016

CPL PROJECT NO.: 11483.25
DOCUMENT DATE: 06/30/2023



DESIGN PROFESSIONAL'S CERTIFICATION

The undersigned certifies that, to the best of his or her knowledge, information and belief, the design conforms to all applicable provisions of the Building Code of New York State, the New York State Energy Conservation Construction Code, and the Manual of Planning Standards of the New York State Education Department.

ARCHITECT/ENGINEER
CPL
50 FRONT STREET, SUITE 202
NEWBURGH, NY 12550
Phone: (845) 567-2011

OWNER
**ONTEORA CENTRAL SCHOOL
DISTRICT**
4166 STATE ROUTE 28
BOICEVILLE, NY 12412
Phone: (845) 657-8743

CONSTRUCTION MANAGER
**BBL CONSTRUCTION
SERVICES, LLC.**
302 WASHINGTON AVENUE EXT.
ALBANY, NY 12203
Phone: (518) 452-8200



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ELECTRICAL

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WES E102 FIRST FLOOR ELECTRICAL PLAN

END OF SECTION

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ADVERTISEMENT FOR BIDS

The Onteora Central School District (Owner) invites bids for **“PES & WES Building & Site Modifications”** which involves work at the Onteora Central School District, 11 School Ln, Phoenicia, New York 12464 & 8 West Hurly Rd, Woodstock, New York 12498.

Separate sealed bids will be received at the Onteora Central School District, **Central Administrative Office, 4166 State Route 28, Boiceville, New York 12412**, until **3:00P.M.** (local time) **August 17th, 2023** at which time they will be publicly opened and read aloud. Bids received after that time will not be accepted.

The Work of the project will be let for the following Contracts:

Contract 1: Site Construction	(SC)
Contract 2: General Construction	(GC)
Contract 3: Window Construction	(WC)
Contract 4: Mechanical Construction	(MC)
Contract 5: Electrical Construction	(EC)

Documents will be available by July 20th, 2023. A complete digital sets of Bidding Documents may be obtained online as a download at www.cplplanroom.com under ‘public projects’ for a non-refundable reproduction fee of \$49.00

Complete hard copy sets of Bidding Documents may be obtained from Rev, 330 Route 17A, Suite #2, Goshen, New York 10924 Tel: 1-877-272-0216, upon depositing the sum of \$100 for each combined set of documents. Checks or money orders shall be made payable to Onteora Central School District. Any bidder requiring documents to be shipped shall make arrangements with the printer and pay for all packaging and shipping costs.

All bid addenda will be transmitted to registered plan holders via email and will be available at www.cplplanroom.com. 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 the printer 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.

A Bidder, upon 1) making the deposit required for the Bid Documents, 2) submitting a Proposal accompanied by a certified check or other security in accordance with the requirements contained in the plans and specifications and public advertisement for bids, and 3) returning the plans and specifications used by such Bidder in good condition within thirty (30) days following the award of the Contract, or rejection of the Bid, shall have returned to them the full amount of the deposit for one copy of the plans and specifications.

Pre-Bid Meeting/walk-throughs will be held at the project site on **August 3rd, 2023, at 1:00 pm.** Bidders shall notify the Construction Manager (BBL Construction Services, LLC., phone 518-452-8200) by August 1st, 2023 of their intent to attend. The Construction Manager will then assign time slots to bidders. Attendance by bidders is recommended, but not required, for submitting a bid.

ADVERTISEMENT FOR BIDS

Attention of the Bidder is particularly called to the Owner's sales tax exemption, the requirements as to conditions of employment to be observed, and the minimum wage rates to be paid under the Contract. In addition, the Bidding Documents contain detailed requirements for the qualification of Bidders. These include, among other things, rigid bonding and insurance requirements, financial statements, bank references, lists of lawsuits, arbitrations or other proceedings in which the Bidder has been named as a party, a statement of surety's intent to issue Performance and Payment Bonds, and a description of other projects of similar size and scope completed by the Bidder.

Bids shall be prepared as set forth in "INSTRUCTIONS TO BIDDERS", enclosed in a sealed envelope bearing on its face the name and address of the Bidder as the title of the Work to which the bid enclosed relates.

Each Bidder shall deposit with its bid, security in an amount not less than five percent (5%) of the base bid in the form and subject to the conditions provided in the "INSTRUCTIONS TO BIDDERS."

No Bidder may withdraw its bid within forty-five (45) days after the actual bid opening.

The Owner reserves the right to waive any and all informalities in, or to reject, all bids.

The Owner further reserves its right to disqualify Bidders for any material failure to comply with the "INSTRUCTIONS TO BIDDERS" and "SUPPLEMENTARY INSTRUCTIONS TO BIDDERS."

**ONTEROA CENTRAL SCHOOL DISTRICT
4166 ROUTE 28
BOICEVILLE, NEW YORK 12412**

END OF SECTION

**SECTION 001116
INVITATION TO BID**

THE ONTEORA CENTRAL SCHOOL DISTRICT INVITES BIDS FOR "PES & WES BUILDING & SITE MODIFICATIONS", WHICH INVOLVES WORK AT THE PHOENICIA ELEMENTARY SCHOOL, SCHOOL LANE, PHOENICIA, NY 12464, AND WOODSTOCK ELEMENTARY SCHOOL, 8 WEST HURLEY ROAD, WOODSTOCK, NY 12498. SEPARATE SEALED BIDS WILL BE RECEIVED AT THE ONTEORA CENTRAL SCHOOL DISTRICT, CENTRAL ADMINISTRATIVE OFFICE, 4166 STATE ROUTE 28, BOICEVILLE, NEW YORK 12412, UNTIL 3:00 P.M, LOCAL TIME, ON 17, AUGUST, 2023

1.01 PROJECT INFORMATION

- A. Project Identification: PES & WES Building & Site Modifications
 - 1. Project Location(s):
 - a. Phoenicia Elementary School, Woodstock, New York 12412
 - b. Woodstock Elementary School, 8 West Hurley Road, Woodstock, NY 12498
- B. Owner: Onteora Central School District, 4166 State Route 28, Boiceville, New York 12412.
 - 1. Owner's Representative:
 - a. Kyle Harjes
 - b. PH: 845-657-6384
- C. Architect/Engineer: CPL (Clark Patterson Lee), at 50 Front Street, Newburgh, NY 12550.
- D. Construction Manager: BBL Construction Services, LLC , 302 Washington Avenue Extension, Albany, NY 12203
- E. Project Description: Project consists of replacing exterior doors, and site improvements, as described in the Contract Documents.
- F. Construction Contract: Bids will be received for the following Work:
 - 1. Multiple Contract Project consisting of the following prime contracts:
 - a. General Construction.
 - b. Mechanical Construction.
 - c. Plumbing Construction.
 - d. Electrical Construction.
 - e. Window Construction

1.02 BID SUBMITTAL AND OPENING

- A. Owner will receive sealed lump sum bids until the bid time and date at the location given below. Owner will consider bids prepared in compliance with the Instructions to Bidders issued by Owner, and delivered as follows:
 - 1. Bid Date: 17, August, 2023
 - 2. Bid Time: 3:00 p.m local time.
 - 3. Location: Onteora Central School District, Central Administrative Office, 4166 State Route 28, Boiceville, New York 12412
- B. Bids will be thereafter publicly opened.

1.03 BID SECURITY

- A. Bid security shall be submitted with each bid in an amount not less than five percent (5%) of the base bid in the form and subject to the conditions provided in the "Instructions to Bidders".

1.04 PREBID MEETING

- A. Prebid Meeting: A Pre-Bid meeting/walk-thru for the Project will be held at 3:00 p.m, local time on Day, Month, 202x , convening at the District Office . Prospective bidders are **requested** to attend. Prospective bidders may visit the site during business hours by appointment by contacting Kyle Harjes at 845-657-6384.

1.05 DOCUMENTS

- A. Complete digital sets of Bidding Documents may be obtained online as a download at www.cplplanroom.com under 'public projects' for a non-refundable reproduction fee of \$49.00.
- B. Complete hard copy sets of Bidding Documents may be obtained from Rev, 330 Route 17A, Suite #2, Goshen, New York 10924 Tel: 1-877-272-0216, upon depositing the sum of \$100 for each combined set of documents. Checks or money orders shall be made payable to Onteora Central School District. Any bidder requiring documents to be shipped shall make arrangements with the printer and pay for all packaging and shipping costs.
- C. All bid addenda will be transmitted to registered plan holders via email and will be available at www.cplplanroom.com. 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 the printer 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.
- D. A Bidder, upon 1) making the deposit required for the Bid Documents, 2) submitting a Proposal accompanied by a the required bid security, and 3) returning the plans and specifications used by such Bidder in good condition within thirty (30) days following the award of the Contract, or rejection of the Bid, shall have returned to them the full amount of the deposit for one copy of the plans and specifications.
- E. Bidders may obtain Bid Documents via the methods described above beginning Day, Month, 202x .

1.06 TIME OF COMPLETION

- A. Successful bidder shall begin the Work upon receipt of the Notice to Proceed and shall complete the Work within the Contract Time.

1.07 BIDDER'S QUALIFICATIONS

- A. Bidders must be properly licensed under the laws governing their respective trades and be able to obtain insurance and bonds required for the Work. A Performance Bond, separate Labor and Material Payment Bond, and Insurance in a form acceptable to Owner will be required of the successful Bidder.

1.08 NOTIFICATION

- A. Attention of the Bidder is particularly called to the Owner's sales tax exemption, the requirements as to conditions of employment to be observed, and the minimum wage rates to be paid under the Contract. In addition, the Bidding Documents contain detailed requirements for the qualification of Bidders. These include, among other things, rigid bonding and insurance requirements, financial statements, bank references, lists of lawsuits, arbitrations or other proceedings in which the Bidder has been named as a party, a statement of surety's intent to issue Performance and Payment Bonds, and a description of other projects of similar size and scope completed by the Bidder.
- B. Bids shall be prepared as set forth in "Instructions to Bidders", enclosed in a sealed envelope bearing on its face the name and address of the Bidder and the title of the Work to which the bid enclosed relates.
- C. No bids may be withdrawn for a period of forty-five (45) days after opening of bids.

1.09 AWARD OF BIDS

- A. The Onteora Central School District hereby reserves the right to waive any informalities and reject any, or all, Bids or to accept the one that, in its judgement, will be in the best interest of Onteora Central School District.
- B. The Owner further reserves its right to disqualify Bidders for any material failure to comply with the "Instructions to Bidders".

END OF SECTION

**SECTION 002000
INSTRUCTIONS TO BIDDERS**

PART 1 GENERAL

1.01 SUMMARY

- A. Attached is AIA Document A701-2018, Instructions to Bidders.
 - 1. AIA Document A701-2018 defines the conditions affecting award of contract and procedures with which Bidders must comply.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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AIA Document A701™ – 2018

Instructions to Bidders

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

Onteora Central School District
Building & Site Improvements
Phoenicia Elementary School
School Lane, Phoenicia, NY 12464
SED Project No.: 62-12-01-06-0-011-017

Woodstock Elementary School
8 West Hurly Road, Woodstock, NY 12498
SED Project No.: 62-12-01-06-0-009-016

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

Onteora Central School District
4166 State Route 28
Boiceville, NY 12412

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

CPL
50 Front Street, Suite 202
Newburgh, New York 12550

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- 1** **DEFINITIONS**
- 2** **BIDDER'S REPRESENTATIONS**
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- 6** **POST-BID INFORMATION**
- 7** **PERFORMANCE BOND AND PAYMENT BOND**
- 8** **ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS**

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.

FEDERAL, STATE, AND LOCAL LAWS MAY IMPOSE REQUIREMENTS ON PUBLIC PROCUREMENT CONTRACTS. CONSULT LOCAL AUTHORITIES OR AN ATTORNEY TO VERIFY REQUIREMENTS APPLICABLE TO THIS PROCUREMENT BEFORE COMPLETING THIS FORM.

It is intended that AIA Document G612™-2017, Owner's Instructions to the Architect, Parts A and B will be completed prior to using this document.

ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the Proposed Contract Documents. The Bidding Requirements consist of the advertisement or invitation to bid, Instructions to Bidders, supplementary instructions to bidders, the bid form, and any other bidding forms. The Proposed Contract Documents consist of the unexecuted form of Agreement between the Owner and Contractor and that Agreement's Exhibits, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda, and all other documents enumerated in Article 8 of these Instructions.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, or in other Proposed Contract Documents apply to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work.

ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 By submitting a Bid, the Bidder represents that:

- .1 the Bidder has read and understands the Bidding Documents;
- .2 the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
- .3 the Bid complies with the Bidding Documents;
- .4 the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;
- .5 the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception; and
- .6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 Distribution

§ 3.1.1 Bidders shall obtain complete Bidding Documents, from the issuing office designated in the advertisement or invitation to bid, for the deposit sum, if any, stated therein.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall obtain Bidding Documents.)

(Paragraph deleted)

§ 3.1.2 Bidders may obtain one complete set of the Bidding Documents from the issuing office designated in the Advertisement or Invitation to Bid for the deposit sum of \$50.00. The deposit will be refunded to Bidders who submit a bona fide Bid and return the Bidding Documents in good condition within thirty (30) days following the award of the Contract or rejection of the Bids. The cost of replacement of missing or damaged documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the Bidding Documents and the Bidder's deposit will be refunded. Good condition as used in this section means that the Bidding Documents must be returned bound as issued, legible, and containing only the markings necessary for bidding purposes.

§ 3.1.3 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the advertisement or invitation to bid, or in supplementary instructions to bidders.

§ 3.1.4 Bidders shall use complete Bidding Documents in preparing Bids. Neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents.

§ 3.1.5 The Bidding Documents will be available for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by distribution of the Bidding Documents.

§ 3.2 Modification or Interpretation of Bidding Documents

§ 3.2.1 The Bidder shall carefully study the Bidding Documents, shall examine the site and local conditions, and shall notify the Architect of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to Section 3.2.2.

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven calendar days prior to the date for receipt of Bids. The day the bids are due shall not be counted as one of the seven days referred to.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)

§ 3.2.3 Modifications and interpretations of the Bidding Documents shall be made by Addendum. Modifications and interpretations of the Bidding Documents made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3 Substitutions

§ 3.3.1 The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.

§ 3.3.2 Substitution Process

§ 3.3.2.1 Written requests for substitutions shall be received by the Architect at least ten days prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.

§ 3.3.2.2 Bidders shall submit substitution requests on the Substitution Request Form is provided in the Bidding Documents.

§ 3.3.2.3 If a Substitution Request Form is not provided, requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the proposed substitution including the name of the material or equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

§ 3.3.3 The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.4 If the Architect approves a proposed substitution prior to receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3.5 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

§ 3.4 Addenda

§ 3.4.1 Addenda will be transmitted to Bidders known by the issuing office to have received complete Bidding Documents.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Addenda will be transmitted.)

§ 3.4.2 Addenda will be available where Bidding Documents are on file.

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids. The day the bids are due shall be counted as one of the four days referred to.

§ 3.4.4 Prior to submitting a Bid, each Bidder shall ascertain that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

§ 3.5 EQUIVALENCY

§ 3.5.1 In the Specifications, if two or more kinds, types, brands, or manufacturers or materials are named, they shall be regarded as the required standard of quality, and are presumed to be equal. The Contractor may select one of these items or, if the Contractor desires to use any kind, type, brand, manufacturer or material other than those named in the Specification, he shall indicate in writing to the Architect and Owner, and prior to the award of Contract, what kind, type, brand or manufacturer is included in the Base Bid for the specified item.

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 Preparation of Bids

§ 4.1.1 Bids shall be submitted on the forms included with or identified in the Bidding Documents.

§ 4.1.2 All blanks on the bid form shall be legibly executed. Paper bid forms shall be executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and numbers, unless noted otherwise on the bid form. In case of discrepancy, the amount entered in words shall govern.

§ 4.1.4 Edits to entries made on paper bid forms must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change" or as required by the bid form.

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall neither make additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name and legal status of the Bidder. As part of the documentation submitted with the Bid, the Bidder shall provide evidence of its legal authority to perform the Work in the jurisdiction where the Project is located. Each copy of the Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further name the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying the agent's authority to bind the Bidder.

§ 4.1.8 A Bidder shall incur all costs associated with the preparation of its Bid.

§ 4.2 BID SECURITY

§ 4.2.1 Each Bid shall be accompanied by a Bid Security in the form and amount required. The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and will, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. The amount of the bid security shall not be forfeited to the Owner in the event the Owner fails to comply with Section 6.2.

§ 4.2.1.1 Bids shall be accompanied by a Bid Security of not less than five percent (5%) of the amount of the Bid. Such Bid Security shall be submitted in the form of a Bid Bond or a Certified Check made payable to the Owner. The submission shall be made with the understanding that the Bid Security shall guarantee that the Bidder will not withdraw its Bid for a period of forty-five (45) days after the scheduled closing time for the receipt of Bids, and that if its Bid is accepted, the Bidder will enter into a formal contract with the Owner in accordance with the terms stated in the Bid and will furnish any required performance and payment bonds at the time required. In the event of the withdrawal of said Bid within the forty-five (45) day period or the failure of the successful Bidder to enter into the Contract with the Owner or the failure of the successful Bidder to furnish required performance and payment bonds at the time required, the Bid Security shall be forfeited to the Owner as liquidated damages, not as a penalty, which represents the damage the Owner incurred as a result of the Bidder's default.

§ 4.2.1.2 The Bid Securities shall be returned to all Bidders except the three (3) lowest Bidders within three (3) days after the formal opening of bids. The remaining Bid Securities will be returned within forty-eight (48) hours after the Owner and the successful Bidder have executed the Contract and executed performance and payment bonds have been approved by the Owner. If a Contract has not been executed or performance and payment bonds have not been approved by the Owner within forty-five (45) days after the scheduled closing time for the receipt of bids, then Bid Securities will be returned within three (3) days after the expiration of this forty-five (45) day period unless the Bid Security has been forfeited under § 4.2.1.1.

§ 4.2.2 If the Bid Security is provided in the form of a Bid Bond (rather than a certified check), it shall be written on AIA Document A310, Bid Bond, and the attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the power of attorney.

(Paragraphs deleted)

§ 4.3 SUBMISSION OF BIDS

§ 4.3.1

(Paragraphs deleted)

All copies of the Bid, the bid security, if any, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.2 Bids shall be deposited at the designated location prior to the time and date for receipt of Bids. Bids received after the time and date for receipt of Bids will be returned unopened.

§ 4.3.3 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.4 Oral, telephonic, telegraphic, facsimile or other electronically transmitted bids will not be considered.

(Paragraph deleted)

§ 4.4 Modification or Withdrawal of Bid

§ 4.4.1 Prior to the date and time designated for receipt of Bids, a Bidder may submit a new Bid to replace a Bid previously submitted, or withdraw its Bid entirely, by notice to the party designated to receive the Bids. Such notice shall be received and duly recorded by the receiving party on or before the date and time set for receipt of Bids. The receiving party shall verify that replaced or withdrawn Bids are removed from the other submitted Bids and not considered. Notice of submission of a replacement Bid or withdrawal of a Bid shall be worded so as not to reveal the amount of the original Bid.

§ 4.4.2 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids in the same format as that established in Section 4.3, provided they fully conform with these Instructions to Bidders. Bid security shall be in an amount sufficient for the Bid as resubmitted.

§ 4.4.3 After the date and time designated for receipt of Bids, a Bidder who discovers that it made a clerical error in its Bid shall notify the Architect of such error within two days, or pursuant to a timeframe specified by the law of the jurisdiction where the Project is located, requesting withdrawal of its Bid. Upon providing evidence of such error to the reasonable satisfaction of the Architect, the Bid shall be withdrawn and not resubmitted. If a Bid is withdrawn pursuant to this Section 4.4.3, the bid security will be attended to as follows:

(State the terms and conditions, such as Bid rank, for returning or retaining the bid security.)

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 **OPENING OF BIDS** At the discretion of the Owner, if stipulated in the Advertisement or Invitation to Bid, the properly identified Bids received on time will be publicly opened and will be read aloud. An abstract of the Bids may be made available to Bidders.

§ 5.2 REJECTION OF BIDS

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

§ 5.3 ACCEPTANCE OF BID (AWARD)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest qualified Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's own best interests.

- .1 The Owner may also reject any Bid not prepared and submitted in accordance with all provisions of the Bidding Documents.

§ 5.3.2 The Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

§ 6.1 Contractor's Qualification Statement

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request a properly executed AIA Document A305™, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted for this Bid.

(Paragraphs deleted)

§ 6.3 Submittals

§ 6.3.1 **CONTRACTOR'S QUALIFICATION INFORMATION** – The apparent low bidder must submit the required pre-award submittal package described below to the Construction Manager within 48 hours after the bids are opened.

BBL Construction Services, LLC
302 Washington Avenue Ext.
Albany, NY 12203
518-452-8200

Submissions must be emailed and must include the Project Name of this contract in the Subject Line of the Pre-Award submission email.

- (1) Pre-award Submittal Package
 - (i) Fully executed AIA A305 Contractors Qualification Statement (to be submitted with the bid).
 - (ii) Most recent financial statement certified by CPA.
 - (iii) References and Experience:

1. List of all past contracts with K-12 Public School Districts (Provide Architect & CM Contact Information)
 2. Provide three (3) references (Name, Title, and Phone Number) associated with three (3) different projects (public or private sector) of similar scope and size to the one identified in this contract. Additionally, include the names of two major suppliers used for each of these three (3) projects.
- (2) Workforce and Work Plan – Provide a detailed written Work Plan which shall demonstrate the contractor’s understanding of overall project scope and shall include, but not be limited to, the following
- (i) Sequential listing of specific project activities required to successfully complete the Work of the contract.
 1. Include Critical Milestones
 2. Narrative of project work plan, sequencing, etc.
 3. Include phasing of the Work, if required.
 4. Include listing of long lead items.
 5. Statement that the project can be completed in established time.
 - (ii) Resumes for Contractor’s proposed supervisory staff, including qualifications for specialized expertise or any certification(s) required to perform the Work.
 - (iii) Names of proposed sub-contractors and a listing of the related trade of work and value.
 - (iv) Any special coordination requirements with other trades.
 - (v) Any special storage and staging requirements for construction materials.
- (3) Detailed Cost Estimate:
- (i) A copy of a Detailed Cost Estimate outlined in CSI format.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder’s option, withdraw the Bid or submit an acceptable substitute person or entity. The Bidder may also submit any required adjustment in the Base Bid or Alternate Bid to account for the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 BOND REQUIREMENTS

§ 7.1.1 The Bidder shall furnish bonds covering the faithful performance of the Contract (performance bond) and payment of all obligations arising thereunder (payment bond). Bonds may be secured through the Bidder’s usual sources unless otherwise required in writing. Bonds may be obtained through the Contractor’s usual source and the cost thereof shall be included in the Bid and Contract Sum. The amount of each bond shall be equal to one hundred (100) percent of the Contract Sum.

§ 7.1.2 The cost of furnishing performance and payment bonds shall be included in the Bid and Contract Sum.

§ 7.1.3 If the Owner requires that bonds be secured from other than the Bidder’s usual sources, changes in cost shall be adjusted and included in the Bid and Contract Sum.

(Paragraphs deleted)

§ 7.2 TIME OF DELIVERY AND FORM OF BONDS

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than ten (10) days after the Bidder has received notice of the acceptance of its Bid but in no event shall bonds be delivered later than the date of the executed Contract. If the Work is to be commenced prior thereto in response to a letter of intent, the Bidder shall, prior to commencement of the

Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise required in writing, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond. The amount of each bond shall be equal to one hundred (100) percent of the Contract Sum.

.1 The Performance and Payment Bonds shall have as surety thereunder such surety company or companies as are acceptable to Treasury Department of the United States on Bonds given to the United States Government, and are authorized to do business in the State of New York. Premium on such Bonds shall be included in the Bid.

§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

§ 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

§ 8.1 Copies of the proposed Contract Documents have been made available to the Bidder and consist of the following documents:

.1 All Specification Sections and Drawings Listed in Section 00 01 10 Table of Contents.

ARTICLE 9: TAXES

(Paragraphs deleted)

9.1 The Owner is an organization, which is exempt from New York State and Local Sales and Use Taxes. Materials purchased for use in fulfilling this Contract will be exempt from New York Sales Tax. The Owner will provide the Contractor with a completed Form ST-121.1, Exempt Organization Certification. The Contractor shall present a copy of this Form and a completed Form ST-120.1, Contractor Exempt Purchase Certificate, to each supplier. Should sales tax be assessed, the Owner agrees that the Contract Sum shall be increased by the full amount of such assessment.

REQUESTS FOR
CLARIFICATION OF BID
DOCUMENTS

SECTION 003000
REQUESTS FOR CLARIFICATION OF BID DOCUMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Requests for clarifications of the Bid Documents shall be submitted by Bidders to the Construction Manager via email (send to sbartholomew@bblinc.com. Requests shall include the following information:
 - 1. Project Name: Onteora Central School District, Building & Site Improvements
 - 2. Bidder's name and full contact information.
 - 3. Subject Specification Number.
 - 4. Subject Drawing Number.
 - 5. Clarification request/question.
- B. All valid request for clarifications will be answered via written addendum.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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**SECTION 003114
CONSTRUCTION SCHEDULE**

PART 1 GENERAL

1.01 CONSTRUCTION SCHEDULE

A. Contractor shall complete work of their Contract per the following Schedule:

Work	Start Date (Date listed or earlier if permitted by Owner)	Completion Date
Submittals:	Submittals to begin upon award of Contract.	
Construction:	6/14/24	8/1/24

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

Onteora Central School District - PES & WES Building & Site Modifications

Bid Documents: June 30, 2023

ID	Task Name	Duration	% Comple	Start	Finish	Calendar																											
						July	August	September	October	November	December	January	February	March	April	May	June	July	August	September													
1	Pre-Construction Phase	34 days	0%	Thu 7/20/23	Wed 9/6/23	Pre-Construction Phase																											
2	Bid Period	21 days	0%	Thu 7/20/23	Thu 8/17/23	Bid Period																											
3	Pre-Bid Walkthrough	1 day	0%	Thu 8/3/23	Thu 8/3/23	Pre-Bid Walkthrough																											
4	Bids Due	1 day	0%	Thu 8/17/23	Thu 8/17/23	Bids Due																											
5	BOE Awards Contracts	0 days	0%	Tue 8/29/23	Tue 8/29/23	BOE Awards Contracts																											
6	Contracts/Insurance/Bond Development	5 days	0%	Wed 8/30/23	Wed 9/6/23	Contracts/Insurance/Bond Development																											
7	Submittals	5 days	0%	Wed 8/30/23	Wed 9/6/23	Submittals																											
8	Long Lead Submittals	5 days	0%	Wed 8/30/23	Wed 9/6/23	Long Lead Submittals																											
9	Long Lead Procurement Items	70 days	0%	Thu 9/7/23	Fri 12/15/23	Long Lead Procurement Items																											
10	Aluminum Entrance	70 days	0%	Thu 9/7/23	Fri 12/15/23	Aluminum Entrance																											
11	FRP Doors	50 days	0%	Thu 9/7/23	Wed 11/15/23	FRP Doors																											
12	Transaction Window	20 days	0%	Thu 9/7/23	Wed 10/4/23	Transaction Window																											
13	Last Day of School (23-24)	0 days	0%	Fri 6/21/24	Fri 6/21/24	Last Day of School (23-24)																											
14	Construction Phase	39 days	0%	Fri 6/14/24	Fri 8/9/24	Construction Phase																											
15	Post for Abatement	1 day	0%	Fri 6/14/24	Fri 6/14/24	Post for Abatement																											
16	Contractor Mobilize	1 day	0%	Mon 6/24/24	Mon 6/24/24	Contractor Mobilize																											
17	Woodstock ES Exterior Door Replacement	33 days	0%	Mon 6/24/24	Fri 8/9/24	Woodstock ES Exterior Door Replacement																											
18	Disconnect Non-Abatement Components	1 day	0%	Mon 6/24/24	Mon 6/24/24	Disconnect Non-Abatement Components																											
19	Asbestos Abatement	10 days	0%	Tue 6/25/24	Wed 7/10/24	Asbestos Abatement																											
20	Demo (Ceiling, Floor Tile, Wood Ramp, etc.)	7 days	0%	Thu 7/11/24	Fri 7/19/24	Demo (Ceiling, Floor Tile, Wood Ramp, etc.)																											
21	Install New Door Frame, Hardware and Door	10 days	0%	Mon 7/22/24	Fri 8/2/24	Install New Door Frame, Hardware and Door																											
22	Prep Subbase	3 days	0%	Mon 8/5/24	Wed 8/7/24	Prep Subbase																											
23	Form and Place Concrete Ramp	1 day	0%	Thu 8/8/24	Thu 8/8/24	Form and Place Concrete Ramp																											
24	Install Handrails	1 day	0%	Fri 8/9/24	Fri 8/9/24	Install Handrails																											

Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Deadline	
Split		External Tasks		Inactive Summary		Manual Summary		Progress	
Milestone		External Milestone		Manual Task		Start-only		Manual Progress	
Summary		Inactive Task		Duration-only		Finish-only			

1.05 ALLOWANCES (REFERENCE SPECIFICATION SECTION 012100)

- A. Specified Allowance as indicated in Specification Section 012100. This amount is to be included in the Base Bid above.

1. Allowance Amount:

\$ _____ (Insert Amount)

1.06 BID SECURITY

- A. Bid Security in the form of a Certified or Cashier's Check or a Bid Bond in the form required by the Contract Documents is attached to and made a part of this Proposal.

1.07 IRAN DIVESTMENT ACT CERTIFICATION

- A. Contractor to submit with the bid, Iran Divestment Act Certification which hereto is made a part of this Form of Proposal and is attached at the end of this Form of Proposal.

1.08 REPRESENTATIONS

- A. By submitting this Proposal the Bidder represents and certifies to the Owner and the Architect that
1. It has examined the Contract Documents, the site of the proposed Work, is familiar with the local conditions at the place where the Work is to be performed and fully comprehends the requirements and intent of the plans and specifications for this Project in accordance with the drawings, specifications and other Contract Documents prepared by CPL the Owners Consultant, for this Project.
 2. It has examined and reviewed, where applicable, all information and data in the Contract Documents related to existing underground facilities at or contiguous to the site. Bidder shall require of the Owner or Architect no further investigations, explorations, tests or reports with respect to such underground facilities in order for the Bidder to perform the Work of the Proposal within the Contract Time and in accordance with the Contract Documents.
 3. It has given notice to the Architect, as required by the Contract Documents of any and all discrepancies it has discovered and accepts the resolution of those discrepancies offered by the Architect.
 4. Pursuant to New York State General Municipal Law section 103-d, 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, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;
 - b. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not be knowingly disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or competitor; and
 - c. No attempt has been made or will be made by 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 proposal is based upon the materials, equipment and systems required by the Contract Documents, without exception, unless otherwise set forth in this Proposal in detail.

1.09 CHANGE ORDERS

- A. We propose and agree that the above lump sum shall be adjusted for changes in the Contract Work not included in unit prices by addition of the following costs:
1. Profit and overhead as permitted in the General Conditions.

1.10 NON-COLLUSIVE BIDDING CERTIFICATION

- A. 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:
 1. The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;
 2. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and
 3. No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

1.11 ACCEPTANCE

- A. When this Proposal is accepted, the undersigned agrees to enter into a Contract with the Owner as provided in the Form of Agreement.

1.12 AFFIRMS

- A. The undersigned affirms and agrees that this Proposal is a firm one which remains in effect and will be irrevocable for a period of forty-five (45) days after opening of Bids.

1.13 TYPE OF BUSINESS

- A. The undersigned hereby represents that it is a (select with circle):
 1. Corporation, Partnership, Individual.
 2. If a Corporation, then the undersigned further represents that it is duly qualified as a Corporation under the laws of New York State and it is authorized to do business in this State.

1.14 PLACE OF BUSINESS

- A. The following is the name and address of the person to whom all notices required in connection with this Proposal may be telephoned, mailed, or delivered.

Name of Contact Person:	
Name of Business or Firm:	
Address:	
Address:	
Telephone:	Fax
Email Address:	
FEIN: Federal Employer Identification No.:	

1.15 EXECUTION OF CONTRACT

- A. When written Notice of Acceptance of the Proposal is mailed or delivered to the undersigned within forty-five (45) days after the opening of Bids, or anytime thereafter should the Proposal not be withdrawn, the undersigned, within ten (10) days, will execute the Form of Agreement with the Owner.

1.16 ADDENDA

- A. Any addenda issued by the Architect and mailed or delivered to the undersigned prior to the Bid opening date shall become part of the Contract Documents. The Bidder shall enter on this list any addenda issued after this Form of Proposal has been received and shall fill in the addenda number and date.

Addendum #	Dated:
Addendum #	Dated:

Addendum #	Dated:
Addendum #	Dated:

1.17 ASBESTOS

- A. The bidder certifies that no asbestos or asbestos-containing materials will be incorporated into the Work of this Contract.

1.18 AUTHORIZED SIGNATURES FOR PROPOSALS

Individual or Legal Name of Firm or Corporation:
Signature of Representative of Firm or Corporation:
Printed Name and Title:
Date:
If Corporation – provide Seal:

1.19 IRAN DIVESTMENT ACT CERTIFICATION

- A. By submission of this bid, (DL & AV Equip 1315), or by assuming the responsibility of a Contract awarded hereunder, each bidder and each person signing on behalf of any bidders, certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief:
 1. That each bidder/contractor/assignee is not on the “Entities Determined To Be Non-Responsive Bidders/Offerers Pursuant to The New York State Iran Divestment Act of 2012” list created pursuant to paragraph (b) subdivision 3 of section 165-a of the New York State Finance Law and posted on the OGS website at <http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf> and further certifies that it will not utilize on such Contract any subcontractor that is identified on the Prohibited Entities List. Additionally, Bidder/Contractor is advised that should it seek to renew or extend a Contract awarded in response to the solicitation, it must provide the same certification at the time the Contract is renewed or extended. (See Article in the Instructions to Bidders.)

Individual or Legal Name of Firm or Corporation:
Mailing Address:
Signature of Representative of Firm or Corporation:
Printed Name and Title:
Date:
SWORN to before me this date:
Notary Public Signature and Stamp:

1.20 SEXUAL HARASSMENT POLICY/TRAINING AFFIRMATION

- A. 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 the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all its employees.

Name of Contractor:	
Name of Business or Firm:	
Address:	
Telephone:	Fax
Email Address:	
Signature and Title of Contractor:	
Date:	

END OF SECTION

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SECTION 004010
FORM OF PROPOSAL – GENERAL CONSTRUCTION

PART 1 GENERAL

1.01 SUMMARY

A. Fill in information:

Date:	
TO:	
OWNER NAME & ADDRESS:	
FROM:	
BIDDER NAME & ADDRESS	

1.02 GENERAL

A. Pursuant to, and in compliance with, the Procurement and Contracting Requirements, Conditions of the Contract, relative thereto and all of the Contract Documents, including any Addenda issued by the Architect and mailed or delivered to the undersigned prior to the opening of Bids, whether received by the undersigned or not, we,

1. having visited the site and being familiar with all conditions and requirements of the Work, hereby propose to furnish all plant, labor, supplies, materials and equipment incidental to **GENERAL CONSTRUCTION WORK** as required by and in strict accord with the applicable provisions of the Drawings and Specifications entitled (Insert project title Here) all to the satisfaction and approval of the Architect and the Owner in accordance with the terms and conditions of the Contract Documents for the following sum:

	DOLLARS
(\$ _____)	
BASE BID	

1.03 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within 10 consecutive days after a written Notice of Award, if offered within 45 days after receipt of bids, and on failure to do so agrees to forfeit to Owner the attached cash, cashier's check, certified check, U.S. money order, or bid bond, as liquidated damages for such failure, in the amount constituting five percent (5%) of the Base Bid.
1. In the event Owner does not offer Notice of Award within the time limits stated above, Owner will return to the undersigned the cash, cashier's check, certified check, U.S. money order, or bid bond.

1.04 TIME OF COMPLETION

- A. It is agreed by the undersigned that after receipt of a Notice of Award and a consummation of a Contract Agreement in accord with the terms of the Contract Documents, he will start work within 10 consecutive calendar days of this notice to proceed and fully complete the work as indicated in the project schedule.

1.05 ALLOWANCES (REFERENCE SPECIFICATION SECTION 012100)

- A. Specified Allowance as indicated in Specification Section 012100. This amount is to be included in the Base Bid above.

1. Allowance Amount:

\$ _____ (Insert Amount)

1.06 ALTERNATES (REFERENCE SPECIFICATION SECTION 012300.)

- A. Enter a whole dollar amount, even if it is zero (\$0), for each Alternate. Circle "ADD" or "DEDUCT" for each Alternate Bid. If neither is circled, "DEDUCT" will be assumed. Do not leave any Alternate amount blank. If any amount is blank, it will be assumed the Bidder will provide that Alternate for no change, neither increase nor decrease, in Contract Price.

1. Alternate No. GC-1: Provide all general construction work relative to providing new vestibule at Phoenicia Elementary School.

ADD/DEDUCT (\$ _____)
DOLLARS

1.07 BID SECURITY

- A. Bid Security in the form of a Certified or Cashier's Check or a Bid Bond in the form required by the Contract Documents is attached to and made a part of this Proposal.

1.08 IRAN DIVESTMENT ACT CERTIFICATION

- A. Contractor to submit with the bid, Iran Divestment Act Certification which hereto is made a part of this Form of Proposal and is attached at the end of this Form of Proposal.

1.09 REPRESENTATIONS

- A. By submitting this Proposal the Bidder represents and certifies to the Owner and the Architect that
1. It has examined the Contract Documents, the site of the proposed Work, is familiar with the local conditions at the place where the Work is to be performed and fully comprehends the requirements and intent of the plans and specifications for this Project in accordance with the drawings, specifications and other Contract Documents prepared by CPL the Owners Consultant, for this Project.
 2. It has examined and reviewed, where applicable, all information and data in the Contract Documents related to existing underground facilities at or contiguous to the site. Bidder shall require of the Owner or Architect no further investigations, explorations, tests or reports with respect to such underground facilities in order for the Bidder to perform the Work of the Proposal within the Contract Time and in accordance with the Contract Documents.
 3. It has given notice to the Architect, as required by the Contract Documents of any and all discrepancies it has discovered and accepts the resolution of those discrepancies offered by the Architect.
 4. Pursuant to New York State General Municipal Law section 103-d, 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, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;
 - b. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not be knowingly disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or competitor; and
 - c. No attempt has been made or will be made by 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 proposal is based upon the materials, equipment and systems required by the Contract Documents, without exception, unless otherwise set forth in this Proposal in detail.

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- A. We propose and agree that the above lump sum shall be adjusted for changes in the Contract Work not included in unit prices by addition of the following costs:
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- A. When this Proposal is accepted, the undersigned agrees to enter into a Contract with the Owner as provided in the Form of Agreement.

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- A. The undersigned affirms and agrees that this Proposal is a firm one which remains in effect and will be irrevocable for a period of forty-five (45) days after opening of Bids.

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- A. The undersigned hereby represents that it is a (select with circle):
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 2. If a Corporation, then the undersigned further represents that it is duly qualified as a Corporation under the laws of New York State and it is authorized to do business in this State.

1.15 PLACE OF BUSINESS

- A. The following is the name and address of the person to whom all notices required in connection with this Proposal may be telephoned, mailed, or delivered.

Name of Contact Person:	
Name of Business or Firm:	
Address:	
Address:	
Telephone:	Fax
Email Address:	
FEIN: Federal Employer Identification No.:	

1.16 EXECUTION OF CONTRACT

- A. When written Notice of Acceptance of the Proposal is mailed or delivered to the undersigned within forty-five (45) days after the opening of Bids, or anytime thereafter should the Proposal not be withdrawn, the undersigned, within ten (10) days, will execute the Form of Agreement with the Owner.

1.17 ADDENDA

- A. Any addenda issued by the Architect and mailed or delivered to the undersigned prior to the Bid opening date shall become part of the Contract Documents. The Bidder shall enter on this list any addenda issued after this Form of Proposal has been received and shall fill in the addenda number and date.

Addendum #	Dated:

1.18 ASBESTOS

- A. The bidder certifies that no asbestos or asbestos-containing materials will be incorporated into the Work of this Contract.

1.19 AUTHORIZED SIGNATURES FOR PROPOSALS

Individual or Legal Name of Firm or Corporation:
Signature of Representative of Firm or Corporation:
Printed Name and Title:
Date:
If Corporation – provide Seal:

1.20 IRAN DIVESTMENT ACT CERTIFICATION

- A. By submission of this bid, (DL & AV Equip 1315), or by assuming the responsibility of a Contract awarded hereunder, each bidder and each person signing on behalf of any bidders, certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief:
 1. That each bidder/contractor/assignee is not on the “Entities Determined To Be Non-Responsive Bidders/Offerers Pursuant to The New York State Iran Divestment Act of 2012” list created pursuant to paragraph (b) subdivision 3 of section 165-a of the New York State Finance Law and posted on the OGS website at <http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf> and further certifies that it will not utilize on such Contract any subcontractor that is identified on the Prohibited Entities List. Additionally, Bidder/Contractor is advised that should it seek to renew or extend a Contract awarded in response to the solicitation, it must provide the same certification at the time the Contract is renewed or extended. (See Article in the Instructions to Bidders.)

Individual or Legal Name of Firm or Corporation:
Mailing Address:
Signature of Representative of Firm or Corporation:

Printed Name and Title:
Date:
SWORN to before me this date:
Notary Public Signature and Stamp:

1.21 SEXUAL HARASSMENT POLICY/TRAINING AFFIRMATION

- A. 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 the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all its employees.

Name of Contractor:
Name of Business or Firm:
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Telephone: Fax
Email Address:
Signature and Title of Contractor:
Date:

END OF SECTION

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**SECTION 004020
FORM OF PROPOSAL -MECHANICAL CONSTRUCTION**

PART 1 GENERAL

1.01 SUMMARY

A. Fill in information:

Date:	
TO:	
OWNER NAME & ADDRESS:	
FROM:	
BIDDER NAME & ADDRESS	

1.02 GENERAL

A. Pursuant to, and in compliance with, the Procurement and Contracting Requirements, Conditions of the Contract, relative thereto and all of the Contract Documents, including any Addenda issued by the Architect and mailed or delivered to the undersigned prior to the opening of Bids, whether received by the undersigned or not, we,

1. having visited the site and being familiar with all conditions and requirements of the Work, hereby propose to furnish all plant, labor, supplies, materials and equipment incidental to **MECHANICAL CONSTRUCTION WORK** as required by and in strict accord with the applicable provisions of the Drawings and Specifications entitled (Insert project title Here)all to the satisfaction and approval of the Architect and the Owner in accordance with the terms and conditions of the Contract Documents for the following sum:

	DOLLARS
(\$ _____)	
BASE BID	

1.03 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within 10 consecutive days after a written Notice of Award, if offered within 45 days after receipt of bids, and on failure to do so agrees to forfeit to Owner the attached cash, cashier's check, certified check, U.S. money order, or bid bond, as liquidated damages for such failure, in the amount constituting five percent (5%) of the Base Bid.
1. In the event Owner does not offer Notice of Award within the time limits stated above, Owner will return to the undersigned the cash, cashier's check, certified check, U.S. money order, or bid bond.

1.04 TIME OF COMPLETION

- A. It is agreed by the undersigned that after receipt of a Notice of Award and a consummation of a Contract Agreement in accord with the terms of the Contract Documents, he will start work within 10 consecutive calendar days of this notice to proceed and fully complete the work as indicated in the project schedule.

1.05 ALLOWANCES (REFERENCE SPECIFICATION SECTION 012100)

- A. Specified Allowance as indicated in Specification Section 012100. This amount is to be included in the Base Bid above.

1. Allowance Amount:
\$ _____ (Insert Amount)

1.06 ALTERNATES (REFERENCE SPECIFICATION SECTION 012300.)

A. Enter a whole dollar amount, even if it is zero (\$0), for each Alternate. Circle "ADD" or "DEDUCT" for each Alternate Bid. If neither is circled, "DEDUCT" will be assumed. Do not leave any Alternate amount blank. If any amount is blank, it will be assumed the Bidder will provide that Alternate for no change, neither increase nor decrease, in Contract Price.

1. Alternate No. MC-1: Provide all mechanical construction work relative to constructing the new vestibule at Phoenicia Elementary School.
ADD/DEDUCT (\$ _____)
_____ DOLLARS

1.07 BID SECURITY

A. Bid Security in the form of a Certified or Cashier's Check or a Bid Bond in the form required by the Contract Documents is attached to and made a part of this Proposal.

1.08 IRAN DIVESTMENT ACT CERTIFICATION

A. Contractor to submit with the bid, Iran Divestment Act Certification which hereto is made a part of this Form of Proposal and is attached at the end of this Form of Proposal.

1.09 REPRESENTATIONS

A. By submitting this Proposal the Bidder represents and certifies to the Owner and the Architect that

1. It has examined the Contract Documents, the site of the proposed Work, is familiar with the local conditions at the place where the Work is to be performed and fully comprehends the requirements and intent of the plans and specifications for this Project in accordance with the drawings, specifications and other Contract Documents prepared by CPL the Owners Consultant, for this Project.
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Addendum #	Dated:

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- A. The bidder certifies that no asbestos or asbestos-containing materials will be incorporated into the Work of this Contract.

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Individual or Legal Name of Firm or Corporation:
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ADD/DEDUCT (\$ _____)	
	DOLLARS

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1. Alternate No. WC-1: Provide all general construction work relative to providing new vestibule at Phoenicia Elementary School.

ADD/DEDUCT (\$ _____)
DOLLARS

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Addendum #	Dated:

1.18 ASBESTOS

- A. The bidder certifies that no asbestos or asbestos-containing materials will be incorporated into the Work of this Contract.

1.19 AUTHORIZED SIGNATURES FOR PROPOSALS

Individual or Legal Name of Firm or Corporation:
Signature of Representative of Firm or Corporation:
Printed Name and Title:
Date:
If Corporation – provide Seal:

1.20 IRAN DIVESTMENT ACT CERTIFICATION

- A. By submission of this bid, (DL & AV Equip 1315), or by assuming the responsibility of a Contract awarded hereunder, each bidder and each person signing on behalf of any bidders, 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/contractor/assignee is not on the “Entities Determined To Be Non-Responsive Bidders/Offerers Pursuant to The New York State Iran Divestment Act of 2012” list created pursuant to paragraph (b) subdivision 3 of section 165-a of the New York State Finance Law and posted on the OGS website at <http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf> and further certifies that it will not utilize on such Contract any subcontractor that is identified on the Prohibited Entities List. Additionally, Bidder/Contractor is advised that should it seek to renew or extend a Contract awarded in response to the solicitation, it must provide the same certification at the time the Contract is renewed or extended. (See Article in the Instructions to Bidders.)

Individual or Legal Name of Firm or Corporation:
Mailing Address:
Signature of Representative of Firm or Corporation:

Printed Name and Title:
Date:
SWORN to before me this date:
Notary Public Signature and Stamp:

1.21 SEXUAL HARASSMENT POLICY/TRAINING AFFIRMATION

- A. 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 the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all its employees.

Name of Contractor:
Name of Business or Firm:
Address:
Telephone: Fax
Email Address:
Signature and Title of Contractor:
Date:

END OF SECTION

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**SECTION 004510
ASBESTOS NOTIFICATION**

PART 1 GENERAL

1.01 SUMMARY

- A. Attached Asbestos Notification form.
 - 1. The attached form shall be submitted to the Architect/Engineer by each Contractor in accordance with the Contract Documents prior to performing any work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

ASBESTOS NOTIFICATION

THE ASBESTOS HAZARD EMERGENCY RESPONSE ACT (AHERA) REQUIRES SCHOOL DISTRICTS TO INFORM ALL NON-DISTRICT EMPLOYEES (CONTRACTORS, VENDORS, ETC.) WHO PERFORM SHORT TERM WORK IN A SCHOOL BUILDING OF THE LOCATIONS OF ANY KNOWN OR ASSUMED ASBESTOS CONTAINING BUILDING MATERIALS IN THE SCHOOL.

EXPOSURE TO ASBESTOS FIBERS CAN BE HAZARDOUS TO ONE'S HEALTH AND TO THE HEALTH OF THE BUILDING OCCUPANTS. PRECAUTIONS MUST BE TAKEN TO PREVENT THE DISTURBANCE OF ASBESTOS CONTAINING BUILDING MATERIALS.

THE OWNER HAS AN ASBESTOS MANAGEMENT PLAN THAT INDICATES THE SPECIFIC LOCATIONS WHERE ASBESTOS IS KNOWN TO EXIST.

PLEASE PROCEED WITH CAUTION AND REMEMBER THAT THE OWNER'S BUILDINGS ARE FOR CHILDREN. NO WORK MAY BEGIN, UNTIL THE CONTRACTOR CERTIFIES, BY SIGNATURE BELOW, THAT THEY:

Have contacted the Owner's Facilities Director to inform him/her of the scope of work.

Have been informed by the Owner's Facilities Director of any known asbestos containing materials.

Will take adequate measures to prevent the disturbance of asbestos fibers to the largest extent possible.

Will inform any sub-contractors of the location of any asbestos containing materials and will require these sub-contractors to take adequate measures to prevent the disturbance of asbestos fibers.

Will immediately contact the Owner's Facilities Director if asbestos fibers are disturbed.

NAME OF CONTRACTOR (PRINTED)	
TITLE (PRINTED)	
ADDRESS OF CONTRACTOR (PRINTED)	
ADDRESS OF CONTRACTOR (PRINTED)	
SIGNATURE	DATE

**SECTION 005200
A132 AGREEMENT (CMA)**

PART 1 GENERAL

1.01 SUMMARY

- A. The following "Standard Form of Agreement Between Owner and Contractor – Construction Manager as Adviser Edition," AIA Document A132 - 2019, is bound with this Section. The document has been prepared for use with AIA A232 – 2019 , General Conditions of the Contract for Construction, Construction Manager as Adviser Edition.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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AIA® Document A132™ – 2019

Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition

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

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

Onteora Central School District
4166 State Route 28
Boiceville, NY 12412

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

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

Onteora Central School District
Building & Site Improvements
Phoenicia Elementary School
School Lane, Phoenicia, NY 12464
SED Project No.: 62-12-01-06-0-011-017

Woodstock Elementary School
8 West Hurly Road, Woodstock, NY 12498
SED Project No.: 62-12-01-06-0-009-016

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

BBL Construction Services, LLC
302 Washington Avenue, Ext.
Albany, NY 12203

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

CPL
50 Front Street, Suite 202
Newburgh, NY 12550

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

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

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

This document is intended to be used in conjunction with AIA Documents A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition; B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser. AIA Document A232™–2019 is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS**
- 2 THE WORK OF THIS CONTRACT**
- 3 DATE OF COMMENCEMENT AND DATES OF SUBSTANTIAL COMPLETION**
- 4 CONTRACT SUM**
- 5 PAYMENTS**
- 6 DISPUTE RESOLUTION**
- 7 TERMINATION OR SUSPENSION**
- 8 MISCELLANEOUS PROVISIONS**
- 9 ENUMERATION OF CONTRACT DOCUMENTS**
(Paragraph deleted)

ARTICLE 1 THE CONTRACT DOCUMENTS

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

ARTICLE 2 THE WORK OF THIS CONTRACT

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

ARTICLE 3 DATE OF COMMENCEMENT AND DATES OF SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

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

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

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

§ 3.3 Substantial Completion of the Project or Portions Thereof

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the date of Substantial Completion of the Work of all of the Contractors for the Project will be:
(Insert the date of Substantial Completion of the Work of all Contractors for the Project.)

See Section 01 1100.

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work of all of the Contractors for the Project are to be completed prior to Substantial Completion of the entire Work of all of the Contractors for the Project, the Contractors shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date
-----------------	-----------------------------

§ 3.4 When the Work of this Contract, or any Portion Thereof, is Substantially Complete

§ 3.4.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall substantially complete the entire Work of this Contract:

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

Not later than () calendar days from the date of commencement of the Work.

By the following date:

§ 3.4.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work of this Contract are to be substantially complete prior to when the entire Work of this Contract shall be substantially complete, the Contractor shall substantially complete such portions by the following dates:

Portion of Work	Date to be substantially complete
-----------------	-----------------------------------

§ 3.4.3 If the Contractor fails to substantially complete the Work of this Contract, or portions thereof, as provided in this Section 3.4, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be one of the following:

(Check the appropriate box.)

Stipulated Sum, in accordance with Section 4.2 below

Cost of the Work plus the Contractor's Fee, in accordance with Section 4.3 below

Cost of the Work plus the Contractor's Fee with a Guaranteed Maximum Price, in accordance with Section 4.4 below

(Based on the selection above, complete Section 4.2, 4.3 or 4.4 below.)

§ 4.2 Stipulated Sum

§ 4.2.1 The Contract Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

§ 4.2.2 Alternates

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

Item	Price
------	-------

§ 4.2.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.

(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance
------	-------	---------------------------

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

Item	Price
------	-------

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

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

§ 4.3 Cost of the Work Plus Contractor's Fee without a Guaranteed Maximum Price

§ 4.3.1 The Cost of the Work is as defined in Exhibit B, Determination of the Cost of the Work.

§ 4.3.2 The Contractor's Fee:

(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee.)

§ 4.3.3 The method of adjustment of the Contractor's Fee for changes in the Work:

§ 4.3.4 Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:

§ 4.3.5 Rental rates for Contractor-owned equipment shall not exceed percent (%) of the standard rental rate paid at the place of the Project.

§ 4.3.6 Unit prices, if any:

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

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

§ 4.3.7 The Contractor shall prepare and submit to the Construction Manager, within 14 days of executing this Agreement, a written Control Estimate for the Owner's review and approval. The Control Estimate shall include the items in Section B.1 of Exhibit B, Determination of the Cost of the Work.

§ 4.4 Cost of the Work Plus Contractor's Fee with a Guaranteed Maximum Price

§ 4.4.1 The Cost of the Work is as defined in Exhibit B, Determination of the Cost of the Work.

§ 4.4.2 The Contractor's Fee:

(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee.)

§ 4.4.3 The method of adjustment of the Contractor's Fee for changes in the Work:

§ 4.4.4 Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:

§ 4.4.5 Rental rates for Contractor-owned equipment shall not exceed percent (%) of the standard rental rate paid at the place of the Project.

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

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

§ 4.4.7 Guaranteed Maximum Price

§ 4.4.7.1 The Contract Sum is guaranteed by the Contractor not to exceed (\$), subject to additions and deductions by Change Order as provided in the Contract Documents. This maximum sum is referred to in the Contract Documents as the Guaranteed Maximum Price. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Contractor without reimbursement by the Owner.

§ 4.4.7.2 Alternates

§ 4.4.7.2.1 Alternates, if any, included in the Guaranteed Maximum Price:

Item	Price
------	-------

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

Item	Price	Conditions for Acceptance
------	-------	---------------------------

§ 4.4.7.3 Allowances, if any, included in the Guaranteed Maximum Price:
(Identify each allowance.)

Item	Price
------	-------

§ 4.4.7.4 Assumptions, if any, upon which the Guaranteed Maximum Price is based:
(Identify each assumption.)

§ 4.4.8 To the extent that the Contract Documents are anticipated to require further development, the Guaranteed Maximum Price includes the costs attributable to such further development consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include changes in scope, systems, kinds and quality of materials, finishes, or equipment, all of which, if required, shall be incorporated by Change Order.

§ 4.4.9 The Owner shall authorize preparation of revisions to the Contract Documents that incorporate the agreed-upon assumptions contained in Section 4.4.7.4. The Owner shall promptly furnish such revised Contract Documents to the Contractor. The Contractor shall notify the Owner and Architect of any inconsistencies between the agreed-upon assumptions contained in Section 4.4.7.4 and the revised Contract Documents.

§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any, to be assessed in accordance with Section 3.4.)

See Section 00 40XX.

§ 4.6 Other:
(Insert provisions for bonus, cost savings or other incentives, if any, that might result in a change to the Contract Sum.)

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

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

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

§ 5.1.3 Provided that an Application for Payment is received by the Construction Manager not later than the 25th day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the 15th day of the next month. If an Application for Payment is received by the Construction Manager after the application date fixed above, payment of the amount certified shall be made by the Owner not later than thirty (30) days after the Construction Manager receives the Application for Payment.

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

§ 5.1.4 Progress Payments Where the Contract Sum is Based on a Stipulated Sum

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

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

§ 5.1.4.3 In accordance with AIA Document A232™-2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

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

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

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

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232-2019;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232-2019; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.5 Progress Payments Where the Contract Sum is Based on the Cost of the Work without a Guaranteed Maximum Price

§ 5.1.5.1 With each Application for Payment, the Contractor shall submit the cost control information required in Exhibit B, Determination of the Cost of the Work, along with payrolls, petty cash accounts, received invoices, or invoices with

check vouchers attached, and any other evidence required by the Owner, Construction Manager or Architect to demonstrate that payments already made by the Contractor on account of the Cost of the Work equal or exceed progress payments already received by the Contractor, plus payrolls for the period covered by the present Application for Payment, less that portion of the payments attributable to the Contractor's Fee.

§ 5.1.5.2 Applications for Payment shall show the Cost of the Work actually incurred by the Contractor through the end of the period covered by the Application for Payment and for which the Contractor has made or intends to make actual payment prior to the next Application for Payment.

§ 5.1.5.3 In accordance with AIA Document A232-2019 and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

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

- .1 The Cost of the Work as described in Exhibit B, Determination of the Cost of the Work;
- .2 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified; and
- .3 The Contractor's Fee computed upon the Cost of the Work described in the preceding Section 5.1.5.3.1.1 at the rate stated in Section 4.3.2; or if the Contractor's Fee is stated as a fixed sum in Section 4.3.2 an amount which bears the same ratio to that fixed-sum Fee as the Cost of the Work included in Section 5.1.5.3.1.1 bears to a reasonable estimate of the probable Cost of the Work upon its completion.

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

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232-2019;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232-2019;
- .5 The shortfall, if any, indicated by the Contractor in the documentation required by Section 5.1.5.1 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and
- .6 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.5.4 The Owner, Construction Manager and Contractor shall agree upon a mutually acceptable procedure for review and approval of payments to Subcontractors and the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.

§ 5.1.5.5 In taking action on the Contractor's Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor, and such action shall not be deemed to be a representation that (1) the Construction Manager and Architect have made a detailed examination, audit or arithmetic verification of the documentation submitted in accordance with Article 5 or other supporting data; (2) that the Construction Manager and Architect have made exhaustive or continuous on-site inspections; or (3) that the Construction Manager and Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.

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

§ 5.1.5.7 If final completion of the Work is materially delayed through no fault of the Contractor, then the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A232-2019.

§ 5.1.6 Progress Payments Where the Contract Sum is Based on the Cost of the Work with a Guaranteed Maximum Price

§ 5.1.6.1 With each Application for Payment, the Contractor shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached, and any other evidence required by the Owner, Construction Manager or Architect to demonstrate that payments already made by the Contractor on account of the Cost of the Work equal or exceed progress payments already received by the Contractor plus payrolls for the period covered by the present Application for Payment, less that portion of the progress payments attributable to the Contractor's Fee.

§ 5.1.6.2 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Guaranteed Maximum Price among: (1) the various portions of the Work; (2) any contingency for costs that are included in the Guaranteed Maximum Price but not otherwise allocated to another line item or included in a Change Order; and (3) the Contractor's Fee.

§ 5.1.6.2.1 The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Construction Manager and Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.6.2.2 The allocation of the Guaranteed Maximum Price under this Section 5.1.6.2 shall not constitute a separate guaranteed maximum price for the Cost of the Work of each individual line item in the schedule of values.

§ 5.1.6.2.3 When the Contractor allocates costs from a contingency to another line item in the schedule of values, the Contractor shall submit supporting documentation to the Architect and Construction Manager.

§ 5.1.6.3 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment. The percentage of completion shall be the lesser of (1) the percentage of that portion of the Work which has actually been completed; or (2) the percentage obtained by dividing (a) the expense that has actually been incurred by the Contractor on account of that portion of the Work and for which the Contractor has made payment or intends to make payment prior to the next Application for Payment by (b) the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values.

§ 5.1.6.4 In accordance with AIA Document A232-2019, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

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

- .1 That portion of the Guaranteed Maximum Price properly allocable to completed Work as determined by multiplying the percentage of completion of each portion of the Work by the share of the Guaranteed Maximum Price allocated to that portion of the Work in the most recent schedule of values;
- .2 That portion of the Guaranteed Maximum Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction or, if approved in writing in advance by the Owner, suitably stored off the site at a location agreed upon in writing;
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified; and
- .4 The Contractor's Fee, computed upon the Cost of the Work described in the preceding Sections 5.1.6.4.1.1 and 5.1.6.4.1.2 at the rate stated in Section 4.4.2 or, if the Contractor's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum fee as the Cost of the Work included in Sections 5.1.6.4.1.1 and 5.1.6.4.1.2 bears to a reasonable estimate of the probable Cost of the Work upon its completion.

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

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232-2019;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232-2019;

- .5 The shortfall, if any, indicated by the Contractor in the documentation required by Section 5.1.6.1 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and
- .6 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.6.5 The Owner and the Contractor shall agree upon a mutually acceptable procedure for review and approval of payments to Subcontractors and the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.

§ 5.1.6.6 In taking action on the Contractor's Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor and such action shall not be deemed to be a representation that (1) the Construction Manager or Architect have made a detailed examination, audit, or arithmetic verification of the documentation submitted in accordance with Section 5.1.6.1 or other supporting data; (2) that the Construction Manager or Architect have made exhaustive or continuous on-site inspections; or (3) that the Construction Manager or Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits, and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.

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

§ 5.1.6.8 If final completion of the Work is materially delayed through no fault of the Contractor, then the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A232-2019.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to when the Work of this Contract is substantially complete, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

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

Five Percent (5%)

§ 5.1.7.1.1 The following items are not subject to retainage:

(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

All items subject to retainage.

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to when the entire Work of this Contract is substantially complete, including modifications for completion of portions of the Work as provided in Section 3.4.2, insert provisions for such modifications.)

None.

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

(Insert any other conditions for release of retainage when the Work of this Contract is substantially complete, or upon Substantial Completion of the Work of all Contractors on the Project or portions thereof.)

§ 5.2 Final Payment

§ 5.2.1 Final Payment Where the Contract Sum is Based on a Stipulated Sum

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

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A232-2019, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect.

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

§ 5.2.2 Final Payment Where the Contract Sum is Based on the Cost of the Work with or without a Guaranteed Maximum Price

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

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A232-2019, and to satisfy other requirements, if any, which extend beyond final payment;
- .2 the Contractor has submitted a final accounting for the Cost of the Work, pursuant to Exhibit B, Determination of the Cost of the Work and a final Application for Payment; and
- .3 a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect in accordance with Exhibit B, Determination of the Cost of the Work.

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

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

As per Section 106-b of the General Municipal Law.

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as Initial Decision Maker pursuant to Article 15 of AIA Document A232-2019, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.

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

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A232-2019, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

- Arbitration pursuant to Article 15 of AIA Document A232-2019.
- Litigation in a court of competent jurisdiction.
- Other: *(Specify)*

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

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 Where the Contract Sum is a Stipulated Sum

§ 7.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2019.

§ 7.1.1.1 If the Contract is terminated for the Owner’s convenience in accordance with Article 14 of AIA Document A232–2019, then the Owner shall pay the Contractor a termination fee as follows:

(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner’s convenience.)

§ 7.1.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2019.

§ 7.2 Where the Contract Sum is Based on the Cost of the Work with or without a Guaranteed Maximum Price

§ 7.2.1 Termination

§ 7.2.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2019.

§ 7.2.1.2 Termination by the Owner for Cause

§ 7.2.1.2.1 If the Owner terminates the Contract for cause as provided in Article 14 of AIA Document A232–2019, the Owner shall then only pay the Contractor an amount as follows:

- .1** Take the Cost of the Work incurred by the Contractor to the date of termination;
- .2** Add the Contractor’s Fee, computed upon the Cost of the Work to the date of termination at the rate stated in Section 4.3.2 or 4.4.2, as applicable, or, if the Contractor’s Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum Fee as the Cost of the Work at the time of termination bears to a reasonable estimate of the probable Cost of the Work upon its completion;
- .3** Subtract the aggregate of previous payments made by the Owner; and
- .4** Subtract the costs and damages incurred, or to be incurred, by the Owner under Article 14 of AIA Document A232–2019.

§ 7.2.1.2.2 When the Contract Sum is based on the Cost of the Work with a Guaranteed Maximum Price, if the Owner terminates the Contract for cause as provided in Article 14 of AIA Document A232–2019, the amount, if any, to be paid to the Contractor under Article 14 of AIA Document A232–2019 shall not cause the Guaranteed Maximum Price to be exceeded, nor shall it exceed the amount calculated in Section 7.2.1.2.1.

§ 7.2.1.2.3 The Owner shall also pay the Contractor fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the Contractor that the Owner elects to retain and that is not otherwise included in the Cost of the Work under Section 7.2.1.2.1.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the Contractor shall, as a condition of receiving the payments referred to in this Article 7, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the Contractor, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Contractor under such subcontracts or purchase orders. All Subcontracts, purchase orders and rental agreements entered into by the Contractor will contain provisions allowing for assignment to the Owner as described above.

§ 7.2.1.3 Termination by the Owner for Convenience

If the Owner terminates the Contract for convenience in accordance with Article 14 of AIA Document A232–2019, then the Owner shall pay the Contractor a termination fee as follows:

(Insert the amount of or method for determining the fee, if any, payable to the Contractor following a termination for the Owner’s convenience.)

§ 7.3 Suspension

The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2019.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A232–2019 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:

(Name, address, email address, and other information)

Kyle Harjes, Director of Facilities

Onteora Central School District

4166 State Route 28

Boiceville, NY 12412

§ 8.3 The Contractor's representative:

(Name, address, email address, and other information)

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

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in the Contract Documents.

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

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A232–2019, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Relationship of the Parties

Where the Contract is based on the Cost of the Work plus the Contractor's Fee, with or without a Guaranteed Maximum Price, the Contractor accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the Architect and exercise the Contractor's skill and judgment in furthering the interests of the Owner; to furnish efficient business administration and supervision; to furnish at all times an adequate supply of workers and materials; and to perform the Work in an expeditious and economical manner consistent with the Owner's interests. The Owner agrees to furnish and approve, in a timely manner, information required by the Contractor and to make payments to the Contractor in accordance with the requirements of the Contract Documents.

§ 8.8 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition
- .2 AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition

- .3 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013 incorporated into this Agreement.)

.4 Drawings

Number	Title	Date
See Specification Section 00 0110	Table of Contents	

.5 Specifications

Section	Title	Date	Pages
See Specification Section 00 0110	Table of Contents		

.6 Addenda, if any:

Number	Date	Pages
--------	------	-------

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

.7 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

AIA Document A132™–2019, Exhibit B, Determination of the Cost of the Work

AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, dated as indicated below:
(Insert the date of the E235-2019 incorporated into this Agreement.)

The Sustainability Plan:

Title	Date	Pages
-------	------	-------

Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
----------	-------	------	-------

.8 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A232–2019 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

The Contract Documents also 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, and portions of Addenda relating to bidding.

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

OWNER *(Signature)*

(Printed name and title)

CONTRACTOR *(Signature)*

(Printed name and title)

SECTION 006000
PROJECT FORMS AND RELATED DOCUMENTS

PART 1 GENERAL**1.01 SUMMARY**

- A. This Section lists the project forms used for administration of the project.

1.02 FORMS

- A. The following forms are provided in this Section:
1. FRONT END SUBMITTAL LOG
 2. REQUEST FOR INFORMATION (RFI) FORM
 3. SUBCONTRACTOR LIST
 4. ALLOWANCE DISBURSEMENT AUTHORIZATION FORM
 5. SUBSTITUTION REQUEST FORM
 6. SUBMITTAL COVER
 7. INFORMATION BULLETIN
 8. AIA FORMS (Forms provided are samples. Original AIA Documents shall be used):
 - a. Contractor's Qualification Statement (AIA Document A305).
 - b. Bid Bond (AIA Document A310).
 - c. Performance Bond (AIA Document A312).
 - d. Change Order - Construction Manager-Adviser Edition (AIA Document G701/CMA).
 - e. Application and Certificate for Payment, Construction Manager as Adviser Edition (AIA G732).
 - f. Certificate of Substantial Completion Construction Manager-Adviser Edition (AIA G734).
 - g. Contractor's Affidavit of Payment of Debts and Claims (AIA Document G706).
 - h. Contractor's Affidavit of Release of Liens (AIA Document G706A).
 - i. Consent of Surety to Final Payment (AIA Document G707).
 - j. Work Changes Proposal Request (AIA Document G709).
 - k. Architect's Supplemental Instructions (AIA Document G710).
 - l. Construction Change Directive (AIA Document G714).
 - m. Supplemental Attachment for ACORD Certificate of Insurance 25-S (AIA Document G715).

PART 2 PRODUCTS (NOT USED)**PART 3 EXECUTION****3.01 PROCEDURES**

- A. Front End Submittal Log: This document is a checklist of the required submissions. Refer to Bidding Requirements, Section entitled "Instructions to Bidders" and Division 1, Specification Section entitled "SUBMITTAL PROCEDURES" for submission procedures.
- B. Project Request For Information (RFI) Form: This form is to be used for information requests. The forms are filled out by any party to the contract and sent to the Architect/Engineer. The Architect/Engineer shall number RFI before processing.
- C. Subcontractor List: This document is to be used identify subcontractors. The forms are filled out by each Prime Contractor for all proposed subcontractors and sent to the Architect/Engineer in accordance with. Division 1, section entitled "SUBMITTAL PROCEDURES"
- D. Substitution Request Form: This document is to be used for a Contractor to propose substitutions. The forms are filled out by each Prime Contractor and sent to the Architect/Engineer in accordance with. Division 1, section entitled "SUBMITTAL
-

PROCEDURES” and “PRODUCT REQUIREMENTS”.

- E. Submittal Cover: This document is to be used for submittal submissions. The forms are filled out by each Prime Contractor and sent to the Architect/Engineer in accordance with Division 1, section entitled “SUBMITTAL PROCEDURES”
- F. Information Bulletin: The Architect/Engineer shall issue this document for 3 actions.
 - 1. PROPOSAL REQUEST: A quotations for changes in the Contract Sum and / or proposed modifications to the Contract Documents
 - 2. SUPPLEMENTAL INSTRUCTIONS: Instructions for changes to the Contract Documents without additional cost or time
 - 3. CONSTRUCTION CHANGE AUTHORIZATION: A directive to immediately proceed with changes to the work of the contract and to submit final cost for inclusion into a Change Order

END OF SECTION



FRONT END SUBMITTAL LOG

**ONTEORA CENTRAL SCHOOL DISTRICT
BUILDING & SITE IMPROVEMENTS
PHOENICIA ES & WOODSTOCK ES**

Contractor Name: _____

SUBMISSIONS

Submission	Date		Remarks
	Submitted	Approved	
Contract:			
Schedule of Values:			
Bonds:			
Insurance:			
Workers Compensation:			
Automobile Insurance:			
Safety Program:			
Construction Schedule:			
Submittal Schedule:			
Emergency Contact:			
Substitution List:			
Subcontractor List:			
Project Manager:			
Superintendent:			

This log is to be used by the Contractor to monitor and complete the required front-end submissions.

REQUEST FOR INFORMATION	RFI No:
	Date:

**ONTEORA CENTRAL SCHOOL DISTRICT
BUILDING & SITE IMPROVEMENTS
PHOENICIA ES & WOODSTOCK ES**

Contract: _____

To: _____

From: _____

Copies to: _____

WE REQUEST YOUR ATTENTION (OR CONFIRMATION) REGARDING THE FOLLOWING:

(Fully describe the question or type of information requested)

(List specific documents researched when seeking the information requested.)

Specifications: _____ Drawings: _____

Other: _____

Sender's Recommendation: _____

Receiver's Reply: _____

Note: This reply is not an authorization to proceed with work involving additional cost, time or both. If any reply requires a change to the Contract Documents, a Change Order or a Construction Change Directive must be executed in accordance with the Contract Documents.

By: _____ Date: _____



SUBCONTRACTOR LIST

**ONTEORA CENTRAL SCHOOL DISTRICT
BUILDING & SITE IMPROVEMENTS
PHOENICIA ES & WOODSTOCK ES**

To: **CPL** From: _____
(Contractor)

50 Front Street, Suite 202
Newburgh, New York 12550

Contractors No.: _____

Contract For: _____

List Subcontractors proposed for use on this Project as required by the Construction Documents.
Attach supplemental sheets if necessary.

Section No.: _____ Section Title: _____

Firm Name: _____ Contact: _____

Address: _____

Section No.: _____ Section Title: _____

Firm Name: _____ Contact: _____

Address: _____

Section No.: _____ Section Title: _____

Firm Name: _____ Contact: _____

Address: _____

Section No.: _____ Section Title: _____

Firm Name: _____ Contact: _____

Address: _____

Section No.: _____ Section Title: _____

Attachment(s)

Signed by: _____ Date: _____

Copies: Owner Consultants File



SUBSTITUTION REQUEST FORM

**ONTEORA CENTRAL SCHOOL DISTRICT
BUILDING & SITE IMPROVEMENTS
PHOENICIA ES & WOODSTOCK ES**

To: **CPL** From: _____
(Contractor) _____
50 Front Street, Suite 202
Newburgh, New York 12550

Re: _____ Substitution Request Number: _____

Contract For: _____

Specification Title: _____ Description: _____

Section Number: _____ Page: _____ Part/Paragraph: _____

Proposed Substitution: _____

Manufacturer: _____ Address: _____ Phone: _____

Trade Name: _____ Model No.: _____

Installer: _____ Address: _____ Phone: _____

History: New product 2-5 years old 5-10 yrs old More than 10 years old

Differences between proposed substitution and specified product: _____

Point-by-point comparative data attached

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect/Engineer: _____

Contractor: _____ Owner: _____

_____ Date Installed: _____

Proposed substitution affects other parts of Work: No
 Yes, explain _____

Savings to Owner for accepting substitution: _____ (\$ _____)

Proposed substitution changes Contract Time: Yes; explain No Yes [Add] [Deduct] _____ days

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted By: _____

Signed By: _____

Firm: _____

Address _____

Phone: _____

Attachments: _____

REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01330.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed By: _____ Date: _____

Additional

Comments: Contractor Subcontractor Supplier Manufacturer Architect/Engineer

SUBMITTAL COVER SHEET

(Attach to each copy of each submittal)

Clark Patterson Lee
50 Front Street, Suite 202
Newburgh, New York 12550
Phone: (800) 274 - 9000



Clark Patterson Lee
DESIGN PROFESSIONALS

Submittal No. _____

Contractor: _____
Address: _____
Phone / Fax: () _____ () _____

Architect Project No: 11483.25
Contractor's Number: _____
Project Name:
Onteora Central School District
Building & Site Improvements
Phoenicia ES & Woodstock ES

TYPE OF SUBMITTAL

(Check one)

- Product Data Color Samples O&M Manual
 Shop Drawings Product Samples Record Document
 Other

SUBSTITUTION

See General Conditions

- YES NO

PRODUCT IDENTIFICATION

Specification Section No: _____
Part/Paragraph: _____
Contract Dwg. Number: _____
Detail Reference: _____
Product: _____
Manufacturer: _____

DATE RECEIVED BY

ARCHITECT: _____

DATE RETURNED TO

CONTRACTOR: _____

CONTRACTOR'S APPROVAL

This submittal has been reviewed and approved by the Contractor in accordance with the General Conditions.

By: _____ **Date:** _____

DEVIATION FROM CONTRACT DOCUMENTS:

CONTRACTOR COMMENTS:

FOR USE BY CPL

ARCHITECT/ENGINEER'S STAMP

- No Exception Taken Revise & Resubmit
 Furnish as Corrected Rejected

Corrections or comments made on the submittal during this review do not relieve the Contractor from compliance with the requirements of the Contract Documents. This review is only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and satisfactory manner.

Clark Patterson Lee

Date: _____ By: _____

ARCHITECT/ENGINEER'S COMMENTS:



INFORMATION BULLETIN

PROJECT: Onteora Central School District INFORMATION BULLETIN NO.: _____
Building & Site Improvements
Phoenicia ES & Woodstock ES
 _____ DATE: _____

OWNER: _____ ARCHITECT'S PROJECT NO.: 11483.25

CONTRACTOR: _____ CONTRACT NO.: _____

CONTRACT DATE: _____

DESCRIPTION:

ATTACHMENT(S): _____

ACTION

- 1. *PROPOSAL REQUEST*: Submit an itemized quotation for changes in the Contract Sum and/or time required to implement the above proposed modifications to the Contract Documents. This is not authorization to proceed with the work.
- 2. *SUPPLEMENTAL INSTRUCTIONS*: Implement the above instructions without change to the Contract Sum and/or Time. Prior to proceeding, indicate acceptance below and return one copy to the Architect.
- 3. *CONSTRUCTION CHANGE AUTHORIZATION*: Proceed with the above described changes to the Contract Documents immediately. Submit final costs and/or change in Contract Time for inclusion in a subsequent Change Order.

Methods: Lump Sum Unit Price Time & Material Not-to-Exceed

Change in Contract Sum of _____

Change in Contract Time of _____ days

ISSUED:

ACCEPTED:

AUTHORIZED:

BY: _____ BY: _____ BY: _____

Architect Date
Required for Actions 1,2,3

Owner Date
Required for Action 3

Contractor Date
Required for Actions 2,3

Owner Architect Structural Civil
 Contractor Field Mechanical/Electrical Other (Roofing)



AIA[®] Document A305[™] – 1986

Contractor's Qualification Statement

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

SUBMITTED TO:

ADDRESS:

SUBMITTED BY:

NAME:

ADDRESS:

PRINCIPAL OFFICE:

- Corporation
- Partnership
- Individual
- Joint Venture
- Other

NAME OF PROJECT (if applicable):

TYPE OF WORK (file separate form for each Classification of Work):

- General Construction
- HVAC
- Electrical
- Plumbing
- Other (please specify)

§ 1. ORGANIZATION

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

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

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

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

§ 1.3.1 Date of incorporation:

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

- § 1.3.2 State of incorporation:
- § 1.3.3 President's name:
- § 1.3.4 Vice-president's name(s)

- § 1.3.5 Secretary's name:
- § 1.3.6 Treasurer's name:

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

- § 1.4.1 Date of organization:
- § 1.4.2 Type of partnership (if applicable):
- § 1.4.3 Name(s) of general partner(s)

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

- § 1.5.1 Date of organization:
- § 1.5.2 Name of owner:

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

§ 2. LICENSING

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

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

§ 3. EXPERIENCE

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

§ 3.2 Claims and Suits. (If the answer to any of the questions below is yes, please attach details.)

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

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

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

§ 3.3 Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please attach details.)

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

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

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

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

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

§ 4. REFERENCES

§ 4.1 Trade References:

§ 4.2 Bank References:

§ 4.3 Surety:

§ 4.3.1 Name of bonding company:

§ 4.3.2 Name and address of agent:

§ 5. FINANCING

§ 5.1 Financial Statement.

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

Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses);

Net Fixed Assets;

Other Assets;

Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes);

Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

§ 5.1.2 Name and address of firm preparing attached financial statement, and date thereof:

§ 5.1.3 Is the attached financial statement for the identical organization named on page one?

§ 5.1.4 If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsiary).

§ 5.2 Will the organization whose financial statement is attached act as guarantor of the contract for construction?

§ 6. SIGNATURE

§ 6.1 Dated at this day of

Name of Organization:

By:

Title:

§ 6.2

M being duly sworn deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading.

| Subscribed and sworn before me this day of 20

Notary Public:

My Commission Expires:



AIA® Document A310™ – 1970

Bid Bond

KNOW ALL MEN BY THESE PRESENTS, that we
(Here insert full name and address or legal title of Contractor)

as Principal, hereinafter called the Principal, and
(Here insert full name and address or legal title of Surety)

a corporation duly organized under the laws of the State of _____ as Surety, hereinafter
called the Surety, are held and firmly bound unto
(Here insert full name and address or legal title of Owner)

as Obligee, hereinafter called the Obligee, in the sum of (\$ _____), for the payment of
which sum well and truly to be made, the said Principal and the said Surety, bind
ourselves, our heirs, executors, administrators, successors and assigns, jointly and
severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for
(Here insert full name, address and description of project)

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the
Principal shall enter into a Contract with the Obligee in accordance with the terms of
such bid, and give such bond or bonds as may be specified in the bidding or Contract
Documents with good and sufficient surety for the faithful performance of such Contract
and for the prompt payment of labor and material furnished in the prosecution thereof, or
in the event of the failure of the Principal to enter such Contract and give such bond or
bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty
hereof between the amount specified in said bid and such larger amount for which the
Obligee may in good faith contract with another party to perform the Work covered by
said bid, then this obligation shall be null and void, otherwise to remain in full force and
effect.

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.



AIA[®]

Document A312[™] – 1984

Performance Bond

CONTRACTOR (*Name and Address*):

SURETY (*Name and Principal Place of Business*):

OWNER (*Name and Address*):

CONSTRUCTION CONTRACT

Date:

Amount:

Description (*Name and Location*):

BOND

Date (*Not earlier than Construction Contract Date*):

Amount:

Modifications to this Bond: None See Last Page

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

Signature:

Name and

Title:

(*Any additional signatures appear on the last page*)

SURETY

Company: (Corporate Seal)

Signature:

Name and

Title:

ADDITIONS AND DELETIONS:

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

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

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

(*FOR INFORMATION ONLY - Name, Address and Telephone*)

AGENT or BROKER:

OWNER'S REPRESENTATIVE

(*Architect, Engineer or other party*):

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

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Section 3.1.

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

§ 3.1 The Owner has notified the Contractor and the Surety at its address described in Section 10 below that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; and

§ 3.2 The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Section 3.1; and

§ 3.3 The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.

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

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

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

§ 4.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or

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

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

§ 5 If the Surety does not proceed as provided in Section 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 4.4, and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 6 After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Section 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:

§ 6.1 The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

§ 6.2 Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 4; and

§ 6.3 Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

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

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

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

§ 10 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.

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

§ 12 DEFINITIONS

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

§ 12.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

§ 12.3 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.

§ 12.4 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

§ 13 MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

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

CONTRACTOR AS PRINCIPAL

Company: *(Corporate Seal)*

SURETY

Company: *(Corporate Seal)*

Signature: _____
Name and Title:
Address:

Signature: _____
Name and Title:
Address:

Payment Bond

CONTRACTOR *(Name and Address):*

SURETY *(Name and Principal Place of Business):*

OWNER *(Name and Address):*

CONSTRUCTION CONTRACT

Date:

Amount:

Description *(Name and Location):*

BOND

Date *(Not earlier than Construction Contract Date):*

Amount:

Modifications to this Bond: None See Last Page

CONTRACTOR AS PRINCIPAL

Company: *(Corporate Seal)*

SURETY

Company: *(Corporate Seal)*

Signature: _____

Name and Title:

(Any additional signatures appear on the last page)

Signature: _____

Name and Title:

(FOR INFORMATION ONLY - Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE *(Architect, Engineer or other party):*

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

§ 2 With respect to the Owner, this obligation shall be null and void if the Contractor:

§ 2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and

§ 2.2 Defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity whose claim, demand, lien or suit is for the payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Section 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.

§ 3 With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.

§ 4 The Surety shall have no obligation to Claimants under this Bond until:

§ 4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Section 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

§ 4.2 Claimants who do not have a direct contract with the Contractor:

- .1 Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and
- .2 Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
- .3 Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Section 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.

§ 5 If a notice required by Section 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.

§ 6 When the Claimant has satisfied the conditions of Section 4, the Surety shall promptly and at the Surety's expense take the following actions:

§ 6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

§ 6.2 Pay or arrange for payment of any undisputed amounts.

§ 7 The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 8 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 9 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

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

§ 11 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Section 4.1 or Section 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

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

§ 14 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 15 DEFINITIONS

§ 15.1 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 15.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

§ 15.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

§ 16 MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

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

CONTRACTOR AS PRINCIPAL

Company: _____
(Corporate Seal)

Signature: _____
Name and Title:
Address:

SURETY

Company: _____
(Corporate Seal)

Signature: _____
Name and Title:
Address:



AIA® Document G701/CMa™ – 1992

Change Order - Construction Manager-Adviser Edition

PROJECT (Name and address):	CHANGE ORDER NUMBER:	OWNER: <input type="checkbox"/>
	INITIATION DATE:	CONSTRUCTION MANAGER: <input type="checkbox"/>
		ARCHITECT: <input type="checkbox"/>
TO CONTRACTOR (Name and address):	PROJECT NUMBERS: /	CONTRACTOR: <input type="checkbox"/>
	CONTRACT DATE:	FIELD: <input type="checkbox"/>
	CONTRACT FOR:	OTHER: <input type="checkbox"/>

THE CONTRACT IS CHANGED AS FOLLOWS:

The original Contract Sum was	\$	0
Net change by previously authorized Change Orders	\$	0.00
The Contract Sum prior to this Change Order was	\$	0.00
The Contract Sum will be increased by this Change Order in the amount of	\$	0.00
The new Contract Sum including this Change Order will be	\$	0.00

The Contract Time will be increased by Zero (0) days.
 The date of Substantial Completion as of the date of this Change Order therefore is .

NOTE: This summary does not reflect changes in the Contract Sum, Contract Time or Guaranteed Maximum Price which have been authorized by Construction Change Directive.

NOT VALID UNTIL SIGNED BY THE OWNER, CONSTRUCTION MANAGER, ARCHITECT AND CONTRACTOR.

CONSTRUCTION MANAGER (Firm name)	ARCHITECT (Firm name)
ADDRESS	ADDRESS
BY (Signature)	BY (Signature)
(Typed name) DATE:	(Typed name) DATE:
CONTRACTOR (Firm name)	OWNER (Firm name)
ADDRESS	ADDRESS
BY (Signature)	BY (Signature)
(Typed name) DATE:	(Typed name) DATE:



AIA Document G732™ - 2009

Application and Certificate for Payment, Construction Manager as Adviser Edition

TO OWNER: PROJECT: APPLICATION NO: 001 Distribution to: OWNER: CONSTRUCTION MANAGER: ARCHITECT: CONTRACTOR: FIELD: OTHER:

FROM: VIA CONSTRUCTION MANAGER: PERIOD TO: CONTRACT DATE: PROJECT NOS: / /

CONTRACT FOR: VIA ARCHITECT: CPL

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. Continuation Sheet, AIA Document G703, is attached.

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

- 1. ORIGINAL CONTRACT SUM \$0.00 CONTRACTOR:
- 2. NET CHANGE BY CHANGE ORDERS \$0.00 By: _____ Date: _____
- 3. CONTRACT SUM TO DATE (Line 1 ± 2) \$0.00 State of: _____
- 4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) \$0.00

5. RETAINAGE:

- a. 0 % of Completed Work (Column D + E on G703) \$0.00
- b. 0 % of Stored Material (Column F on G703) \$0.00

County of: _____

Subscribed and sworn to before me this _____ day of _____

Notary Public: _____ My Commission expires: _____

CERTIFICATE FOR PAYMENT

- 6. TOTAL Retainage (Lines 5a + 5b or Total in Column I of G703) \$0.00
- TOTAL EARNED LESS RETAINAGE \$0.00
- (Line 4 Less Line 5 Total)
- 7. LESS PREVIOUS CERTIFICATES FOR PAYMENT \$0.00
- (Line 6 from prior Certificate)
- 8. CURRENT PAYMENT DUE \$0.00 AMOUNT CERTIFIED \$0.00

9. BALANCE TO FINISH, INCLUDING RETAINAGE

(Line 3 less Line 6)

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

CONSTRUCTION MANAGER: _____

By: _____ ARCHITECT: _____ Date: _____

By: _____ ARCHITECT: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$0.00	\$0.00
Total approved this month including Construction Change Directives	\$0.00	\$0.00
TOTALS	\$0.00	\$0.00
NET CHANGES IN THE WORK		\$0.00

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Continuation Sheet

AIA Document G702, APPLICATION AND CERTIFICATION FOR PAYMENT, containing Contractor's signed certification is attached.

In tabulations below, amounts are stated to the nearest dollar.

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

APPLICATION NO:

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO:

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		E THIS PERIOD	F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G TOTAL COMPLETED AND STORED TO DATE (D+E+F)	H BALANCE TO FINISH (C - G)	I RETAINAGE (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
	GRAND TOTAL								

 **AIA** Document G734™ – 2019**Certificate of Substantial Completion Construction Manager as Adviser Edition**

PROJECT: *(name and address)***CONTRACT INFORMATION:****CERTIFICATE INFORMATION:**

Contract For:

Certificate Number:

Date:

Date:

OWNER: *(name and address)***ARCHITECT:** *(name and address)***CONSTRUCTION MANAGER:** *(name and address)*

CONTRACTOR(S):*(Enter names and addresses for all Contractors)*

The Work identified below has been reviewed and found, to the Construction Manager's and Architect's best knowledge, information and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work of all of the Contractors, or designated portion thereof, is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project, or portion thereof designated below, is the date established by this Certificate *(Identify the Work of all of the Contractors, or portion thereof, that is substantially complete.)*

For all Contractors, the date of Substantial Completion of the Project, or portion thereof, is: *(Insert the date of Substantial Completion for all Contractors of the Work described above.)*

<hr/> CONSTRUCTION MANAGER <i>(Firm Name)</i>	<hr/> SIGNATURE	<hr/> PRINTED NAME AND TITLE	<hr/> DATE
<hr/> ARCHITECT <i>(Firm Name)</i>	<hr/> SIGNATURE	<hr/> PRINTED NAME AND TITLE	<hr/> DATE

WARRANTIES

The date of Substantial Completion of the Project, or portion designated above, is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below: *(Identify warranties that do not commence on the date of Substantial Completion, if any, and indicate their date of commencement.)*

WORK TO BE COMPLETED OR CORRECTED

A list of items to be completed or corrected by each of the Contractors, including a cost estimate, is attached hereto or transmitted as agreed upon by the parties, and identified as follows: *(Attach a list of items to be completed or corrected by each of the Contractors and provide an identification of each list.)*

The failure to include any items on such list does not alter the responsibility of a Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise agreed to in writing, the date of commencement of warranties for items on the attached lists will be the date of issuance of the final Certificate of Payment or the date of final payment, whichever occurs first. Each Contractor will complete or correct the Work on the appropriate list of items attached hereto within () days from the above date of Substantial Completion.

As of the date of Substantial Completion, the Owner shall be responsible for security, maintenance, heat, utilities, damage to the Work, and insurance, except as noted below:

(Identify any responsibilities that are assigned to the Contractors.)

(Note: Owner's and Contractor's legal and insurance counsel should review insurance requirements and coverage.)

The Owner and Contractor hereby accept the responsibilities assigned to them in this Certificate of Substantial Completion:

_____	_____	_____	_____
CONTRACTOR <i>(Firm Name)</i>	SIGNATURE	PRINTED NAME AND TITLE	DATE
_____	_____	_____	_____
OWNER <i>(Firm Name)</i>	SIGNATURE	PRINTED NAME AND TITLE	DATE



AIA Document G706™ – 1994

Contractor's Affidavit of Payment of Debts and Claims

PROJECT: *(Name and address)*

ARCHITECT'S PROJECT NUMBER:

TO OWNER: *(Name and address)*

CONTRACT FOR:
CONTRACT DATED:

OWNER:
ARCHITECT:
CONTRACTOR:
SURETY:
OTHER:

STATE OF:
COUNTY OF:

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

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

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

Indicate Attachment Yes No

CONTRACTOR: *(Name and address)*

BY:

(Signature of authorized representative)

(Printed name and title)

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

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

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:



AIA® Document G706A™ – 1994

Contractor's Affidavit of Release of Liens

PROJECT: <i>(Name and address)</i>	ARCHITECT'S PROJECT NUMBER:	OWNER: <input type="checkbox"/>
TO OWNER: <i>(Name and address)</i>	CONTRACT FOR: CONTRACT DATED:	ARCHITECT: <input type="checkbox"/>
		CONTRACTOR: <input type="checkbox"/>
		SURETY: <input type="checkbox"/>
		OTHER: <input type="checkbox"/>

STATE OF:
COUNTY OF:

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

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

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

CONTRACTOR: *(Name and address)*

BY:

(Signature of authorized representative)

(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:

My Commission Expires:

AIA® Document G707™ – 1994

Consent Of Surety to Final Payment

PROJECT: <i>(Name and address)</i>	ARCHITECT'S PROJECT NUMBER:	OWNER: <input type="checkbox"/>
	CONTRACT FOR:	ARCHITECT: <input type="checkbox"/>
TO OWNER: <i>(Name and address)</i>	CONTRACT DATED:	CONTRACTOR: <input type="checkbox"/>
		SURETY: <input type="checkbox"/>
		OTHER: <input type="checkbox"/>

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

on bond of
(Insert name and address of Contractor)

, SURETY,

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

, CONTRACTOR,

as set forth in said Surety's bond.

, OWNER,

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

(Surety)

(Signature of authorized representative)

Attest:
(Seal):

(Printed name and title)



AIA® Document G709™ – 2001

Work Changes Proposal Request

PROJECT (Name and address):

PROPOSAL REQUEST NUMBER:

OWNER:

ARCHITECT:

DATE OF ISSUANCE:

CONSULTANT:

CONTRACTOR:

OWNER (Name and address):

CONTRACT FOR:

FIELD:

OTHER:

CONTRACT DATE:

FROM ARCHITECT (Name and address):

ARCHITECT'S PROJECT NUMBER:

TO CONTRACTOR (Name and address):

Please submit an itemized proposal for changes in the Contract Sum and Contract Time for proposed modifications to the Contract Documents described herein. Within () days, the Contractor must submit this proposal or notify the Architect, in writing, of the date on which proposal submission is anticipated.

THIS IS NOT A CHANGE ORDER, A CONSTRUCTION CHANGE DIRECTIVE OR A DIRECTION TO PROCEED WITH THE WORK DESCRIBED IN THE PROPOSED MODIFICATIONS.

DESCRIPTION (Insert a written description of the Work):

ATTACHMENTS (List attached documents that support description):

REQUESTED BY THE ARCHITECT:

(Signature)

(Printed name and title)



AIA® Document G710™ – 2017

Architect's Supplemental Instructions

PROJECT: *(name and address)*

CONTRACT INFORMATION:

Contract For:

Date:

ASI INFORMATION:

ASI Number: 001

Date:

OWNER: *(name and address)*

ARCHITECT: *(name and address)*

CONTRACTOR: *(name and address)*

The Contractor shall carry out the Work in accordance with the following supplemental instructions without change in Contract Sum or Contract Time. Proceeding with the Work in accordance with these instructions indicates your acknowledgment that there will be no change in the Contract Sum or Contract Time.

(Insert a detailed description of the Architect's supplemental instructions and, if applicable, attach or reference specific exhibits.)

ISSUED BY THE ARCHITECT:

ARCHITECT *(Firm name)*

SIGNATURE

PRINTED NAME AND TITLE

DATE



AIA Document G714™ – 2017

Construction Change Directive

PROJECT: (name and address)

CONTRACT INFORMATION:

CCD INFORMATION:

Contract For:

Directive Number: 001

Date:

Date:

OWNER: (name and address)

ARCHITECT: (name and address)

CONTRACTOR: (name and address)

The Contractor is hereby directed to make the following change(s) in this Contract:

(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits.)

PROPOSED ADJUSTMENTS

1. The proposed basis of adjustment to the Contract Sum or Guaranteed Maximum Price is:

Lump Sum decrease of \$0.00

Unit Price of \$ per

Cost, as defined below, plus the following fee:

(Insert a definition of, or method for determining, cost)

As follows:

2. The Contract Time is proposed to remain unchanged. The proposed adjustment, if any, is (0 days).

NOTE: The Owner, Architect and Contractor should execute a Change Order to supersede this Construction Change Directive to the extent they agree upon adjustments to the Contract Sum, Contract Time, or Guaranteed Maximum price for the change(s) described herein.

When signed by the Owner and Architect and received by the Contractor, this document becomes effective IMMEDIATELY as a Construction Change Directive (CCD), and the Contractor shall proceed with the change(s) described above.

Contractor signature indicates agreement with the proposed adjustments in Contract Sum and Contract Time set forth in this CCD.

ARCHITECT (Firm name)

OWNER (Firm name)

CONTRACTOR (Firm name)

SIGNATURE

SIGNATURE

SIGNATURE

PRINTED NAME AND TITLE

PRINTED NAME AND TITLE

PRINTED NAME AND TITLE

DATE

DATE

DATE



AIA® Document G715™ – 2017

Supplemental Attachment for ACORD Certificate of Insurance 25

PROJECT: (name and address)	CONTRACT INFORMATION: Contract For: Date:	CERTIFICATE INFORMATION: Producer: Insured: Date:
OWNER: (name and address)	ARCHITECT: (name and address)	CONTRACTOR: (name and address)

		Yes	No	N/A
A. General Liability				
1. Does this policy include coverage for:				
a	Damages because of bodily injury, sickness, or disease, including occupational sickness or disease, and death of any person?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b	Personal injury and advertising injury?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c	Damages because of physical damage to or destruction of tangible property, including the loss of use of such property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d	Bodily injury or property damage arising out of completed operations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e	The Contractor's indemnity obligations included in the Contract Documents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Does this policy contain an exclusion or restriction of coverage for:				
a	Claims by one insured against another insured, where the exclusion or restrictions is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b	Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c	Claims for bodily injury other than to employees of the insured?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d	Claims for the Contractor's indemnity obligations included in the Contract Documents arising out of injury to employees of the insured?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e	Claims for loss excluded under a prior work endorsement or other similar exclusionary language?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f	Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g	Claims related to residential, multi-family, or other habitational projects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h	Claims related to roofing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i	Claims related to exterior insulation finish systems, synthetic stucco, or similar exterior coatings or surfaces?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j	Claims related to earth subsistence or movement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k	Claims related to explosion, collapse, and underground hazards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Other Insurance Coverage				
1. Indicate whether the Contractor has the following insurance coverages and, if so, indicate the coverage limits for each.				
a	Professional liability insurance Coverage limits:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b	Pollution liability insurance Coverage limits:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c	Insurance for maritime liability risks associated with the operation of a vessel Coverage limits:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- d Insurance for the use or operation of manned or unmanned aircraft
 Coverage limits:
- e Property insurance
 Coverage limits:
- f Railroad protective liability insurance
 Coverage limits:
- g Asbestos abatement liability insurance
 Coverage limits:
- h Insurance for physical damage to property while it is in storage and in transit
 to the construction site
 Coverage limits:
- i Other:

(Authorized Representative)

(Date of Issue)

**SECTION 007200
A232 GENERAL CONDITIONS (CMA)**

SUMMARY

- 1.01 AIA DOCUMENT A232-2019 "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, CONSTRUCTION MANAGER AS ADVISOR EDITION" IS BOUND WITH THIS SECTION. THE GENERAL CONDITIONS DOCUMENT SETS FORTH THE RIGHTS, RESPONSIBILITIES, AND RELATIONSHIPS OF THE OWNER, CONTRACTOR, ARCHITECT AND CONSTRUCTION MANAGER.**

END OF SECTION

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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)

Onteora Central School District
Building & Site Improvements
Phoenicia Elementary School
School Lane, Phoenicia, NY 12464
SED Project No.: 62-12-01-06-0-011-017

Woodstock Elementary School
8 West Hurly Road, Woodstock, NY 12498
SED Project No.: 62-12-01-06-0-009-016

THE CONSTRUCTION MANAGER:

(Name, legal status, and address)

BBL Construction Services, LLC
302 Washington Avenue, Ext.
Albany, NY 12203

THE OWNER:

(Name, legal status, and address)

Onteora Central School District
4166 State Route 28
Boiceville, NY 12412

THE ARCHITECT:

(Name, legal status, and address)

CPL
50 Front Street, Suite 202
Newburgh, NY 12550

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. 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.

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

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

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

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

The Specifications may describe (or the Drawings may show) the general placement required of materials or equipment, but the actual required placement may vary depending on the specific material or equipment used by the Contractor or the existing field conditions. The Contractor shall bear all direct and indirect costs associated with such variances.

Some Specifications may be written in a condensed outline form and omitted words shall be included by inference. If the Specifications identify a task, it shall mean the "Contractor shall furnish, install and complete" the identified task unless otherwise stated.

Reference to standard specifications, manuals or codes shall mean reference to the latest standard specification, manual or code in effect at the time of the execution of the Owner-Contractor Agreement, unless otherwise stated. When reference is made to a manufacturer, trade association, reference standard or similar source (such as ASTM, ASA, AISC, ACI, etc.) the standards or requirements of such entity shall be incorporated into the Specifications and have the force and effect as though they were set forth expressly. Upon entering into the Owner-Contractor Agreement, the Contractor acknowledges its familiarity with those references, codes, etc. The date of the referenced standard shall be the latest edition in effect at the time of the execution of the Owner-Contractor Agreement unless otherwise stated.

§ 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. In the event of inconsistencies within or between parts of the Contract Documents, the Contractor shall (1) provide the better quality of Work or (2) comply with the more stringent requirement; either or both in accordance with the Architect's interpretation. The terms and conditions of the Subparagraph 1.2.1, however shall not relieve the Contractor of any of the obligations set forth elsewhere in this Agreement. All work shall conform to the Contract Documents. No significant change there from shall be made without prior written authorization by the Owner. Where only part of the Work is indicated, similar parts shall be considered repetition. When any detail is shown and the components therefore are fully described, similar details shall be construed to require the same materials and construction. Items required by either the Drawings or the Specifications and not mentioned in the other shall be of like effect as if shown or mentioned in both. Should the Specifications and Drawings fail to particularly describe a product or material shown to be used in any place, the Contractor shall furnish the product that would normally be used in that place.

§ 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 nor to limit the scope of work performed by any trade or by any Subcontractor or supplier. Such separations shall not operate to make the Architect an arbiter to establish limits of work between Subcontractors or between Contractor and Subcontractor.

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

§ 1.2.4 Reference to "match existing" in Contract Documents refer to existing finishes, materials, details, and qualities which have been used in adjacent portions of existing facilities. Material designations or details not specifically shown shall either match existing or be similar in finish, material or quality to similar adjacent conditions.

§ 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.

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§ 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 Owner, 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.

(Paragraph deleted)

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

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

§ 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, 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. Such order or stoppage by the Owner shall not constitute grounds for contract termination by the Contractor under Article 14 and shall not be the basis of Time Extensions by the Contractor under Article 8.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to review by the Construction Manager and prior approval of the Architect, and the Construction Manager or Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Construction Manager's and Architect's and their respective consultants' additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

§ 2.5.1 The rights stated in this Article 2 and elsewhere in the Contract Documents are cumulative and not in limitation of any rights of the Owner or Contractor (1) granted in the Contract Documents; (2) law; or (3) in equity.

§ 2.5.2 In no event shall the Owner have control over, charge of, or any responsibility for construction means, methods, techniques, sequences, or procedures or for safety precautions and programs in connection with the Work. The owner assumes no responsibility for liability for the safety of the Project site. The Contractor shall be solely responsible for providing a safe place for the performance of the Work; provided that the Owner shall be responsible for, and the Contractor shall upon discovery notify the Owner of, any unsafe condition created by the Owner.

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.

The Contractor shall rely on its own knowledge and its review and interpretation of the Contract Documents and data provided in entering into the Contract and not the representations of the Owner or other persons. The Contractor acknowledges that quantities provided in the Contract Documents are estimates only and Contractor shall not seek additional compensation or adjustment in price based on a variation in actual quantities.

Prior to execution of the Contract, the Contractor and each Subcontractor shall evaluate and satisfy themselves as to the conditions and limitations under which the Work is to be performed, including, without limitation, (i) the location, condition, layout, and nature of the Project site and surrounding areas, (ii) generally prevailing climatic conditions, (iii) anticipated labor supply and costs, and (iv) availability and cost of materials, tools, and equipment.

The location of existing features shown on plans is intended for general information only. The Contractor, alone, is responsible for accurate determination of the location of all structures, and shall not be entitled to any extra payment for discrepancies between the Work as shown in the Contract Documents and existing conditions.

The locations, depths and data as to underground conditions have been obtained from records, surface indications and data furnished by others. Information furnished is solely for the convenience of the Contractor without any warranty, expressed or implied as to its accuracy or completeness. The Contractor shall verify all existing conditions prior to commencing the Work. The Contractor shall make no claim against the Owner or Architect with respect to the accuracy or completeness of such information if the conditions found after commencement of the Work are different from those as indicated.

The Contractor shall be solely responsible for the conditions which develop during construction and in the event any structure is dislocated, or over strained, or damaged so as to affect its usefulness, the Contractor shall correct or repair any dislocations, over strains or damages caused.

The Contractor is responsible for restoration and/or repair of utilities, private property, buildings, pavement, walkways, roads, etc. damaged by its activities during the performance of its Work.

The Contractor shall assume full responsibility for accuracy of measurements obtained at the site. No extra compensation will be allowed because of differences between actual measurements and dimensions indicated on the Drawings, nor for Contractor's failure to coordinate work with actual field measurements.

§ 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,

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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 Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of the Owner. The Contractor shall report to the Architect whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

§ 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.

§ 3.3.4 The Contractor shall employ a licensed surveyor to locate and stake out the Work and establish necessary reference and bench marks. The contractor shall work from established bench marks and reference points, layout and correctly establish all lines, levels, grades and locations of all parts of their own Work and be responsible for their accuracy and proper correlation with Work and established data.

§ 3.3.5 Prohibitions: There shall be no use of tobacco products, alcohol or illegal drugs at the construction site. No weapons are permitted at the construction site. Contractor and its agents shall refrain from the use of profanity or dressing in any way that is disrespectful or harassing to legally protected groups, including but not limited to race, color, sex, age, disability, religion, national orientation or sexual orientation.

§ 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.

- .1 All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier or distributor, except as otherwise provided in the Contract Documents.
- .2 Contractor shall confine construction equipment, the storage of materials and equipment and the operations of all workers to areas permitted by law, ordinances, permits or the Contract Documents, and

shall not disturb the premises more than required for the proper performance of the Work and/or permitted by the Owner.

- .3 Contractors and Subcontractors warrant that they have good title to all materials used in performing Work on this Contract.

§ 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.

After the Contract has been executed, the Owner and Architect will consider requests for the substitution of products in place of those specified only if the Contractor satisfies the procedural requirements 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 may subsequently be incurred by the Contractor; 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.

§ 3.4.2.1 The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Architect for reviewing the Contractor's proposed substitutions and making agreed upon changes in the Drawings and Specifications resulting from such substitutions. The Owner may seek reimbursement pursuant to the procedures set forth in § 9.5.1.

§ 3.4.2.2 The Contractor shall bear all expenses resulting from substitutions including the cost General Conditions as well as any structural, plumbing, mechanical and electrical trade costs made necessary by the substitution.

§ 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.

§ 3.4.4 The Owner shall have the right, but not the obligation, to require the Contractor to remove and replace, with a person acceptable to Owner, promptly after notice from Owner, any employee of Contractor or Subcontractor who: (1) has engaged in conduct on Owner's property that is contrary to the requirements of any applicable law, the Contract Documents, or any rule or directive of Owner relating to conduct on Owner's property; or (2) is incapable of fulfilling its responsibilities in connection with the Project.

§ 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.

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§ 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 Owner is exempt from payment of federal, state, and local Sales and Compensation Use Taxes on all supplies and materials incorporated into and becoming an integral component part of the structures, buildings, or real property pursuant to this Contract. Such taxes are therefore not to be included in the Contractor's bid or Contract Sum. Owner shall deliver to Contractor the appropriate exemption certificate required to be supplied by the Owner, and Contractor and its Subcontractors and materialmen shall be solely responsible for obtaining and delivering any and all exemption or other certificates and for furnishing a Contractor Exempt Purchase Certificate or other appropriate certificates to all persons, firms, or corporations from whom they purchase supplies, materials, and equipment for the performance of the Work.

§ 3.7 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. The Contractor shall secure and pay for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

- .1 The Contractor shall promptly deliver copies of such documents to the Owner.
- .2 If in connection with the Project, the Owner has obtained certain permits, licenses or agreements for the Project, the Owner will furnish copies of these documents to the Contractor. It is the Contractor's responsibility to comply with any conditions or limitations placed on the Project by these permits. The Contractor shall fully cooperate with the Owner in meeting the permit requirements and accommodations of regulatory inspections / directives.

(Paragraph deleted)

§ 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. If the Contractor fails to give such notices as applicable to the performance of the Work, the Contractor shall be liable for and shall indemnify and hold harmless the Owner against any and all resulting fines, penalties, judgments or damages, including reasonable attorney fees, imposed on or incurred by the parties indemnified, as a result of such failure by the Contractor

§ 3.7.3 If the Contractor 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.

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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.

§ 3.7.6 Upon completion of the Work, the Contractor shall deliver to the Construction Manager original copies of all required final certificates of inspection, the Certificate of Occupancy, the other documents evidencing that inspections required by authorities having jurisdiction over the Work have been performed

§ 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 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

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

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

The Contractor's superintendent shall not be removed from this Project until the Project punch list has been completed and the Project has been accepted by the Owner. Unless approved otherwise by the Owner in advance, the Contractor's superintendent shall be assigned solely to this Project and shall not perform any duties or superintendence on any other Project until completion of this Project.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect, through the Construction Manager, of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor, stating whether the Owner, the Construction Manager, or the Architect (1) has reasonable objection to the proposed superintendent or (2) require additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 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, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information, and the Construction Manager's use in developing the Project schedule, a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project. The Contractor shall cooperate with the Construction Manager in scheduling and

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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.

§ 3.10.1.1 The Construction Schedule shall be a Critical Path Method (CPM) type of schedule, consisting of: (1) a single critical path delineation and other sequencing, and early and late start, float, and completion dates for each activity; and (2) milestones, interrelationships, and restraints for all activities, including Owner-awarded contracts through the date of Project completion. The Construction Schedule must show all activities necessary for Substantial and Final Completion as defined in Section 9.8, Section 9.10, and elsewhere in the Contract Documents.

§ 3.10.1.2 When the Construction Schedule is complete, the Contractor, after consultation with all Subcontractors and material suppliers, shall confirm in writing to the Architect that the Construction Schedule is reasonable and achievable by the Contractor, subject to any extensions of time as provided for elsewhere in the Contract Documents. The Contractor shall thereafter give prompt specific notice to the Owner and the Architect of any change in the logic of the Construction Schedule or any part thereof, the removal of any restraints, or the reduction of any durations.

§ 3.10.1.3 Periodic meetings will be held at least monthly or at more frequent times, as required by the Work, to assess the state of the completion of the Project and to update the Construction Schedule as necessary. In advance of each such meeting, Contractor shall provide Owner a written status report identifying whether the Work is on schedule in accordance with the Construction Schedule or whether there are anticipated or potential delays to any critical path elements in the construction of the Work (in which event Contractor shall provide notice and an analysis as reasonably requested by Owner)

§ 3.10.1.4 The Construction Schedule shall be revised at least monthly or at more frequent times as required by conditions of the Work, and shall provide for expeditious and practicable execution of the Work consistent with the Contract Time. The Architect and Owner shall be provided copies of the Construction Schedule as periodically updated and in electronic format, as maintained by the Contractor.

§ 3.10.1.5 In the event that any updated Construction Schedule indicates a projected Substantial Completion date that is more than thirty (30) days after the required Substantial Completion date (as the same may be extended by Change Order for Excusable Delay), the Owner shall have the right to direct the Contractor to take corrective measures necessary to expedite the progress of construction, including, without limitation, (1) working additional shifts or overtime, (2) supplying additional manpower, equipment, facilities, (3) rescheduling activities, and (4) other similar measures (hereinafter referred to collectively as "Recovery Measures"). Such Recovery Measures shall continue until the progress of the Work complies with the state of completion required by the Construction Schedule. The Owner's right to require Recovery Measures is solely for the purpose of ensuring the Contractor's compliance with the Construction Schedule.

- .1 The Contractor shall not be entitled to seek and adjustment in the Contract Sum in connection with Recovery Measures required by the Owner, unless they are incurred by Contractor as directed in writing by Owner to mitigate or offset Excusable Delay.
- .2 The Owner may exercise the rights furnished to the Owner under or pursuant to this Subparagraph 3.10.1.5 as frequently as is reasonably necessary to ensure that the Contractor's performance of the Work will comply with any milestone date or completion date set forth in the Construction Schedule.

§ 3.10.1.6 The Contractor is solely responsible for the timing, sequencing coordination, and supervision of the work in accordance with the approved Construction Schedule. Review or approval of the initial Construction Schedule and subsequent reviews of the Construction Schedule by the Architect and Owner do not operate to imply agreement by the Architect or Owner that the means and methods of planning of the Work utilized by the Contractor are adequate or will accomplish the Work in the time shown on the Construction Schedule. The Contractor shall take all actions necessary to ensure the Work's successful planning and execution within the stipulated Contract Time. Additionally, review or approval of the Construction Schedule by the Owner or its consultants shall not make the Owner or its consultants responsible for Contractor's scheduling obligations or the accuracy of the Construction Schedule prepared by the Contractor.

§ 3.10.1.7 The Contractor represents to the Owner that the initial Construction Schedule and all subsequent Construction Schedules (including updates and amendments) have been prepared in good faith and are accurate to the best of the Contractor's knowledge.

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§ 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.

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

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

§ 3.10.5 The Owner shall have the reasonable right to direct postponement or rescheduling of any date or time for the performance of any part of the Work that may interfere with the operation of the Owner's premises or any tenants or invitees, thereof. The Contractor shall, upon the Owner's reasonable request, reschedule any portion of the Work affecting operation of the premises during hours when the premises are not in operation. Any postponement, rescheduling, or performance of the Work under this Subparagraph 3.10.5 may be grounds for an extension of the Contract Time, if permitted under Subparagraph 8.3.1, and an equitable adjustment in the Contract Sum if (1) the performance of the Work was properly scheduled by the Contractor in compliance with the requirements of the Contract Documents, and (2) such rescheduling or postponement is required by the Owner.

§ 3.11 Documents and Samples at the Site

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

§ 3.12 Shop Drawings, Product Data, and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 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. Contractor shall submit samples requiring color or finish selection in a single, coordinated submittal. The Architect will issue no color or finish schedule until all samples and other data necessary for making complete color selections for the project are received.

§ 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

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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.

The Architect shall have no responsibility to review any Shop Drawings, Product Data, Samples or similar submittals unless and until the Contractor has submitted and received back from the Architect approved reviewed submittal schedule as required under Section 3.10.2. In addition, it is not the Architect's responsibility to ensure that all required Shop Drawings, Product Data, Samples or similar submittals that are required to be submitted and reviewed under the Contract Documents are submitted by the Contractor. Submissions of Shop Drawings, Product Data, Samples or similar submittals is solely the Contractor's responsibility.

§ 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 commented on 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 review of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Construction Manager and Architect of such deviation at the time of submittal and (1) the Architect has indicated in writing that there is no exception 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 review 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 action 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 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, accuracy and completeness 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 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 Architect's review of the Contractor's submittals will be limited to examination of an initial submittal and one (1) resubmittal. The Owner is entitled to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of additional resubmittals.

§ 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.

- .1 Due to the site constraints, only materials and equipment that are to be used in the Work shall be brought to and stored on the Project site by the Contractor. After materials and equipment are no longer required for the Work, they shall be promptly removed from the Project site. Protection of materials and equipment stored at the Project site from weather, theft, damage, and all other adversity is solely the responsibility of the Contractor. The Contractor shall ensure that the Work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, to the site of the Work and adjacent areas.
- .2 The Contractor shall not permit any workers to use existing facilities at the Project site, including, without limitation, lavatories, entrances and parking areas other than those designated and approved by the Owner.
- .3 The Contractor shall comply with all rules and regulations promulgated by the Owner in connection with the use and occupancy of the Project site and the Building, as amended from time to time. The Contractor shall immediately notify the Owner in writing if during the performance of the Work, the Contractor finds compliance with any portion of such rules and regulations to be impracticable, setting forth the problems of such compliance and suggesting alternatives through which the same results intended by such portions of the rules and regulations can be achieved. The Owner may, in the Owner's sole discretion, adopt such suggestions, develop new alternatives, or require compliance with the existing requirements of the rules and regulations.

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

§ 3.14 Cutting and Patching

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

§ 3.14.2 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.

§ 3.14.3 All cutting and patching work shall be done by the Contractor (or through the appropriate Subcontractor). Patches in finish surfaces shall match the adjacent surfaces in material, finish, detail, and quality. Patches in fire rated construction or construction required to be smoke tight shall be made in conformance with assemblies designed and tested by agencies recognized by governing codes. Any UL rated fire safing materials, flanges, or other materials required by Code, the Contract Documents, or manufacturers installation instructions for devices penetrating the work affected shall be applied an installed by an approved firestop subcontractor or qualified personnel from the applicable trade.

§ 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 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, and Architect. 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. 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 to maintain the Project Schedule or for defects and deficiencies in the Work. The Owner may seek reimbursement pursuant to the procedures set forth in § 9.5.1.

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

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

§ 4.2.12 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 review of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.13 The Construction Manager will prepare Change Orders and Construction Change Directives.

§ 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 site visits 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 for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10. The Construction Manager will forward to the Architect a final Application and Certificate for Payment or final Project Application and Project Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

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

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

§ 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.

- .1 The Contractor's request for information shall be prepared and submitted in accordance with the General Requirements (Division 01 of the Specifications) on the form included therein or as otherwise approved in advance. The Construction Manager will return requests for information that do not conform to requirements of the Contract Documents.
- .2 The Architect's response to a request for information (RFI), or issuance of a clarification or interpretation shall be considered an interpretation, clarification, supplemental information or an order for a minor change in the Work not involving an adjustment in Contract Sum or extension of Contract Time and not inconsistent with the intent of the Contract Documents, and shall be binding, unless indicated otherwise in the Architect's response to the RFI.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

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

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

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

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, but prior to the first Application for Payment, 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

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Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor whether the Owner, the Construction Manager or the Architect (1) has reasonable objection to any such proposed person or entity or, (2) requires additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

The listing required by this Section shall be submitted to the Construction Manager no later than 30 days from the date of the Agreement. This list shall include the names of manufacturers, suppliers, and installers proposed for each of the products, equipment, and materials to be incorporated into the project.

The Contractor shall furnish upon request adequate data on any named entity on the list in order to permit the Construction Manager, Architect and the Owner to conduct a proper evaluation. Failure to object to a manufacturer shall not constitute a waiver of any of the requirements of the Contract Documents and all products furnished by the listed manufacturer must conform to such requirements.

§ 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.

§ 5.3 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.

§ 5.3.1 The division of the Specifications into sections is not intended to control the Contractor in dividing the work among subcontractors nor to limit the scope of work performed by any trade under a given section. The Architect will not undertake to settle any differences between the Contractor and its Subcontractors as to the responsibility for completing all Work in the Specifications. It shall be entirely the Contractor's responsibility to properly coordinate and complete all the Work described in the Specifications whether performed by the Contractor or its 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, provided that the Owner shall not be under any obligation to compensate the Subcontractor with respect to amounts that the Owner has already paid to the Contractor for such Subcontractor's work.

§ 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.

§ 5.4.4 Nothing in the Contract Documents shall be deemed to create any contractual relationship between any Subcontractor of any tier and the Owner, or between the General Contractor or Subcontractor of any tier and the Architect.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction with Own Forces and to Award Other Contracts

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 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.

§ 6.1.3 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.

§ 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.

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

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

§ 6.2.5 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 Unless otherwise agreed to in writing by the Owner and the Contractor, the combined overhead and profit that shall be included in the total cost (or credit) to the Owner for a Change in the Work shall be based on the following schedule:

- .1 For the Contractor, for Work performed by the Contractor's own forces:
 - a. 15% on the first \$25,000 of the change order direct cost of self-performed work,
 - b. 10% on the portion of the change order direct cost of self-performed work between \$25,000 and \$50,000 and
 - c. 7.5% on the portion of the change order direct cost of self-performed work between \$50,000 and \$200,000 and
 - d. 5% on the portion of the change order direct cost of self-performed work greater than \$200,000.
- .2 For the Contractor, for Work performed by the Contractor's Subcontractor five percent (5%) of the amount due the Subcontractor.
- .3 For each Subcontractor involved, for Work performed by that Subcontractor's own forces, fifteen percent (15%) of the cost.
- .4 For each Subcontractor involved, for Work performed by the Subcontractor's Sub-subcontractors, five percent (5%) of the amount due the Sub-subcontractor.
- .5 Cost to which overhead and profit is to be applied shall be determined in accordance with Section 7.3.7 and shall be itemized (including labor costs).

§ 7.2 Change Orders

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

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

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.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 A Change Order, when issued, shall be full compensation, or credit, for the extra Work performed, omitted, or substituted. It shall show on its face, any adjustment in time for completion of the Project as a result of the Change in the Work. Each Change Order shall include all costs related thereto, including all overhead, miscellaneous expenses, and incidentals.

§ 7.3 Construction Change Directives

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

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

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

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.
- .5 Calculation of overhead and profit shall be consistent with Section 7.1.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in 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.

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

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

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

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Construction Manager and Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured in accordance with Section 7.1.4.

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

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

§ 7.4 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.

§ 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.

(Paragraphs deleted)

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15; however, The Contractor's Claims, if any, for any increase in Contract Time must be made in accordance with the time requirements of this Section. Claims for an increase in Contract Time must be made in writing to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims must be initiated within seven (7) days after the Contractor has notice of the delay (initial notice). Thereafter, the Contractor must provide full details and support documentation with regard to the cause of the delay within twenty-one (21) days of the initial notice of the delay. If either the initial notice or the supporting documentation is not submitted to the Initial Decision Maker with a copy to the Architect, if the Architect is not the Initial Decision maker, in writing within the time periods prescribed in this Section, the Claim for an increase in Contract Time shall be waived. If the cause for the delay is a continuing one then only one Claim is necessary. The Contractor's supporting documentation to the Initial Decision Maker and/or Architect shall include an estimate of cost, if any, and of the probable effect of the delay on the progress of the Work and the Project Schedule.

§ 8.3.3 Unless expressly provided otherwise in the Contract Documents, an extension of the Contract Time, to the extent permitted under Subparagraph 8.3.1 shall be the sole remedy of the contractor for any (1) delay in the commencement, prosecution, or completion of the Work, (2) hindrance or obstruction in the performance of the work, (3) loss of productivity, or (4) other similar claims (collectively referred to in this Subparagraph 8.3.3 as "Delays") whether or not such Delays are foreseeable unless a Delay is caused by acts of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner (an "Owner-Caused Delay"), in which case the Contractor shall also be entitled to an equitable adjustment of the Contract Sum provided that the Contractor provides to the Owner written notice of such Owner-Caused Delay within ten (10) days of the occurrence of the event giving rise to such Owner-Caused Delay or within ten (10) days after the Contractor first recognizes the condition giving rise to such Owner-Caused Delay, whichever is later.

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.

§ 9.2.1 The Contractor and each Subcontractor shall prepare a trade payment breakdown for the work for which it is responsible, such breakdown being submitted on a uniform standardized form reasonably approved by the Architect and Owner (AIA G703). The form shall be divided in detail sufficient to exhibit area, floors, and/or sections of the Work, and/or by convenient units and shall be updated as required by either the Owner or the Architect as necessary to reflect (1) description of Work (listing labor and material separately), (2) total value, (3) percent of the work completed to date, (4) value of the work completed to date, (5) percent of previous amount billed, (6) previous amount billed, (7) current percent completed, and (8) value of Work completed to date. Any trade breakdown that unreasonably fails to include sufficient funds shall be withheld from future Applications for Payment to ensure an adequate reserve (including of normal retainage) to complete the Work.

§ 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 Application for Payment, duly notarized, shall be the most recent authorized edition of AIA Document G732, Application and Certificate for Payment, supported by the most recent authorized edition of AIA Document G703, Continuation Sheet.

§ 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 Each Application for Payment shall be submitted electronically and in four (4) hard copies and shall be accompanied by the following, in all form and substance reasonably satisfactory to the Owner; (1) a current conditional Contractor's waiver of claims and liens, and duly executed an acknowledged sworn statement showing all Subcontractors and material suppliers with whom the Contractor has entered into subcontracts, the amount of each such subcontract, the amount requested for any Subcontractor and material supplier in the requested progress payment, and the amount to be paid to the Contractor from such progress payment together with similar sworn statements from all such subcontractors and material suppliers; (2) duly executed unconditional waivers of claims and liens from all Subcontractors and, when appropriate, from material suppliers and lower tier Subcontractors establishing payment or satisfaction of payment of all amounts requested by the Contractor on behalf of such entities or information and materials required to comply with the requirements Contract Documents or reasonably requested by the Owner or the Architect or required by the Owner's title insurer.

§ 9.3.1.4 Until Substantial Completion, the Owner shall pay the Contractor ninety five percent (95%) of the amount due the Contractor.

§ 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. Such payment by the Owner for materials, equipment, fixtures and supplies stored on or off the Site shall not relieve the Contractor of its responsibility to provide reasonable protection of said materials, equipment, fixtures and supplies until their incorporation into the Work.

§ 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, suppliers, or other persons or entities that provided labor, materials and equipment relating to the Work.

§ 9.3.3.1 The Contractor further expressly undertakes to defend the Owner, against any actions, lawsuits, or proceedings brought against the Owner as a result of liens related to the Work unless the reason for the lien is the nonpayment by the Owner to the Contractor in accordance with the Contract Documents (referred to as "liens" in this Subparagraph). The Contractor hereby agrees to indemnify and hold the Owner harmless against any such liens or claims of liens and agrees to pay any final judgment or lien if the reason for the judgment or lien is the nonpayment by the Owner to Contractor in accordance with the Contract Documents.

§ 9.3.3.2 The Owner shall release any payments withheld due to a lien or claim of lien if the Contractor obtains security acceptable to the Owner or a lien discharge bond that is (1) issued by a surety acceptable to the Owner; (2) in form and substance satisfactory to the Owner, and (3) in an amount required by law to release such lien claim. By posting a lien discharge bond or other acceptable security, however, the Contractor shall not be relieved of any responsibilities or obligations under Subparagraph 9.3.3.1 including without limitation, the duty to defend and indemnify the Owner. The cost of any premiums incurred in connection with such bonds and security shall be the responsibility of the Contractor and shall not be part of, or cause any adjustment to, the Contract Sum.

§ 9.4 Certificates for Payment

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

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

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

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

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§ 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.

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

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

§ 9.5 Decisions to Withhold Certification

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

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor or other Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- .7 repeated failure to carry out the Work in accordance with the Contract Documents; or
- .8 any other reasonable grounds for objection or withholding as provided in the agreement or as permitted by the law.

§ 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. The Owner shall not be deemed in default by reason of withholding payment while any conditions described in 9.5.1 remain.

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

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

§ 9.6.2.1 The Contractor shall indemnify and hold the Owner harmless from laborers, mechanics and materialmen liens upon the Owner's properties or the premises upon which the work is located, arising out of the work performed or materials furnished by the Contractor or any of its Subcontractors or any material suppliers under the Contract.

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

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. 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 suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4. The Owner shall have no obligation to pay or reimburse a Contractor for payments to material and equipment suppliers until materials and supplies have been delivered on site or to an offsite storage facility which is bonded and secured.

§ 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' notice to the Owner, Construction Manager

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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.

§ 9.8 Substantial Completion

(Paragraph deleted)

§ 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 that the Owner can occupy or utilize the Work for its intended use, and shall require that: (1) the Work is operational and usable for the purposes intended; and (2) all required governmental permits, approvals and temporary or permanent certificates of occupancy have been properly and validly issued. Substantial completion shall not be withheld due to Owner's failure to occupy or use based on any reason that is not the responsibility of the Contractor under the Contract Documents or is caused by circumstances beyond Contractor's control

§ 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.

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

- .1 The Architect will perform no more than two (2) inspections 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 pursuant to Section 9.5.1.

§ 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 will not be issued until after the Construction Manager, Architect and Owner have determined that: (1) the Work and all systems are operational and otherwise complete and ready for unobstructed, lawful use and occupancy by the Owner; (2) the governmental agency that issued the building permit has issued a certificate of occupancy; (3) all testing (including but not limited to TAB, Envelope, Commissioning, etc.) are completed and required corrections revealed by these tests are completed; (4) the Project has been accepted by each regulatory body having jurisdiction, and (5) the only items of Work remaining to be completed are of a minor nature such as touch-up, adjustments, testing, corrections, and omissions to be remedied, as may appear on the final list made during site visit by the Construction Manager, Architect and Owner.

§ 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 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. When the Contractor considers a portion substantially complete, the Contractor and Construction Manager shall jointly prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

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

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

§ 9.10 Final Completion and Final Payment

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

§ 9.10.1.1 The Architect will perform no more than two (2) site visits 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 inspections. The Owner may seek reimbursement pursuant to Section 9.5.1.

§ 9.10.1.2 The final payment of retained amount due the Contractor on account of the Contract shall not become due until the Contractor has furnished to the Owner, through the Architect, completion documents as enumerated below, or as otherwise required in the Contract Documents.

- .1 One (1) hard copy and one electronic Record Set of Drawings showing actual construction of all portions of the Work and incorporating all changes and amendments thereto, as redlined against the 100% Construction Drawings.
- .2 Guarantees and Warranties required by specific Sections of the Specifications.
- .3 Release and Waiver of Claims, conditioned upon Final Payment, by the General Contractor, Subcontractors, Sub-subcontractors and materials suppliers.
- .4 All mechanical and electrical installation, operating and maintenance manuals called for under the Specifications.
- .5 All test reports and certifications required under the mechanical and electrical specifications.
- .6 All forms required to be completed by the Contractor by regulatory governmental agencies with two copies delivered to the Architect.
- .7 Shop Drawing submittals in accordance with Article 3.

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- .8 A copy of the unconditional Occupancy Permit or Certificate of Compliance issued by the local Building Inspection Department have Jurisdiction, unless such is not issued for any reason that is not the responsibility of the Contractor under the Contract Documents or is caused by circumstances beyond Contractor's control.
- .9 Manufacturer's current detailed installation instructions for fire dampers, ceiling radiation dampers, smoke dampers, and duct smoke detectors as applicable to the Project
- .10 One (1) copy of the equipment operational and maintenance manuals.

§ 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.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

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

§ 10.2 Safety of Persons and Property

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

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, 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.

§ 10.2.2.1 In the event that review, inspection or other action by regulatory agencies or other parties results in the imposition of fines, fees, or other costs due to the failure of the Contractor to comply with said applicable laws, ordinance, rules, regulations and lawful orders, the Contractor shall hold harmless the Owner, owner's Consultants, the Construction Manager, Architect, and Owner's separate contractors, if any, from all consequences arising from the Contractor's non-compliance.

§ 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, 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 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

(Paragraphs deleted)

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below (and such insurance shall be from a company that is A rated or better by A.M Best Company) which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed.
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death or a person or property damage arising out of ownership, maintenance or use of a motor vehicle.
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 (or other corresponding Exhibit setting forth the specific insurance requirements) shall be written for not less than limits of liability specified by the Owner or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within not less than twenty (20) 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 to the Owner 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.

§ 11.1.5 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.1.6 See Section 00 7250 for additional requirements.

§ 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

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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.

(Paragraphs deleted)

§ 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 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 effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 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.

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, 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, 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 is guilty of substantial breach of a 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' 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 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.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost. If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 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. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 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. 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 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 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.

§ 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.

§ 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.

**SECTION 007250
INSURANCE REQUIREMENTS – CONTRACTOR****PART 1**

1.01 NOTWITHSTANDING ANY TERMS, CONDITIONS OR PROVISIONS, IN ANY OTHER WRITING BETWEEN THE PARTIES, THE CONTRACTOR HEREBY AGREES TO EFFECTUATE THE NAMING OF THE ONTEORA CENTRAL SCHOOL DISTRICT (DISTRICT / OWNER), AND CPL (ARCHITECT/ENGINEER), AND BBL CONSTRUCTION SERVICES, LLC AS ADDITIONAL INSURED(S) ON THE CONTRACTOR'S INSURANCE POLICIES, EXCEPT FOR WORKERS' COMPENSATION AND N.Y. STATE DISABILITY INSURANCE.

1.02 THE POLICY NAMING ADDITIONAL INSURED(S) SHALL:

- A. Be an insurance policy from an A.M. Best A- rated or better insurer, licensed to conduct business in New York State.
- B. State that the organization's coverage shall be primary and non-contributory coverage for the District, its Board, employees and volunteers, Construction Manager, and Architect.
- C. Additional insured status shall be provided by standard or other endorsements that extend coverage to the District, Construction Manager, and Architect for on-going operations (CG 20 38) and products and completed operations (CG 20 37). The decision to accept an endorsement rest solely with the District, and its consultants. A completed copy of the endorsements must be attached to the Certificate of Insurance.
- D. All insurance policies maintained by the Contractor shall include a waiver of any and all rights of subrogation of the Contractor or its insurers against the Owner, Construction Manager, and Architect, along with all other Additional Insureds / Indemnified Parties and their agents, officers, directors and employees for recovery of damages. Contractor further waives its rights of subrogation against the Owner or any Additional Insureds or Indemnified Party for any damage or loss to the Contractor's scope of work, tools, equipment, materials or any other loss within the scope of any insurance maintained by the Owner.

1.03 CERTIFICATE OF INSURANCE

- 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. 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 shall provide a copy of the policy endorsements and forms.
- C. A fully completed New York Construction Certificate of Liability Insurance Addendum (ACORD 855 2014/15) must be included with the certificates of insurance. For any "Yes" answers on Items G through L on this Form– additional details must be provided in writing.

1.04 THE CONTRACTOR AGREES TO INDEMNIFY THE DISTRICT FOR APPLICABLE DEDUCTIBLES AND SELF-INSURED RETENTIONS.

1.05 MINIMUM REQUIRED INSURANCE:

- A. Commercial General Liability Insurance
 - 1. \$1,000,000 per Occurrence/ \$2,000,000 Aggregate
 - 2. \$2,000,000 Products and Completed Operations
 - 3. \$1,000,000 Personal and Advertising Injury
 - 4. \$100,000 Fire Damage
 - 5. \$10,000 Medical Expense
 - 6. The general aggregate shall apply on a per-project basis.

1.06 OWNERS CONTRACTORS PROTECTIVE (OCP) INSURANCE

- A. 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.
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- B. For projects greater than \$1,000,000 and work over 1 story (10 feet); \$2 million per occurrence, \$4 million aggregate with the District as the Named Insured.
 - C. The District will be the Named Insured on OCP Policies. There will be no Additional Insureds on any OCP Policies.
 - D. Automobile Liability
 - 1. \$1,000,000 combined single limit for owned, hired, borrowed and non-owned motor vehicles.
 - E. Workers' Compensation and NYS Disability Insurance
 - 1. 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.
 - F. Builder's Risk
 - 1. 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.
 - G. Umbrella/Excess Insurance
 - 1. \$5 million each Occurrence and Aggregate for general construction and no work at elevation greater than 1 story or 10 feet, or project values less than or equal to \$1,000,000.
 - 2. \$10 million each Occurrence and Aggregate for high risk construction, work at elevation greater than 1 story or 10 feet, or project values greater than \$1,000,000.
 - 3. Umbrella/Excess coverage shall be on a follow-form basis.
- 1.07 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. THE CONTRACTOR IS TO PROVIDE THE DISTRICT WITH A CERTIFICATE OF INSURANCE, EVIDENCING THE ABOVE REQUIREMENTS HAVE BEEN MET, PRIOR TO THE COMMENCEMENT OF WORK.**
- 1.08 SUB-CONTRACTORS ARE SUBJECT TO THE SAME TERMS AND CONDITIONS AS STATED ABOVE AND SUBMIT SAME TO THE DISTRICT FOR APPROVAL PRIOR TO START OF ANY WORK.**
- 1.09 IN THE EVENT THE 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, AND THE ARCHITECT/ENGINEER, 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.**
- 1.10 ADDITIONAL REQUIREMENTS ASBESTOS, LEAD ABATEMENT AND/OR HAZARDOUS MATERIALS**
- A. Asbestos/Lead Abatement Insurance
 - 1. \$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
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Contract.

2. 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.

1.11 TESTING COMPANY ERRORS AND OMISSION INSURANCE

- A. \$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.

END OF SECTION

**SECTION 007343
PREVAILING WAGE RATES**

PART 1 GENERAL

1.01 SUMMARY

- A. Wage rates shall apply as shown in the Prevailing Wage Schedule prepared by the New York State Department of Labor for this project (the Prevailing Wage Case Number (PRC#) assigned to this project is **2022011055**). The Schedule can be viewed at the following web site:<https://apps.labor.ny.gov/wpp/publicViewProject.do?method=showit&id=1539154>.
- B. The Contractor shall be responsible for completing one copy of Notice of Contract Award (Form PW-16). Upon completion of the form, the Contractor shall submit the form to the Architect for record keeping and forwarding to the New York State Department of Labor.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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**SECTION 011000
SUMMARY**

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Multiple work packages.
 - 4. Access to site.
 - 5. Work restrictions.
 - 6. Coordination with occupants.
 - 7. Phased construction.
 - 8. Work under separate contracts.
 - 9. Work by Owner.
 - 10. Owner-furnished products.
 - 11. Miscellaneous provisions.
 - 12. Specification and drawing conventions.

1.02 PROJECT INFORMATION

- A. Project Identification: Building & Site Improvements.
- B. Project Location(s):
 - 1. Phoenicia Elementary School, School Lane, Phoenicia, NY 12464, ,
 - 2. Woodstock Elementary School, 8 West Hurley Road, Woodstock, NY 12498
- C. Owner: Onteora Central School District, 4166 State Route 28, Boiceville, New York 12412.
 - 1. Owner's Representative: Kyle Harjes.
- D. Architect: CPL, 50 Front Street, Newburgh, NY 12550.
- E. Construction Manager: **BBL Construction Services, LLC.**
 - 1. 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.

1.03 DEFINITIONS

- A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

1.04 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of the Project is defined by the Contract Documents and consists of the following:
 - 1. Work consists of exterior door replacement, site improvements, and renovations to the main entry at Phoenicia ES to create a security vestibule, as described in the Contract Documents.
- B. Type of Contract:
 - 1. Project will be constructed under coordinated, concurrent multiple contracts. See Division 01 Section "Multiple Contract Summary" for a description of work included under each of the multiple contracts and for the responsibilities of the Project coordinator.

1.05 ACCESS TO SITE

- A. 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 (parking garage,) (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.
- B. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.06 WORK RESTRICTIONS

- A. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7:00 a.m. to 3:30 p.m, Monday through Friday, except as otherwise indicated.
1. School Vacations and Holidays: Work may occur at any times, as approved.
 2. Weekend Hours: Work may occur at any times, as approved.
 3. Hours for Utility Shutdowns: Only on weekends, holidays and school vacations as approved.
 4. Hours for Noisy Activity: For core drilling, powder-activated fasteners, and other disruptive activities, 3:30 p.m. to 11:00 p.m, or as otherwise approved.
 5. Special Events: The Owner will provide dates and times of special events that will restrict construction operations.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
1. Notify **Owner** not less than two days in advance of proposed utility interruptions.
 2. Obtain **Owner's** written permission before proceeding with utility interruptions.
- C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
1. Notify **Owner** not less than two days in advance of proposed disruptive operations.
 2. Obtain **Owner's** written permission before proceeding with disruptive operations.
- D. Nonsmoking Building: Smoking is not permitted within the building or **grounds**.

1.07 COORDINATION WITH OCCUPANTS

- A. **Full Owner Occupancy:** Owner will occupy site and building(s) during entire construction period. 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 Owner and approval of authorities having jurisdiction.
 2. Notify the Owner not less than 72 hours in advance of activities that will affect Owner's operations.
- B. **Owner Limited Occupancy** of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.
1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.
 2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
 3. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving

- occupied portions of Work.
4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.

1.08 WORK UNDER SEPARATE CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

1.09 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
 3. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
 4. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:
- B. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 1. Abbreviations: Materials and products are identified by abbreviations (published as part of the U.S. National CAD Standard) (and) scheduled on Drawings.
 2. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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SECTION 011200
SUMMARY OF MULTIPLE CONTRACTS**PART 1 GENERAL****1.01 SUMMARY**

- A. This Section includes a summary of each contract, including responsibilities for coordination and temporary facilities and controls.
- B. Specific requirements of each contract are also indicated in individual Specification Sections and on Drawings.

1.02 DEFINITIONS

- A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.03 COORDINATION

- A. Each Contractor is responsible for coordinating their work with that of all other Contractors.

1.04 CONTRACTS, GENERAL

- A. Contractor understands that time is of the essence and will adequately man the job to successfully complete the Work within the dates provided in the Contract Documents. The option to work extended hours and weekends at the Contractor's expense may be performed to meet the intended dates. Where work is required to be 2nd shift the Contractor shall provide in his base bid the cost of such premium time work.

1.05 PHASING REQUIREMENTS

- A. Dates of commencement and completion of work shall be coordinated with the Owner's activities.
- B. Contractor shall provide isolation valves to systems as needed to accommodate their work. All existing building systems are to remain in operation during progress of the Work.
- C. Each Contractor shall provide temporary power as needed to accommodate their work.
- D. Maintain power, public address system, and phone systems to occupied areas. Occupied areas are to remain in operation. The fire alarm systems shall remain in operation for the duration of the project. No building services shall be interrupted.

1.06 WORK RESTRICTIONS

- A. All Work performed after normal hours shall be coordinated with the authorized Owner's representative. All occupied spaces shall be returned to original condition the following day.

1.07 ADDITIONAL REQUIREMENTS

- A. Contractors shall provide all temporary facilities required for staging, delivery and access to construction areas. Temporary facilities may include removal, and subsequent repair, replacement and reconstruction, of building windows and other building elements as may be required to gain access to the construction areas. Temporary facilities may include the construction of temporary stairs, provision of scaffolding and other items necessary for the Contractor to gain access to areas of construction. The Contractors are to provide for such items in their Base Bid.
- B. Contractors shall provide and maintain temporary exits from all locations affected by their construction work. All building and site exiting requirements shall be provided for and be maintained throughout the project. Contractors shall submit to the Owner a temporary site access and exiting plan indicating how he proposes to maintain the protection of exit ways and walkways from the building and construction areas throughout the construction of the project.

1.08 CONTRACT SUMMARY

- A. Unless otherwise indicated, the Work described in this Section for each Contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the Contract Documents.
 - B. Local custom and trade union jurisdictional settlements do not control the scope of the Work of each Contract. When a potential jurisdictional dispute or similar interruption of work is first identified or threatened, affected Contractor(s) shall negotiate a reasonable settlement to avoid or minimize interruption and delays.
 - C. All OSHA safety and hazardous materials regulations shall be complied with.
 - D. Contractors are responsible for any debris caused by their work. A weekly clean up and disposal is required by each Contractor for the periods which that Contractor is performing work on site. Each trade will assign at least one person to the weekly clean-up; the name of this person is to be submitted to the Owner. Any Contractor not providing clean-up personnel will be charged for clean-up labor provided by the Owner on the Contractor's behalf.
 - E. All Contractors are responsible for cutting/patching required to complete their work. Patching, unless otherwise noted, shall match adjacent finishes and surfaces. Note all demolition work, unless otherwise noted, shall be trimmed and finished to match the adjacent conditions.
 - F. Multiple Crews: To maintain the project schedule, each Contractor is to provide multiple crews as needed. Each crew is to be furnished with its own Administrative Superintendent, foreman, labor force, materials and equipment and other means necessary to maintain the Project Schedule.
 - G. Supervision: The Project Manager and Field Superintendent proposed by the Contractor for the project are to have at least five years experience in the proposed position. Each successful bidder shall submit resumes for the proposed Project Manager and Field Superintendent for the project to the Owner for review. The Field Superintendent should be an administrative position to coordinate the work of the Contract and any sub-contractors.
 - 1. Should the Project Manager(s) and/or Superintendent(s) prove unqualified for the position at any point in the project, the Owner shall issue a letter stating that the person is to be removed from involvement in the project. Action must be made within seven working days of receipt of such letter.
 - H. Each Contractor shall supply and coordinate exact locations of embedded items in concrete or masonry work with all other applicable Contractors. Each Contractor shall monitor such items throughout concrete/masonry activities to ensure proper placement.
 - I. Each Contractor shall provide shoring as may be required to execute his work.
 - J. Unless noted otherwise, new openings in existing construction are to be neatly sawcut by the Contractor requiring the opening. All steel lintels, floor, wall and/or roof framing, etc. required at said openings shall also be provided by the Contractor requiring the opening.
 - K. Each Contractor shall perform demolition required to accommodate their work.
 - L. Unless otherwise noted, each Contractor shall return areas disturbed by their work to the conditions prior to start of work.
 - M. Maintain within the field office a complete and current set of Contract Documents (including any Addenda, Change Orders, etc.), approved product data, shop drawings, samples, color schedules and other data pertinent to the Project.
 - N. Trenching, excavation, and backfill for the Work of each Contract shall be provided by each Contract for its own Work, unless noted otherwise.
 - O. Unless noted otherwise, cutting and patching for the Work of each Contract shall be provided by each Contract for its own Work.
 - P. Firestopping for the Work of each Contract shall be provided by each Contract for its own Work.
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- Q. Each Contractor shall be responsible for de-watering their excavations for the duration that the excavations remain open.
- R. Each Contractor is to survey existing work and submit to the Owner a list of damaged areas prior to commencing work. Any damaged areas not identified prior to the work shall be the responsibility of the Contractor(s) working in that area.
- S. Clean up: Each Contractor is to stockpile his debris on a daily basis, and place it in the appropriate dumpster. Dumpsters shall be provided by each Contractor for their work.
- T. Each Contract is responsible for cabling or roping all their openings, excavations, etc. in an OSHA approved manner, and to provide all necessary fall protection.
- U. CONTRACT NO. 1 – SITE WORK
- V. Work in the Contract includes, but is not limited to, the following:
1. Provide all Work specified in:
 - a. Divisions 00, 01, 02, 03, 05, 26, 31, 32 and 33.
 - b. Any related Work in other Divisions.
 2. Provide all Work shown on Civil (C-series) drawings and E001, unless specifically assigned to another Contractor.
 3. Work specifically assigned to the Site Work Contract on/in other Drawings and/or Specification Sections.
 4. Provide all Work required to complete the Project except for Work which has been specifically assigned to another Contractor.
 5. Temporary facilities and controls include, but are not limited to, the following:
 - a. Provide dumpsters for debris resulting from work of this Contract. Remove dumpsters within 2 hours of being full and haul off-site to a legal dumpsite. Pay all costs associated with providing the dumpsters and removing project debris from the job site.
 - b. Provide and maintain all soil erosion control measures.
 - c. Maintain emergency exits and means of egress to/from work areas.
 - d. Provide temporary construction as shown and/or as required to facilitate construction activities and means of egress.
 - e. Provide and maintain (minimum number as required by OSHA) temporary toilets for use by this Contractor, complete with periodic cleaning as required to service the project throughout construction.
 - f. Job signs and safety signage.
 - g. Final Cleaning of all work of this contract.

1.09 CONTRACT NO. 1 – GENERAL CONSTRUCTION WORK

- A. Work in this Contract includes, but is not limited to, the following:
1. Provide all Work specified in:
 - a. Divisions 00 thru 10, inclusive.
 - b. Any related Work in other Divisions.
 2. Provide all Work shown on the Abatement (AA-series) and Architectural (A-series) Drawings, unless specifically assigned to another Contractor.
 3. Work specifically assigned to the General Construction Work Contract on/in other Drawings and/or Specification Sections.
 4. Work specifically assigned to the Asbestos Abatement Work Contract on/in other Drawings and/or Specification Sections.
 5. Provide all Work required to complete the Project except for Work which has been specifically assigned to another Contractor.
 6. Provide all access doors, frames and trim, shown on the Construction Documents, as well as the following to be installed where deemed necessary:
 - a. Doors per Section 08 3113, Paragraph 2.02.B: 18" X 18", Quantity 12.
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- b. Doors per Section 08 3113, Paragraph 2.02.C: 18" X 18", Quantity 12.
 - c. Doors per Section 08 3113, Paragraph 2.02.D: 18" X 18", Quantity 12.
 - d. Doors per Section 08 3113, Paragraph 2.02.E: 18" X 18", Quantity 12.
 7. Temporary facilities and controls include, but are not limited to, the following:
 - a. Provide dumpsters for all debris resulting from work of all Contracts. Remove dumpsters within 2 hours of being full and haul off-site to a legal dumpsite. Pay all costs associated with providing the dumpsters and removing project debris from the job site.
 - b. Maintain emergency exits and means of egress to/from work areas.
 - c. Provide temporary construction as shown and/or as required to facilitate construction activities and means of egress.
 - d. Provide and maintain (minimum number as required by OSHA) temporary toilets for use by all Contracts, complete with periodic cleaning as required to service the project throughout construction.
 - e. Job signs and safety signage.
 - f. Final Cleaning of all work of this contract.

1.10 CONTRACT NO. 2 – HVAC WORK

- A. Work in this Contract includes, but is not limited to, the following:
 1. Provide all Work specified in:
 - a. Divisions 00, 01, 02, 07 and 23.
 - b. Any related Work in other Divisions.
 2. Provide all Work shown on the HVAC (H-series) Drawings, unless specifically assigned to another Contractor.
 3. Work specifically assigned to the HVAC Work Contract on/in other Drawings and/or Specification Sections.
 4. Provide all Work required to complete the Project except for Work which has been specifically assigned to another Contractor.
 5. Temporary facilities and controls include, but are not limited to, the following:
 - a. Maintain emergency exits and means of egress to/from work areas.
 - b. Provide temporary construction as shown and/or as required to facilitate construction activities and means of egress.
 - c. Job signs and safety signage.
 - d. Final Cleaning of all work of this contract.

1.11 CONTRACT NO. 3 – ELECTRICAL WORK

- A. Work in this Contract includes, but is not limited to, the following:
 1. Provide all Work specified in:
 - a. Divisions 00, 01, 02, 07, 26, 27 and 28.
 - b. Any related Work in other Divisions.
 2. Provide all Work shown on the Electrical (E-series) Drawings, unless specifically assigned to another Contractor.
 3. Work specifically assigned to the Electrical Work Contract on/in other Drawings and/or Specification Sections.
 4. Provide all Work required to complete the Project except for Work which has been specifically assigned to another Contractor.
 5. Provide electric hand dryers (see Section 10 2800), and Electric Hand Dryer Schedule on Drawing A501.
 6. Temporary facilities and controls include, but are not limited to, the following:
 - a. Maintain emergency exits and means of egress to/from work areas.
 - b. Provide temporary construction as shown and/or as required to facilitate construction activities and means of egress.
 - c. Job signs and safety signage.
-

- d. Final Cleaning of all work of this contract.

1.12 CONTRACT NO. 4 – WINDOW CONSTRUCTION WORK

- A. Work in this Contract includes, but is not limited to, the following:
 - 1. Provide all Work specified in:
 - a. Divisions 00, 01, 02, 06, 07, and 09
 - b. Any related Work in other Divisions.
 - 2. Provide all Work shown on the Abatement (AA-series) and Architectural (A-series) Drawings, unless specifically assigned to another Contractor.
 - 3. Work specifically assigned to the Window Construction Work Contract on/in other Drawings and/or Specification Sections.
 - 4. Work specifically assigned to the Asbestos Abatement Work Contract on/in other Drawings and/or Specification Sections.
 - 5. Provide all Work required to complete the Project except for Work which has been specifically assigned to another Contractor.
 - 6. Temporary facilities and controls include, but are not limited to, the following:
 - a. Maintain emergency exits and means of egress to/from work areas.
 - b. Provide temporary construction as shown and/or as required to facilitate construction activities and means of egress.
 - c. Job signs and safety signage.
 - d. Final Cleaning of all work of this contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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Scopes of Work

September 30, 2022

Contract 1: Site Construction	(SC)
Contract 2: General Construction	(GC)
Contract 3: Window Construction	(WC)
Contract 4: Mechanical Construction	(MC)
Contract 5: Electrical Construction	(EC)

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1. Division of the Work: All of the work of this project has been assigned to specific Prime Contracts as defined in this Scope of Work document. References to G.C. or “General Contractor” in the drawings and technical specifications are to be read as the specific Prime Contractor assigned that work by this Scope of Work section. Division 1 documents apply to all Prime Contractors. Contractors must refer to Scopes of Work, Temporary Conditions Applicable to All Scopes, and other Division 1 documents. It is the responsibility of the bidder to review the entire scope of work and remaining documents for additional work items.
2. Coordination: Each Prime Contractor is to coordinate its work with all other Prime Contractors. This includes distributing shop drawings, submittals and look-ahead schedules to other Prime Contractors where appropriate. Approved submittals will also be available for viewing at BBL’s field office. Each Prime Contractor shall familiarize themselves with the drawings, specifications and existing conditions, along with the work of all other contracts relating to this project. Each Prime Contractor shall be responsible to communicate critical information concerning their work with dependent contractors. Any additional cost, or delay damages, arising from a Prime Contractor’s failure to so furnish, or provide, critical information shall be borne by that Prime Contractor.
3. Job Meetings: As per section 013100 Project Management and Coordination will be held on a weekly basis. All Prime Contractors currently performing work at the job site and other Prime Contractors, as required for coordination, must attend. Attendee must be a Project Manager who can make decisions on schedule and manpower and give authoritative status of material/equipment deliveries. Project Foreman/Superintendent shall also attend these meetings. A \$500 fine will be assessed against any Prime Contractor who misses a required job meeting. Prime Contractors shall be aware that pre-installation meetings will be held for various activities in which all Prime Contractors that have related or interfacing work will be required to attend. Prime Contractors shall also be prepared to have their subcontractors attend meetings as may be requested.
4. Submittal Schedule: Each prime contractor shall provide a submittal schedule within fifteen (15) days of contract award and or notification to proceed. Each Prime Contractor must submit a list of all required submittals showing the anticipated date of submittal, the anticipated approval date, and the lead time required to deliver the submittal item after approval. This list shall reference specification sections and subsections. This list shall also clearly define all samples required for review and approval. A copy of a blank Submittal Schedule Form will be provided to each Prime Contractor upon issuance of contracts. All Submittals are to be made as quickly as possible, within at least four (4) weeks of contract award, or notification to proceed, and shall not delay the Project Schedule. Decisions required from the Architect and/or Engineer, shall be anticipated by the Contractor to provide ample time for inspection, investigation or detailed drawings.
5. Submittals: (*Please Note: The information listed within this section is in addition to the requirements defined in other portions of the contract documents including specification section 013300 Submittal Procedures*)
 - A. SUBMITTAL PROCEDURE
 1. Items which are required to be submitted for approval are identified in the technical specifications. Submit shop drawings, product data and samples as soon as possible, but no later than four (4) weeks of contract award, in order to conform to the Construction Schedule.

2. All items that require color selection must be submitted within two (2) weeks of award of contract. The Architect's review and coordination of color selections cannot be completed until all items are submitted. All color selection submittals (i.e. samples and or color charts) must have their own Submittal Coversheet attached to each item and be clearly identified.
 3. Forward submittals to the Construction Manager via e-mail as PDF documents. Submissions of physical samples are to be in the number as specified in the technical specifications requiring the submittal.
 4. All submittals must be from Prime Contractors only, with letter of transmittal listing project name, contractor's name and name of subcontractor, manufacturer and/or supplier's names and description of submittal. Include the Architect's Submittal Cover Page form with similar information. Each submittal item must be sent in with its own submittal coversheet for the related specification section and must be clear and precise. Each copy of each submittal item must have a submittal coversheet attached. Direct submission by subcontractor, etc., is not acceptable.
 5. All items shall bear the contractor's stamp, initialed or signed, certifying review and approval of submittal, verification of field measurements and compliance with Contract Documents.
 6. Submissions, which are incomplete due to lack of contractor's approval, lack of proper identification, incorrect number of copies or type of submittal items, or similar reasons, shall be returned without action for correct submission.
 7. Any deviations from the Contract Documents shall be specifically noted, by the Contractor, on the submittals and letter of transmittal. Deviations not specifically noted are subject to rejection after installation.
 8. Special consideration shall be given to preserving headroom and space conditions.
 9. Review by the Architect will be for conformance to design intent only and materials and general dimensions, but does not relieve any contractor of its responsibility for furnishing proper equipment or materials, nor for undetected errors in the drawings, unless attention to same is noted in writing at the time of submission of drawings. Review of shop drawings does not relieve contractor of responsibility for proper fit, nor detail design of connections, nor for supplying all necessary material or quantities.
 10. Fabrication shall not be done until review of shop drawings is complete. Contractors failing to submit shop drawings of materials or equipment shall be required to bear all costs of replacement of equipment, or work attached thereto, found to be in variance with plans and specifications.
 11. Where the contract drawings have used a number or type designation (such as door frame or door type, column number, etc.) these numbers must appear on the shop drawings. They may be used as the suppliers' designations or may be in addition to the suppliers' designation. If shop drawings are submitted that do not comply with this requirement, they shall be returned without checking.
 12. Architects/Engineers contract drawings SHALL NOT be reproduced for use as shop drawings.
- B. SHOP DRAWINGS**
1. Present original drawings in a clear and thorough manner. Details shall be identified by reference to sheet and detail, schedule or room numbers shown on Contract Drawings.
 2. Mark-up prints or other reproduction of Architects' drawings are not acceptable as shop drawings.
- C. PRODUCT DATA**
1. Preparation:
 - a. Clearly mark each copy to identify pertinent products or models.
 - b. Show performance characteristics and capacities.

- c. Show dimensions and clearance required.
- d. Show wiring or piping diagrams and controls.
- e. Manufacturer's Standard Schematic Drawings and Diagrams:
- f. Modify drawings and diagrams to delete information that is not applicable to the work.
- g. Supplement standard information to provide information specifically applicable to the work.

D. SAMPLES

- 1. Label each sample with material name, quality, contractor's name, date, project name, and other pertinent data.
- 2. Samples shall be of sufficient size and quantity to clearly illustrate:
 - a. Functional characteristics of the project, with integrally related parts and attachment devices.
 - b. Full range of color, texture and pattern.

E. RESUBMITTALS

- 1. Resubmittals shall be complete and shall correct any items noted on the first submission.
- 2. Resubmittals must be provided within five (5) working days, so as not to delay the project.
- 3. The contractor shall direct specific attention, in writing, on submitted shop drawings, samples and product data, to revisions other than those required by the Architects, based on the Architects' review of previous submittals.

- 6. [Conflicts between the "Scopes of Work" section and the Architect's plans and specifications](#): The Construction Manager is responsible for assigning the work to the various contracts, and the "Scopes of Work" section is used to do this. 1) If a conflict is related to which Prime Contractor performs certain work, the "Scopes of Work" overrides the drawings and specifications. 2) If the conflict is a matter of Quantity or Quality of the finished product, the more expensive detail will govern for pricing purposes.

7. [Work Hours/Additional Work Hours/Unscheduled Entry](#)

- A. [Work Hours](#): For Work in New Construction Areas: To ensure a harmonious project which has multiple Prime Contractors, unless specifically noted in the "Scopes of Work" or "Project Schedule", all work is to be performed Weekdays between the hours of 7:00 AM to 3:30 PM. This allows for an 8-hour day with some flexibility in start time, provided that BBL approves each Prime Contractor's start time. To ensure harmony between Primes and because of the requirement that a BBL superintendent must be on site at all times that work is being performed, no work will be allowed outside of the hours specified above, unless the Scopes of Work or Project Schedule specify nonstandard hours. An example of where nonstandard hours may be specified is for an operation like a Utility Shutdown, which is scheduled to be done over a weekend.

- B. [Additional Work Hours](#): If it appears that some work cannot be completed prior to the scheduled dates, that contractor must increase the work force and/or increase working hours to stay on schedule. In the case of increasing working hours; a Prime Contractor must 1) make arrangements with BBL at least 24 hours in advance so a BBL superintendent can be present, 2) agree to pay for BBL's superintendent based on an overtime rate of \$185/hour, 3) obtain, at no cost to the owner, written approval from all other prime contractors that might be effected by the work to be performed outside the specified work hours, and 4) Provide reimbursement for any cost to the District, resulting from the additional scheduling.

- C. Unscheduled Entry:
1. The Contractors and their employees, subcontractors and supplier are expressly prohibited from entering the occupied areas of the buildings during operation hours without prior written permission of the owner and for using any of its facilities (i.e. restrooms, cafeteria, etc.).
 2. There shall be absolutely no access to the project (site and buildings) off hours without written permission from the Construction Manager.
8. Additional Work:
- A. HOURLY RATE SHEETS: Contractor shall submit hourly rate sheets that would apply to time and material work for all pertinent trades upon Award of Contract.
 - B. Authorization of Additional Work: On this project, neither BBL as Construction Manager, nor the architect, is authorized to add or delete work from a Prime Contractor's contract. Only the owner can spend the owner's money. Do not ask BBL's Superintendent to sign field authorizations for extra work. Submit requests for extra work to BBL's Project Manager who will obtain the owner's written authorization as a formal change order.
9. District Schedule and Project Holidays:
- A. District Schedule: The schools will be closed on Saturdays, Sundays, regularly scheduled district holidays, and at night after cleaning crews have finished.
 - B. Project Holidays: Scheduled work is to be performed on a continuous basis every Monday through Friday. This project will be shut down to recognize 6 national holidays as follows: New Year's, Labor Day, Independence Day, Memorial Day, Thanksgiving and Christmas. If a holiday falls on a weekend, BBL will determine whether it is the Monday or Friday that is to be the shutdown.
10. Temporary Facilities: Review the Scopes of Work/General Items All Prime Contracts and the scope of work for each prime contractor as well as any specific inclusions within the technical specifications, to see what temporary facilities are required for each prime contractor to provide for general use. Additionally, each Prime Contractor is to provide any other temporary facilities it requires. Special Provisions to existing Electric Power will not be made for Prime Contractors' field offices. Each contractor should make arrangements with a licensed electrician if it requires any special modifications for its field office.
11. Clean Up: Each Trade Contractor is to clean up its debris daily. If, in BBL's opinion, a Contractor is not fulfilling this obligation, BBL will issue a written warning. If 24 hours later, the condition has not been rectified, BBL will fine the contractor \$1,000 in addition to the costs of having the clean up done by others. Additionally, each trade contractor whom is actively working on the site shall assist in general site and building cleaning and organization. Cleaning up shall be considered a safety issue. All Contractors that do not participate in cleaning up will have their contract amount adjusted accordingly. See Scopes of work by contract for specific instructions as to assignment of cleaning and disposal of debris.
12. Permits, inspections & certifications: Obtain any permits, inspections, or certifications from governing authorities having jurisdiction over the work required to be installed by this Trade Contractor. Exclude obtaining the Project Building Permit, as this will be furnished by the Owner. Additionally, the owner will be hiring an independent special inspector; contractor shall schedule its work as required for these inspections to occur as noted.
13. Scope Clarifications: A "Scope Clarifications List" is included in this document to give specific examples and further define which contract does what work items. All Prime Contractors must

review this list to understand the scope of work to be performed under its contract. The list does not exhaustively list every detail, but is intended to show specific examples of the type of work done under a particular contract.

14. [Protection of Existing materials/Temporary Protection of the Work](#):
 - A. [Protection of existing materials](#) Any contractor performing selective demolition or performing other work in an existing building or on the site, must protect existing materials not scheduled for replacement. Each prime contractor shall make reasonable provisions to protect its work during construction and shall coordinate this protection with other trades. In the event that a product is damaged during construction and the damage is to an area not scheduled for immediate demolition or reconstruction, the repair of the damages (or the cost of repair of the same depending on the item) shall be assigned to the contractor who damaged the area.
 - B. [Site Fencing](#): Contractor is responsible to maintain existing site fencing in its existing condition. Modifications to the fence to better accommodate the contract work can be discussed with the Architect and owner. These changes shall then be handled by this contractor at its expense and in accordance with the architect and owner's direction. Any cost incurred as a result of damages shall be charged to this contractor.
 - C. [Temporary Protection of Work](#): The Contractor is responsible for temporary protection of all work until acceptance.

15. [Multiple Crews](#): Each Prime Contractor is to provide multiple crews as required to maintain the project schedule. Due to the overall duration of the project schedule, multiple zones and locations have been scheduled for work to take place simultaneously. Each crew is to be furnished with its own supervision, labor force, equipment, cranes, scaffold and/or other means necessary to maintain the Project Schedule. This shall include all overtime work, shift work and/or weekend work as required to maintain pace with the project and or required to complete your work by the dates identified in the project schedule. This includes all final cleaning, punchlist work and any applicable owner training, systems balancing, certifications and commissioning of systems. Sufficient manpower shall be provided at all times to maintain progress of the job. A shortage of labor in the industry shall not be accepted as an excuse for not properly manning the job.

16. [Allowances](#): Contractors are to include in their lump sum bid any allowances specified in their specification sections. Contractors are to include overhead and profit for allowances in their lump sum base bid. Any allowances, including scope of work allowance items, remaining at the end of the project shall be returned to the Owner.

17. [Warrantees](#): It may be necessary to run, test or use various components of the project prior to the date of substantial completion. All warranties shall commence on the date of substantial completion, regardless of prior use.

18. [Safety](#): Per General Condition's ALL Prime Contractors must comply with applicable laws on safety of persons or property. This includes compliance with all OSHA regulations
 - 18.1 Guide Rails and Fall Protection: any contractor doing work on the roof is to conform to OSHA 29CFR1926 Subpart M as no perimeter railing system is being specified for any location on the project. Each Prime must provide its own railings or otherwise ensure its labor is protected per OSHA regulations.

19. Communication:

- A. Each Prime Contractor's Superintendent must carry at all times while on site, a Cell Phone that gets reception throughout the site; all cost for this service to be paid for by the Prime Contractor. Provide CM, Owner and Architect appropriate contact information.
- B. All Prime Contractors shall be aware that all communication must go through the Construction Manager. For example, Requests for Information (RFIs) shall be submitted in writing to the Construction Manager in a timely manner.

20. Delivery of Materials installed by another Prime:

- A. Materials being supplied by one Prime Contractor, but installed by another Prime Contractor shall be delivered to the site by the Supplying Contractor complete with a detailed checklist of the delivered items so the Installing Contractor can confirm its receipt of all items. The Installing Contractor is responsible for unloading and storing the material. Once the Installing Contractor has received the material, it is responsible for proper storage, damage or loss of the material. The Supplying Contractor shall give formal notice to the Installing Contractor (and to the Construction Manager) at least 2 work days in advance of the delivery. Failure to make formal notice of delivery shall relieve the Installing Contractor of its obligation to off-load and store the materials being delivered. The Supplying Contractor must obtain a signed copy of the delivered items list from the Installing Contractor as proof of receipt. The Supplying Contractor must not deliver materials to be installed by others, earlier than 2 months before the earliest installation date scheduled.

21. GENERAL:

- A. All work shown, specified, or required to complete the work shall be included in the bids unless specifically noted to be included in other contracts.
- B. The contract documents may not completely describe a particular building system; Prime Contractors are to include all items of work relevant to their scope of work and necessary for a complete installation and work package.
- C. Wood Blocking/Bracing/Angles and Clips: The contractor is responsible to supply and install all wood blocking/bracing/angles and clips as necessary to properly secure their work. This responsibility includes coordinating the installation in concealed areas without delaying other trades.
- D. Claims or complaints concerning the suitability of, or the ability to produce first-class work with materials indicated or specified, shall not be entertained unless made in writing to the Architect prior to execution of contracts for the work.

22. SPECIAL BUDGET REQUIREMENTS:

- A. Contractors shall provide estimates of individual items of work as may be required.

23. PROTECTION OF PERSONS ON SITE:

- A. It shall be noted and stressed that the contractor's installations are occurring at the site of active an active facility, with numerous staff present at various times. Organize, schedule and conduct operations so as to cause the least amount of inconvenience to normal operations. Provide the necessary safeguards to protect all staff and visitors to the site.

24. MAINTENANCE OF EXITS:

- A. Contractor shall be certain to schedule its work and operations so that service entrances shall be kept open at all times.

25. PROJECT REGULATIONS:

- A. All personnel on the site are subject to the same general regulations as the Owner's staff and such regulations shall be enforced by the contractor.
- B. Drinking of alcoholic beverages is not permitted on Owner's property.
- C. Contractor's personnel shall limit their access to the building to areas in which work is being done.
- D. Smoking is not permitted on Owner's property
- E. Electronic devices such as, but not limited to, radios, CD players, I-pods and headphones are not allowed on the job site. The operation of any electronic device not specifically required for completion of the project work at hand may be a safety hazard and as such is prohibited. Disregarding this rule will result in the offending worker being prohibited from this job site.
- F. Cell phones must be turned off during job meetings. \$50 fine will apply to each interruption of a job meeting.
- G. Each Prime Contractor is to furnish each workman for its crew or subcontractor that it employs with a photo badge which the tradesperson must wear in a visible location at all times when on site. Badge must be 2"x 3" (minimum) and include the Contractor's Name, Project Name, Employee photo & Employee No. Badge must clip onto hard hat or shirt. Badge must be laminated or in a clear plastic pouch so it does not get damaged when wet. Replace badge if it becomes lost or illegible.
- H. Progression of the Work: Work in each work period shall progress at least at a pace in proportion to the Contract time available.
- I. Temporary Facilities/Use of Existing Facilities: Prime Contractors shall provide temporary facilities for their own use. Contractor's personnel will not be permitted to use existing facilities (including toilet, telephone, etc.) for their own benefit. Contractor's Superintendent must explain this to all its field forces.
- J. On Site Personnel Requirements: Insubordination, unsafe practices, horseplay, abusive behavior or language, wanton destruction of property, use of drugs or alcohol, possession of firearms, and solicitation shall not be tolerated. There will be no warnings, and Contractor shall designate a responsible on-site supervisor to handle any situations that may arise, including termination.

26. OWNER'S TOOLS AND EQUIPMENT:

Contractor's personnel shall not use tools or other equipment, ladders, etc., belonging to the Owner.

27. ACCESSIBILITY AND CLEARANCES:

- A. The contractor shall inform himself fully regarding peculiarities and limitations of space available for the installation of the materials and equipment. It shall verify all dimensions and conditions in the field and from rough-in drawings of the various equipment manufacturers. No extra compensation will be allowed because of difference between actual dimensions and the sizes shown on the drawings.
- B. The contractor shall see that all the equipment such as switches, panels, pull boxes, fixtures, lamps, and such items and apparatus necessary to be reached from time to time for operation and maintenance are made easily accessible. All panels and devices shall be checked for interferences with beams, ducts and pipes prior to installation of associated conduit, outlets, and other accessories.

28. MAINTENANCE AND REPAIR OF EXISTING FACILITIES:

- A. Before work is started, each contractor shall inspect the existing work which will be affected by its operations.

- B. Each contractor shall report in writing to the Architect any observed defects in order to avoid being held responsible for damage.
 - C. Any areas damaged by the contractor shall be restored by the contractor to a condition at least equal to that prior to start of construction. This is to be done at no additional cost to the Owner.
29. CONTRACT DOCUMENTS:
- A. The Owner will furnish, at no cost, two (2) sets of specifications and drawings for each Prime Contractor's use, and each set shall contain all contract divisions of work.
30. PROJECT SCHEDULE - MULTIPLE CONTRACTS:
- A. A Project Milestone Schedule is being specified, and all Prime Contractors must comply with this schedule.
 - B. Within 15 days after award of a contract, each Prime Contractor shall submit a detailed schedule of its work showing the details of its compliance with the Project Milestone Schedule. The Prime Contractor's Schedule must show its intended submittal dates, allowing sufficient time for submittal turn around, and showing the manufacturing lead time to ensure that the work will start on the dates required by the Project Milestone Schedule. If a contractor misses the deadline for submission of its detailed schedule it then accepts the final approved schedule based on the input of the other prime contractors with the major milestones as bid without its input accounted for both start and finish dates of any additional necessary sub-tasks needed to break up major milestone dates as bid. Any schedule problems or hardships must be brought to the attention of the Construction Manager two (2) weeks prior to bid so that an adjustment to the Project Milestone Schedule can be made by addendum prior to the bid date. Submission of a bid is full acceptance of the Project Schedule as specified
 - C. The Construction Manager will combine the project schedules received by each of the Prime Contractors and will combine these to develop a Detailed Project schedule that all Prime Contractors must then review and approve.
 - D. Each Prime Contractor and sub-contractor is responsible for maintaining progress in accordance with the Detailed Project Schedule. It shall award sub-contracts, order materials, schedule operations, provide sufficient personnel at proper times, use all resources at its command and do all things necessary to maintain this progress.
 - E. Time is of the essence. Contractor's proposed schedule must be approved by the Owner. Contractor shall indicate significant events such as submittals, shop drawings, material ordering, fabrication, delivery and coordination with the Owner. A revised progress status shall be required on a weekly basis.
 - F. Out of Sequence Work: The intention of the work is to follow a logical sequence; however, the Contractor may be required by Architect to temporarily omit or leave out any section of its work, or perform its work out of sequence. All such out of sequence work and come back time to these areas shall be performed at no additional cost.
 - G. Three-week Look Ahead Schedule: Contractor shall submit a three-week schedule (man-loaded by work activity and area) to the Owner each week. Contractor's representative shall attend a weekly meeting with all contractors, chaired by Owner or Architect, for the purpose of job coordination and sequencing. Contractor is responsible to coordinate the job with other trades and Owner and or Architect, and to cooperate with other trades in pursuit of the overall project's shop drawings and actively participate in resolving discrepancies, conflicts, interferences, etc.
 - H. Construction Schedule: The Prime Contractor shall prepare an overall job schedule for the work upon award of Contract, as per section 003114 – Contract Schedule. The Owner reserves the right to adjust the Detailed Project Schedule from time to time during

- construction to mitigate unavoidable problems and ensure that the project completion date is achieved. Prime Contractors must comply with the adjusted Project Schedule without additional cost.
- I. A Prime Contractor who does not meet a Project Schedule date, which in the opinion of the Construction Manager is a critical date, will be considered in default of contract and the Owner may exercise its right to correct the scheduling problem created by the Prime Contractor at the Prime Contractor's expense.
 - J. All Prime Contractors shall anticipate starting their tasks two (2) weeks earlier than the start dates shown.
 - K. A normal amount of inclement weather is to be anticipated and will not extend any of the project schedule dates.
 - L. All work must be completed by the date of Substantial Completion and the project milestones identified. In part, this shall also include: final cleaning, punch list work, owner training and mechanical system balancing.
 - M. In the event that there is a lag in the date that contracts are awarded and a Notice to Proceed is issued, then the completion date as well as each of the scheduled tasks will be pushed back the number of days that the actual Notice to Proceed lags the Scheduled Project Start date.
31. **COOPERATION:**
- A. Each contractor shall be responsible for the distribution to all other contractors, all necessary information, concerning its work, as required for the prompt installation of the work.
32. **STAGING AND STORAGE AREAS/USE OF PREMISES:**
- A. **Staging and Storage Areas:** Contractor shall use staging and storage areas designated by the Construction Manager (See site Staging Plan for locations). Contractor shall coordinate with Construction Manager prior to setting up lay down areas, staging areas, and overall use of project site.
 - B. **Use of Premises:** Contractor shall coordinate the use of premises with the Construction Manager and Owner and shall move at its own expense any stored products under Contractor's control, including any material (such as excavated materials), which would interfere with operations of the Owner or separate contractors.
33. **PROTECTION OF THE WORK:**
- A. The contractor shall effectively protect, at its expense, all materials and equipment, including the employees, during the period of construction, and shall be held responsible for all damages done to this work, until the same is fully and finally accepted by the Owner.
34. **DEBRIS CONTROL AND CLEAN UP:**
- A. Contractor shall take all measures necessary to control debris and garbage due to its operations as may be required by job conditions. See Scopes of Work for detailed requirements.
 - B. Clean up shall be done on an on-going, continuous basis so as to keep property clean at all times. Any combustible materials shall be stored at a safe distance from the outside of the building(s). Burning of debris is not allowed.
 - C. Contractor shall be responsible for clean-up of its work. Contractor shall inspect building areas and will notify the Architect in writing of any areas damaged or dirty before it commences its work. At completion of its work, all areas that it used shall be clean and free of all debris equal to conditions prior to its starting work.
35. **FIELD TEST PROCEDURES:**
- A. Contractor shall notify Owner and Construction Manager prior to any test.

- B. No “testing” of any equipment or systems shall be done unless prior approval has been granted.
36. CUTTING AND PATCHING:
- A. Each contractor shall bear the cost of cutting and patching required by and for its work, unless noted otherwise on their drawings.
 - B. Cutting shall be done in a manner which will not adversely affect the strength of the building. Holes and openings shall be neatly cut so as to provide a finished appearance and shall be patched around the edge where required for a finished appearance. Provide temporary bracing and shoring as required.
 - C. Patching shall be structurally sound and match the materials and finish of adjacent materials. Patching is required in finished areas, wherever existing work is removed, at the sides of openings and other similar situations.
 - D. At the completion of the work all evidence of alterations and reconstruction will be as inconspicuous as possible.
37. EXTRA TIME WORK/OWNER’S RIGHT TO COMPLETE THE WORK:
- A. Extra Time Work: It is important that work planned for designated periods of time be progressed and completed within designated periods of time and the resulting installations be operable and in service at the termination of the outlined time limit. Failure to fulfill these schedule requirements would inconvenience the Owner and its personnel. It is expressly understood that premiums paid by the contractor for any overtime work or weekend work required to meet this time schedule shall be borne by the contractor as a portion of its lump-sum contract price. (NOTE: See Paragraph #7 Work Hours above for additional costs involved in off-hours work)
 - B. Owner’s Right to Complete the Work: If the Contractor fails to staff the job adequately to meet the completion date, the Owner reserves the right to assume possession of the material and complete installation with the Owner’s forces, or other Contractors, or to require the Contractor to work evenings and weekends.
38. MATERIALS REMOVED:
- A. Unless a specific item or material is noted as to remain the Owner’s property or to become the Contractor’s property (or similar words) any materials having salvage or reuse value shall be inspected by the Owner. If the Owner wishes to retain this material it shall be turned over on the site where directed. If the Owner designates the material as scrap, it shall become the Contractor’s property and removed from the site. Material having salvage value shall be carefully removed.
39. REUSED MATERIAL:
- A. Where any material is to be reused, it shall be removed and reinstalled without damage. In the event it is damaged, it shall be removed and replaced with comparable new material.
40. Connections to Existing Buildings: (Not Applicable / Not Used)
41. CONTROL OF PERSONS, TRAFFIC ON SITE:
- A. Contractor shall control action of all persons on the site working on this project and shall enforce all regulations, Contractor shall not interfere with operations and traffic pattern normal traffic on site.

- B. Some on-site contractor parking is available, this parking will be evenly assigned to contractors after spaces for owners, consultants, and others have been assigned. If this parking is insufficient for project needs, workers shall park off site.
 - C. Workers shall not enter building except to perform work in the building.
42. DEFINITIONS:
- A. "Provide" used in the specifications and on the drawings shall mean to "furnish" and "install" complete, in place, and ready for operation and use.
43. HEALTH-SAFETY REQUIREMENTS:
- A. SDS Info and Binders: Prime Contractors shall provide three (3) copies of their SDS Binder for the material intended for this project to the Construction Manager (for distribution only) within ten (10) days of contract award or notification to proceed is provided. This Binder shall have an index and tabs to clearly and quickly identify each item. This Binder shall be job specific for this project and shall be updated regularly. It is the sole responsibility of the Prime Contractor to follow all safety requirements and jurisdictions and to have the appropriate information on site.
 - B. Safety Programs: Prime Contractors shall provide three (3) copies of their Safety Programs intended for this project to the Construction Manager (for distribution only) within ten (10) days of contract award or notification to proceed is provided. This Binder shall have an index and tabs to clearly and quickly identify each item. This Binder shall be job specific for this project and shall be updated regularly. It is the sole responsibility of the Prime Contractor to follow all safety requirements and jurisdictions and to have the appropriate information on site.
44. SCHEDULE OF VALUES:
- A. In addition to the requirements of the contract documents, Prime Contractors are to follow the requirements listed below with regards to Schedule of Values.
 - 1. Schedule of Values are to be submitted on the correct AIA Documents as identified in the contract documents.
 - 2. Schedule of Values are to be submitted for review and approval to the Construction Manager within ten (10) days of contract award or notification to proceed is provided. This information may also be reviewed by the Architect as required.
 - 3. Schedule of Values shall list all items applicable to the Prime Contractors scope of work. In part this shall include line items for: labor for each item, material for each item, allowances, scope of work allowance items, include a line item for as-builts, include a line item for project close-out/Owner Training, include a line item for clean-up and include a line item for submittals.
 - 4. Schedule of Values must be submitted, reviewed and approved before a request for payment is made.
45. DELIVERIES: Prime Contractors shall coordinate all deliveries with BBL's Superintendent and all other applicable contractors. Prime Contractors are to provide a minimum of 48 hours Advance Notice for all deliveries.
46. SUBCONTRACTORS AND SUPPLIERS LIST: Prime Contractors shall provide a list of the Subcontractors and Suppliers they intend to use on this project to the Construction Manager within ten (10) days of contract award or notification to proceed is provided

47. Contact Information: Prime Contractors shall provide a Contact List of the individuals that will be part of this project to the Construction Manager within ten (10) days of contract award or notification to proceed is provided.
48. TEMPORARY PARTITIONS: (see Section 015000 – Temporary Facilities and Controls to be provided by one contractor for use by other trade contractors)
49. TEMPORARY TOILETS: (see Section 015000 – Temporary Facilities and Controls to be provided by one contractor for use by other trade contractors)
50. TEMPORARY FENCING: (see Section 015000 – Temporary Facilities and Controls to be provided by one contractor for use by other trade contractors)
51. COMPLETENESS OF THE WORK:
 - A. The Owner does not undertake to insure the Contractor against all risks.
 - B. No provisions of insurance, payment of transfer of title shall relieve the Contractor from full satisfactory completion of the work at no cost to the Owner beyond the original contract amount and any approved change order.
52. TEMPORARY ELECTRIC AND WATER:
 - A. Water service is currently on site. The Owner will pay for water service for the project.
 - B. Temporary electric service is specified in electrical contractor’s scope of work. The Owner will pay for electricity consumed for work associated with the project. Any temporary connection, required, shall be made by the contractor at its own expense. Work shall be maintained in a safe condition and removed immediately after it is no longer needed. Any damage to the Owner’s systems shall immediately be repaired at the contractor’s expense.
53. BUILDING SECURITY/WATER AND WEATHER PROTECTION:
 - A. Contractors shall conform to the following and detailed descriptions as noted in section 015000 – Temporary Facilities and Controls.
 1. Building Security: Contractors shall maintain the security of the building during their work; and be responsible to secure the building nightly, see 015000 – Temporary Facilities and Controls.
 2. Water & Weather Protection: Throughout this work, it shall be each contractor’s responsibility to maintain water and weather protection for the areas of the building in which work is in progress. Provide all arrangements, temporary construction required to accomplish this.
54. WINTER WORK:
 - A. The work may be scheduled to continue without interruption during the winter. All Contractors shall include in their bid the cost of winter conditions. See Scopes of Work for specific responsibilities. See the Project Schedule for milestone dates.
 - B. Maintain temperatures as recommended by the manufacturer of the materials being installed, and as specified. Installed masonry work shall be protected until mortar has completely set and cured.
 - C. Temporary enclosures shall be flame retardant and all safety and fire prevention measures shall be observed.

55. ACCESS, RAMPING, AND EGRESS:

Contractor must plan, provide and maintain its own access, ramping, and egress as required into and out of the site, staging of trailer(s), materials, machinery, and equipment in agreement with the Owner. Maintain free and safe access on the jobsite for other related project personnel. Maintain safe pedestrian or vehicular traffic must be regulated by a flagman. Trucking and delivery operation should be coordinated with owner. (see Section 015000 – Temporary Facilities and Controls to be provided by one contractor for use by other trade contractors).

56. EXISTING UNDERGROUND UTILITIES:

- A. Each Prime Contractor will be responsible for verifying all underground utilities, as required.
- B. Underground utilities are shown where they are reported to be or as indicated on other documents. Contractors are cautioned that there may be more service than shown and locations may vary from those shown.
- C. Excavation shall be made carefully so as to avoid damage to existing work. Should any work be damaged, it shall be satisfactorily repaired immediately by and at the expense of the contractor causing the damage.
- D. Exposed underground work shall be protected.

57. VERIFYING EXISTING CONDITIONS:

- A. Before submitting a bid, Contractors shall examine the site and all existing buildings and conditions, to which this work is in any way dependent upon according to the intent of these specifications.
- B. Before starting to fabricate materials, Contractors shall visit the site and/or building to examine surfaces and conditions prior to the start of work and become thoroughly familiar with work conditions and dimensions that may affect their installation. Contractors are completely responsible for the verification of all dimensions, and acceptance of these existing conditions. The Owner takes no responsibility for actual conditions found deviating from the drawings. If existing condition interferes with contract work, contractor is responsible to eliminate this condition. Do not proceed until unacceptable conditions are corrected and acceptable. Prior to commencing the work, the Contractor shall provide written acceptance of grades, structures, substrates, and/or systems installed by the Contractor as suitable for installation of its work. Failure to provide this verification prior to commencing work shall constitute acceptance of the existing conditions.

58. EXCAVATION AND BACKFILL:

- A. Excavation is unclassified. Remove all materials encountered. No extras will be allowed for rock excavation.
- B. Unless indicated otherwise, each Contractor shall perform its own excavation filling and grading work. Where excavation is made into compacted materials the backfill shall be similar material compacted at least as well as the adjacent material.

59. “AS BUILT” DRAWINGS:

- A. See Contract Closeout procedure, paragraph below.

60. CLEANING:

- A. See “Scopes of Work” for each contract included in this section for specifics regarding both daily construction cleanup and final cleaning.
- B. No burning of debris is allowed on site.

61. PROJECT COST BREAKDOWN:
Project breakdown shall include a cost for weekly cleaning – See Paragraphs 11 and 60 above as well as SOW for each contract for specific requirements for cleaning.
62. JOB SIGN: (see Section 015000 – Temporary Facilities and Controls)
63. SITE SIGNAGE: (see Section 015000 – Temporary Facilities and Controls)
64. NOT APPLICABLE/NOT USED
65. PRODUCTS STORED ON SITE/OFF SITE STORAGE/PAYMENT FOR STORED MATERIALS:
 - A. Products Stored On Site: Contractor shall assume full responsibility for the protection and safekeeping of products under this Contract stored on the site and shall cooperate with the Architect and Owner to ensure security for the Owner’s Property.
 - B. Off-Site Storage: Contractor shall obtain and pay for the use of additional storage of work areas needed for operations, as shown on the site phasing plans; working laydown areas are small, contractors must work within the confines of these areas, elevated storage on top of “conex” boxes needs to be secure at all times.
 - C. Payment For Stored Materials:
 1. The Agreement and the General Conditions shall be modified as noted in paragraph “B” for payment of stored materials.
 2. Payment will be made for materials properly stored and secured on site. Contractor remains responsible for the material through installation and acceptance by Owner. Payment will be made for materials properly stored and secured offsite, provided the material is clearly labeled for this project, is separately stored from general stock or material for other projects and is available for inspection by the Owner or its representative. A requisition for material stored off site, must be accompanied by an inventory list and a certificate of insurance for fire, theft and for transportation to the job site. The Owner is to be named as additional insured on certificate of insurance. Contractor remains responsible for the material through installation and acceptance by Owner. Requisitions must include 12, 3x5 photos of the stored material, showing project labeling, and showing the adequacy of the storage building or area.
 3. It is the Owner’s intent by the above commitment to provide an incentive for all contractors to purchase materials early enough and to be reimbursed promptly for stored materials, to effectuate a timely commencement and completion of all work.
66. MATERIAL RECORDS:
 - A. During the course of the work, a LABEL from each material used shall be turned over to the Construction Manager for its records.
67. SECURITY OF MATERIALS:
 - A. All materials shall be made secure at the end of each work day so that possibility of misuse is reduced to minimum.
 - B. Ladders shall be removed from site or chained in place in storage areas so they are not accessible to unauthorized persons.

68. COMPLETENESS OF WORK: NOT USED

69. COORDINATION FOR ASBESTOS REMOVALS:

- A. For all work within the existing buildings all contractors shall coordinate, where required, with the General Construction Contractor (GC). Wherever Asbestos is to be disturbed, including removal, cutting or drilling through, the CM, Owner and the General Construction Contractor (GC) shall be notified and shall be given ample and reasonable time to remove.
- B. No contractor shall cut, drill, remove, abrade or otherwise disturb existing construction materials which contain asbestos. This work will be strictly the work of the General Construction Contractor (GC).

70. LEAD BASED PAINT:

- A. Each contractor shall provide proper removal of lead based paint for any work assigned to them. All paint is to be considered Lead Paint unless there is a test report that shows otherwise.

71. ADJUSTMENT FOR CHANGES IN THE WORK:

- A. Contractor is to submit an itemized and detailed cost breakdown for changes in the work within 4 working days of receipt of a written Request for Proposal.
- B. The maximum overhead and profit to be applied to the estimated cost (as defined in General Conditions 7.3.6) of a change in the work, is to be as follows:
 - 1. Contractor can add 15% combined overhead and profit for work done directly by the Contractor.
 - 2. Contractor can add 5% combined overhead and profit for work done by its Subcontractor.
 - 3. Subcontractor can add 15% combined overhead and profit above its direct costs for performing the change in the work.
- C. The cost of preparing, estimating and submitting Proposals for changes in the work is to be included in the Contractor's Base Bid for the project. No overhead or profit is to be applied to changes in the work, for which specified allowances are to be utilized.
- D. When submitting a proposal for a change in the work, unless otherwise instructed, such proposal should be priced on the basis of no extension of time.

72. RETAINAGE

- A. Applications for Progress Payments are to include a 5 % retainage on the work and on stored materials as stipulated in the AIA Owner/Contractor agreement A101/CMA.

73. CONTRACT CLOSEOUT (Please Note: The information listed within this section is in addition to the requirements defined in other portions of the contract documents including specification section [017700 – Closeout Procedures](#); in cases where there is conflict with [017700](#) the more stringent requirement shall apply)

- A. PROJECT RECORD DOCUMENTS (As-Built Drawings)
 - 1. Each Prime Contractor shall maintain a set of "Record Documents"
 - 2. The record documents shall consist of a set of the drawings and copy of the project manual, including all addenda shall be kept at the site as "Record Documents" and shall be made readily available for the Construction Manager to review at any time to ensure drawings are being updated on a regular basis. On this set, changes incorporated in the finished work shall be neatly indicated in a prominent contrasting color. Where

necessary to clarify, prints of supplementary drawings at larger scale shall be attached to this set.

3. During construction, All Prime Contractors shall keep accurate records of location (plan dimensions and depth) of all concealed or buried work (plumbing and electrical). This information shall be neatly marked on the "Record Document" Drawings.
4. On completion of the work, the "Record Documents" set shall neatly show all construction material arrangements, piping, conduit and sheet metal arrangements as actually installed, with particular attention to dimensioning underground utility lines, their offsets, and valves; all keyed to the appropriate shop drawings. THIS RECORD SET, along with 4 additional copies SHALL BE SUBMITTED TO THE OWNER AS THEIR "AS-BUILT" DRAWINGS no later than ten (10) days after substantial completion is obtained.

B. OPERATION & MAINTENANCE MANUALS

1. No later than ten (10) days after substantial completion is obtained, each Prime Contractor shall prepare a minimum of five (5) complete sets of Operation and Maintenance Manuals. These O/M Manuals must be submitted as a complete package and in a binder format. Binders shall have an index and include tabs that clearly identify each section. As part of these of O/M Manuals, Prime Contractors shall also include a listing of names, addresses, phone, and fax numbers for all of their Subcontractors, Suppliers and Vendors.
2. Obtain manufacturer's printed installation instructions to aid in properly executing work, on equipment requiring such directions, especially to ensure that manufacturer's warranty is applicable.

C. CONTRACT CLOSEOUT INSPECTIONS

1. The Architect will inspect the work and prepare a written "Punch List" of deficiencies in the work. The contractor must correct or complete the deficiencies as quickly as possible and within the scheduled time allowed for punch list work.

D. FINAL CLEANING:

1. The Final Cleaning of the project must be completed as specified
2. Owner's Right to Perform Final Cleaning before Occupancy: If the work is complete but the area is not cleaned and debris or equipment is not removed, the Owner shall have the right to prepare the area for occupancy with its own forces and deduct the costs from the Contract Amount. (If Contractor does not respond within 24 hours' notice).

E. WARRANTIES

1. Each Prime Contractor shall submit a minimum of five (5) warranty certifications and copies of warranties, which extend beyond the one-year period required by the General Conditions Article 12.2.2. Warranties submitted without warranty certification will not be accepted. Unless required in the specification, or specifically requested earlier, Warranty Manuals shall be submitted as a complete package no later than five (5) dates after substantial completion is obtained.
 - a. Warranty Certification: Written certification from the warrantor that invoices for installation, service, supplies, and warranty fees have been paid in full to persons or firms due payment, and that the warranty is in effect and non-retractable due to any of the specified conditions.
2. For items of Work delayed beyond date of Substantial Completion, provide updated warranty submittal within 10 days after acceptance, indicating date of acceptance as start of warranty period.
3. Applications for final payment will not be approved until the warranty certification and warranty documents are delivered to the owner's representative.

F. SPARE PARTS AND MAINTENANCE MATERIALS

1. Label and deliver any specified spare parts, maintenance items, and extra materials to the Site. Place in locations as directed.
 - a. Include "NOT FOR WARRANTY REPAIRS" on the labels.
 - b. Obtain receipt prior to final payment.
2. Do not use the spare parts and maintenance materials required by the Contract Documents to remedy defects during the one-year warranty period
3. Furnish the names, business addresses, and telephone numbers of fully equipped authorized service organizations to the Construction Manager.
4. These items are to be provided prior to the date of substantial completion.
5. These items must be turned over to the Owner via a detailed transmittal. Transmittals are to be signed by the Prime Contractor and either the Owner or Owner's Representative. A copy of these signed transmittals must be submitted to the Construction Manager. Applications for final payment will not be approved until these items are delivered to the Owner and the Construction Manager has been copied on the transmittal.

G. DEMONSTRATION AND TRAINING:

1. Prime Contractors shall provide instructional training as required by the contract specifications; all training shall be per the following:
 - a. Training shall be performed by an individual thoroughly knowledgeable about the product, such as the product representative, service technician or start-up technician.
 - b. Prime Contractors will be required to submit to the Construction Manager sign-in sheets indicating start time, end time and attendees present for training.
 - c. Prime Contractors are required to have all Owner Training scheduled and completed prior to date of substantial completion.
 - d. Prime Contractors shall submit to the Construction Manager a detailed outline of the items that will be covered during Owner Training. This information is required a minimum of 4 weeks prior to the date owner training is to take place for that specific item.
 - e. Prime Contractors shall provide a minimum of three (3) dates in which owner training can take place for each specific item. This information will be provided to the Owner and a date selected so that the appropriate staff can be in attendance.

74. COORDINATION DRAWINGS

- A. As described in section [013100 – Project Management and Coordination](#), all relevant prime contractors shall provide a set of coordination drawings if space limits require. The requirements and procedures noted this section shall govern should a conflict in procedures arise. The requirements of developing a coordinated set of MEP Drawings shall belong to the General Construction (GC), Mechanical Construction (MC), and the Electrical Construction (EC). All Prime Contractors shall provide submittal information as needed to help facilitate the completion of the MEP Coordination Drawings.
 1. Coordination Drawing Process: In the addition to the requirements of the contract documents, Prime Contractors are to follow the requirements listed below:
 - a. Each Prime Contractor shall familiarize themselves with the drawings, specifications and existing conditions and all other contracts relating to this project and shall coordinate their Scope of Work with the work of other contracts. Each Prime Contractor shall be responsible to communicate critical information concerning their work with dependent Prime Contractors.
 - b. Each Prime Contractor shall prepare composite shop drawings and field installation layouts for its work as required by the contract documents, field conditions, or as

directed by the Construction Manager in order to solve tight field conditions or clarify interface conditions. Such drawings shall as a minimum consist of dimensional plans and elevations and shall give complete information, particularly to size and location of sleeves, attachments, openings, clearances, tolerances, conduits, ducts, boxes and structural interferences.

- c. At a minimum, the work shown on MEP Coordination Drawings Shall M/E/P Equipment, ductwork (with transitions and insulation), air handling devices, vents, diffusers, all panels, racks, light fixtures, main distribution runs switchgear, detection heads, sprinkler heads and cable trays. Top and bottom elevations shall be shown for all items. Bottom of ceiling and soffit elevations and room numbers shall be noted on the MEP Coordination Drawings. Location of Access Doors shall be coordinated and noted on the MEP Coordination Drawings. All major equipment shall be shown, including concrete pads as applicable. Account for threaded rods and hanger systems. Location of valves, control and filters shall be located (and identified) in serviceable areas. Wall penetrations locations shall be noted on a coordinated drawing(s).
- d. The Coordination Drawings, for the entire project, shall be completed and signed-off no later than the dates identified in the project bid schedule. Prime Contractors shall commence with the MEP Coordination Process at the point when a contract and or notification to proceed is provided. Prime Contractors shall be aware that various areas shall be worked on simultaneously in order to expedite the MEP Coordination Process.
- e. Each Prime Contractor shall be responsible to collect, verify and show any pertinent or critical existing dimensions on their layer which are required by field conditions or as requested by the Owner's representatives.
- f. The MC Prime Contractor shall expedite the submission of the ductwork drawings by level to the A/E (via the Construction Manager) for review and approval.
- g. The PC Prime Contractor shall be responsible for combining and assembling all MEP Coordination drawing information as provided by the GC, MC and EC Prime Contractors during the course of the MEP Coordination Process. The gathering and processing of this information must be completed by the project milestone schedule dates, if not sooner, and must not impact the project schedule and associated sequential activities. The MC shall be responsible for providing full size color MEP Coordination Drawings, for all prime contractors, at each MEP Progress Meeting for review/discussion with the Project Team.
- h. Submission of critical/key submittal items that require dimensional information to allow for the completion of the MEP Coordination Process shall take priority and shall not negatively impact the completion of this process.
- i. When all work has been shown and signed-off (by each of the Prime Contractors) to indicate that all conflicts have been resolved, the PC Prime Contractor shall submit color copies of the signed-off version for the A/E's review and approval. Upon approval the MC Prime Contractor shall distribute three (3) color prints of these documents to the CM.
- j. Each Prime Contractor shall keep a copy of these fully coordinated (and by layer) M/E/P Drawings in the field and shall update on a weekly basis.
- k. Upon project completion each of the M/E/P Prime Contractors shall update their respective layers of these MEP coordinated drawings (as-built version) and forward to the MC Prime Contractor. The MC Prime Contractor will assemble, print out and submit three (3) color layers of each "As-Built" layer drawing. The MC Prime Contractor will also provide these documents on a disk as CAD files and in PDF format.

- l. The GC, MC, PC and EC Prime Contractors shall carry a line item in their schedule of values for this MEP Coordination Process.
- m. MEP Coordination Meetings to resolve interferences in the Work will be held on a weekly basis at the project site. Representatives of each Prime Contractor shall be present at each of these mandatory meetings. Failure to attend an M/E/P Coordination Meeting will result in a fine of \$ 500 being assessed against the offending Prime Contractor for each occurrence. Subcontractors of each of the Prime Contractors may have to attend these meetings if requested by the Construction Manager. The MC Contractor shall bring color M/E/P Coordination Progress Drawings to each of these meetings for review and discussion as required and directed by the Construction Manager.
- n. All HVAC, Plumbing, Fire Protection, Electrical and Data Work shall be coordinated as indicated by the following procedure. Each Prime Contractor shall sign each Coordination Drawing after all work has been laid out to verify that all conflicts have been resolved.
 - i. Baseline Requirements: Coordination overlays will be performed on the latest version of AutoCAD. All Prime Contractors shall be on compatible computer platforms. The Coordination Drawings shall be prepared at 3/8" scale. Areas requiring more detail, such as mechanical, electrical and or data rooms, shall be developed at 3/4" scale. Specific rooms (example: tele-data rooms shall be shown separately as directed by the CM).
 - ii. b. The PC Prime Contractor shall develop the project backgrounds and be the focal point of the MEP Coordination Process. The following layers shall be developed in succession by the appropriate Prime Contractors, as applicable for this project:
 - 1) Backgrounds – by MC Prime Contractor - color: Black
 - 2) Ductwork – by MC Prime Contractor – color: Green
 - 3) Gravity Pipe – by MC Prime Contractor – color: Red
 - 4) Hydronic Pipe – by MC Prime Contractor – color: Blue
 - 5) Sprinkler Pipe – by MC Prime Contractor – color: Purple
 - 6) Electrical Conduit/Fixtures/Items – by EC Prime Contractor – color: Brown
 - 7) Tele/Data Items – by EC Prime Contractor – color: Orange.Note: Color assignment can be modified as long as all Prime Contractors are in agreement and the MEP Coordination Drawings are clear and readable.
- o. Each Prime Contractor shall place, as applicable, their equipment, pumps and panels on the MEP Coordination Drawings. The EC as a minimum shall indicate all main distribution runs and panels, system panels, light fixtures and smoke detector heads.
- p. Each MEP Prime Contractor shall provide fully coordinated Access Door Ceiling and Wall plan drawings that as a minimum will show location and size of required access doors.

75. CONSTRUCTION OF MOCKUPS:

- A. Comply with any requirements identified in the contract documents.

76. BUY AMERICAN REQUIREMENTS: (NOT APPLICABLE/NOT USED)

Contract 1 – Site Construction (SC)

1. Perform all work of the following specification sections:

- A. DIVISION 31 – EARTHWORK / All Sections
- B. DIVISION 32 – EXTERIOR IMPROVEMENTS / All Sections

2. Temporary Facilities:

- A. See Spec Section 015000 – Temporary Facilities and Controls for a listing of all Temporary Facilities to be provided by this Contractor for use by other Trade Contractors the Owner or the Owner’s agents. Temporary Facilities shall be maintained at all times throughout the duration of the project. Additionally, each trade contractor shall provide any additional temporary facilities it may require for its own use unless specifically provided by other trade contractors for your use.
- B. Road Cleaning: During the entire project maintain public roads and the entirety of the existing and future access road in an acceptably clean condition. This includes the removal of dirt due to your operations daily, if required, and due to all project traffic a maximum of once a week for the duration of the project.
- C. Temporary Security Fence: Maintain existing fencing. Add additional temporary fencing to limit access to the site. Furnish a chain and padlock with twelve (12) keys to the Construction Manager. Once the building is complete items are to be removed along with additional fencing that was installed to limit access to the site. Building security fencing should extend across the west and south of the building. Temporary fence may be used or rented as long as it looks reasonably new and is erected neatly in straight lines. Fence is to be 6’ high chain link fence with posts at 6’ on center. Location of the fence is to be approved by the Construction Manager. Include 2, 30’ gates, and 2, 4’ gates. Relocate 100 lineal feet of fence during the project to accommodate changing conditions.
- D. Snowplowing: Provide snowplowing within the contract limit lines. Include clearing sufficient areas used for parking and access to within 10 feet of stored materials. Clear and salt pathways to doors to the buildings and to the Construction Manager’s field office.
- E. Temporary Roads and Access to the Work:
 - 1. Construction Entrance and Temporary Access Road: Provide and maintain the temporary stabilized Construction Entrance as the first item of site work for the project. Maintain this entrance throughout the project.
 - 2. Grade & maintain grades and site drainage around buildings so that concrete trucks, 4 wheel drive lulls, delivery trucks and cranes will be able to travel and get to the pier or scaffold where work is occurring under their own power.
- F. Surveyor: Provide the services of a licensed Surveyor to establish 2 perpendicular reference lines and vertical benchmarks for the building. Include 4 monuments to establish each line. Monuments to be 6 x 6 wood posts flush with grade and extending 4 feet below grade. Maintain these monuments or points through project completion. All contractors will layout their work from these reference lines.

3. Permits, inspections & certifications:

- A. Obtain any permits, inspections, or certifications from governing authorities having jurisdiction over the work required to be performed by this Trade Contractor.
- B. Exclude obtaining the Project Building Permit as this will be furnished by the Owner.
- C. Each Prime Contractor shall be present for building inspections as may be required and when requested by the Construction Manager.

4. Clean up:

- A. Do not use the owner's or any other prime contractor's dumpster for anything.
- B. Site Contractor to provide their own dumpsters for this contract.
- C. General Construction is to broom sweep, all areas soiled by contracts 2, 3, 4 and 5 on every Friday for the duration of the project.
- D. General Construction is to provide a continuous supply of sweeping compound, for use by Contracts 2, 3, 4 and 5, for the duration of the project, replenishing sweeping compound at 5 gallon intervals.
- E. No burning of debris will be allowed on site.
- F. Final Cleaning for the project will be performed by the General Construction. This includes thoroughly cleaning and washing the inside and outside of all windows, cleaning and dusting of all surfaces, mopping of hard floors & vacuuming of carpet. Mechanical or Electrical equipment such as lights and fixtures, are to be Final Cleaned by the respective Mechanical or Electrical Contractor.
- G. At time of acceptance, the building or any portion thereof shall be turned over to the Owner in such condition that it may be occupied without additional cleaning.

5. Include (furnish and install unless otherwise noted):

- A. [General](#) - Provide all labor, material, equipment and accessories required to furnish, deliver and install the work associated with this scope of work in accordance with the contract documents. All work is to be performed according to applicable manufacturer's warranties, good construction practice and in a warrantable fashion.
- B. [Critical Submittals](#) – Provide Critical submittals as outlined in the instructions to bidders as either an attachment to your bid, or as post bid information.
- C. [Jobsite Coordination](#) – Contractors for each of the packages must work together to coordinate work patterns to keep work flow moving at the site.
- D. [Mock-up Units](#) – As per specification.
- E. [SWPPP](#) – Installation and maintenance of all SWPPP requirements as indicated in the contract documents.
- F. [Dewatering](#): Include dewatering all excavations for the duration that the excavation must remain open.
- G. [Site Removals and Relocations](#): Perform all site removals and relocations as noted on the site plans as it relates to site work.
- H. [Limits of Utilities](#): Include storm, sanitary, gas and water systems to within 5' of the building. Connect permanent water service and sewer from the new service in the street within one week of notification of its completion.
- I. [Miscellaneous Concrete for Utility Work](#): All misc. concrete related to utility work such as thrust blocks and catch basins.
- J. [Registered Land Surveyor](#) - In addition to the requirements identified in the project documents, provide five (5) additional man-days of a Registered Land Surveyor for the Owner's use as directed by the Construction Manager. This item shall be listed in the schedule of values.
- K. [Excavation and Backfill](#): The Site Contractor (SC) will grade the building to subgrade +/- 0.2 feet. The Site Contractor (SC) will be required to excavate depressed slabs, footings and foundations, etc. as necessary to complete the foundation system installation inclusive of stabilization fabric, imported fill. This Contractor will be required to backfill its depressed slabs, foundations and footings and will final grade the building prior to concrete placement.
- L. [Temporary Bracing](#) – Provide temporary bracing of the structure as required to hold the structure straight and plumb until the work is complete.

- M. [Labor and Equipment Allowance](#) – Provide five (5) man-days of a laborer for the Owner’s use, as directed by the Construction Manager. Laborer is to be equipped with hand tools such as broom, wheelbarrow, camera, etc. Include an allowance of \$1,000 for these hand tools, camera, film & processing. These items shall be individually listed in the schedule of values.
- N. [Job Site Materials](#) – All materials shall be in-hand and ready to be installed no later the start of construction.

6. Exclude:

- A. Exterior concrete & railing work shown on Architectural drawings.

7. Scope Clarifications:

- A. See the “General Items - All Prime Contracts” and the “Scope Clarifications List” for additional work under this contract. The “[Scope Clarifications List](#)” is included in this document to give specific examples and further define which contract does what work items. The list does not exhaustively list every detail, but is intended to show specific examples of the type of work done under a particular contract.

8. Allowance:

- A. As stated in Section [012100](#) an Allowance for Changes in the Scope of Work is specified. Include the amount stated in Section [012100](#) for this Contract in your base bid. Also include any other allowances that may be specified elsewhere, for this contract, in your base bid.

9. Alternates:

- A. See Section [012300 – Alternates](#) for a general description of project alternates and see the bid form for your contract for the exact implications to your contract if any.

Contract 2 – General Construction (GC)

1. Perform all work of the following specification sections:

- A. DIVISION 2 – EXISTING CONDITIONS / All Sections
- B. DIVISION 3 – CONCRETE / All Sections
- C. DIVISION 5 – METALS / All Sections
- D. DIVISION 6 – WOOD, PLASTICS & COMPOSITES / All Sections
- E. DIVISION 7 – THERMAL & MOISTURE PROTECTION / All Sections
- F. 081113 – HOLLOW METAL DOORS AND FRAMES
- G. 083313 – COILING COUNTER DOORS
- H. 087100 – DOOR HARDWARE
- I. DIVISION 9 – FINISHES / All Sections

2. Temporary Facilities:

- A. See Spec Section 015000 – Temporary Facilities and Controls for a listing of all Temporary Facilities to be provided by this Contractor for use by other Trade Contractors the Owner or the Owner’s agents. Temporary Facilities shall be maintained at all times throughout the duration of the project. Additionally, each trade contractor shall provide any additional temporary facilities it may require for its own use unless specifically provided by other trade contractors for your use.

3. Permits, inspections & certifications:

- A. Obtain any permits, inspections, or certifications from governing authorities having jurisdiction over the work required to be performed by this Trade Contractor.
- B. Exclude obtaining the Project Building Permit as this will be furnished by the Owner.
- C. Each Prime Contractor shall be present for building inspections as may be required and when requested by the Construction Manager.

4. Clean up:

- A. Do not use the owner’s or any other prime contractor’s dumpster for anything.
- B. General Construction is to broom sweep, all areas soiled by contracts 2, 3, 4 and 5 on every Friday for the duration of the project.
- C. General Construction is to provide a continuous supply of sweeping compound, for use by Contracts 2, 3, 4 and 5, for the duration of the project, replenishing sweeping compound at 5 gallon intervals.
- D. No burning of debris will be allowed on site.
- E. Final Cleaning for the project will be performed by the General Construction. This includes thoroughly cleaning and washing the inside and outside of all windows, cleaning and dusting of all surfaces, mopping of hard floors & vacuuming of carpet. Mechanical or Electrical equipment such as lights and fixtures, are to be Final Cleaned by the respective Mechanical or Electrical Contractor.
- F. At time of acceptance, the building or any portion thereof shall be turned over to the Owner in such condition that it may be occupied without additional cleaning.

5. Include (furnish and install unless otherwise noted):

- A. [General](#) - Provide all labor, material, equipment and accessories required to furnish, deliver and install the work associated with this scope of work in accordance with the contract documents. All work is to be performed according to applicable manufacturer's warranties, good construction practice and in a warrantable fashion.
- B. [Critical Submittals](#) – Provide Critical submittals as outlined in the instructions to bidders as either an attachment to your bid, or as post bid information.
- C. [Jobsite Coordination](#) – Contractors for each of the packages must work together to coordinate work patterns to keep work flow moving at the site.
- D. [Mock-up Units](#) – As per specification.
- E. [Asbestos Abatement](#) – Provide all abatement required per the contract documents.
- F. [Temporary weather tight enclosures](#) - This Prime Contractor shall be prepared to install and maintain temporary weather tight enclosures at all window and door openings as may be required and directed by the Construction Manager for your work.
- G. [Demolition](#) – Remove finishes and existing openings per the contract documents for this contract. Coordinate with abatement & MEP removals.
- H. [Masonry Work](#) – Provide all Masonry repair, replacement and/or repointing per the Architectural drawings. Coordinate locations with Construction Manager and Architect.
- I. [Labor and Equipment Allowance](#) – Provide ten (10) man-days of a laborer for the Owner's use, as directed by the Construction Manager. Laborer is to be equipped with hand tools such as broom, wheelbarrow, camera, etc. Include an allowance of \$1,000 for these hand tools, camera, film & processing. These items shall be individually listed in the schedule of values.
- J. [Job Site Materials](#) – All materials shall be in-hand and ready to be installed no later the start of construction.
- K. [Exterior Concrete](#) – Provide exterior concrete work as shown on the Architectural drawings.
- L. [Exterior Metal Railings](#) – Provide exterior metal railing as shown on the Architectural drawings.
- M. [Door Hardware](#) – Provide door hardware for doors furnished under this contract.

6. Exclude:

- A. Site Concrete provided by Contract 1 (SC)
- B. Aluminum Entrances, FRP Doors & associated hardware by Contract 3 (WC).
- C. Glazing, Security Glazing & Security Glazing film by Contract 3 (WC).

7. Scope Clarifications:

- A. See the “General Items - All Prime Contracts” and the “Scope Clarifications List” for additional work under this contract. The “[Scope Clarifications List](#)” is included in this document to give specific examples and further define which contract does what work items. The list does not exhaustively list every detail, but is intended to show specific examples of the type of work done under a particular contract.

8. Allowance:

- A. As stated in Section [012100](#) an Allowance for Changes in the Scope of Work is specified. Include the amount stated in Section [012100](#) for this Contract in your base bid. Also include any other allowances that may be specified elsewhere, for this contract, in your base bid.

9. Alternates:

- A. See Section [012300 – Alternates](#) for a general description of project alternates and see the bid form for your contract for the exact implications to your contract if any.

Contract 3 – Window Construction (WC)

1. Perform all work of the following specification sections:

- A. 079200 – JOINT SEALANTS
- B. 081743 – FRP/ALUMINUM HYBRID DOORS
- C. 084113 – ALUMINUM-FRAMED ENTRANCES & STOREFRONTS
- D. 084114 – ALUMINUM-FRAMED ENTRANCES
- E. 084115 – ALUMINUM-FRAMED ENTRANCES & STOREFRONTS NON-THERMAL
- F. 087100 – DOOR HARDWARE
- G. 088000 – GLAZING
- H. 088700 – SECURITY GLAZING FILMS
- I. 088853 – SECURITY GLAZING
- J. DIVISION 13 – SPECIAL CONSTRUCTION / All Sections

2. Temporary Facilities:

- A. See Spec Section 015000 – Temporary Facilities and Controls for a listing of all Temporary Facilities to be provided by this Contractor for use by other Trade Contractors the Owner or the Owner’s agents. Temporary Facilities shall be maintained at all times throughout the duration of the project. Additionally, each trade contractor shall provide any additional temporary facilities it may require for its own use unless specifically provided by other trade contractors for your use.

3. Permits, inspections & certifications:

- A. Obtain any permits, inspections, or certifications from governing authorities having jurisdiction over the work required to be performed by this Trade Contractor.
- B. Exclude obtaining the Project Building Permit as this will be furnished by the Owner.
- C. Each Prime Contractor shall be present for building inspections as may be required and when requested by the Construction Manager.

4. Clean up:

- A. This Prime Contractor is to stockpile its debris and load it into the General Construction’s dumpster on a daily basis. The General Construction will provide dumpsters for the use of Contracts 2, 3, 4 and 5. The General Construction will provide a minimum of two (2) 30 cubic yard boxes for the period that construction is scheduled and will pay all costs for the proper disposal of the debris.
- B. Do not use the owner’s or any other prime contractor’s dumpster for anything.
- C. General Construction is to broom sweep, all areas soiled by contracts 2, 3, 4 and 5 on every Friday for the duration of the project.
- D. General Construction is to provide a continuous supply of sweeping compound, for use by Contracts 2, 3, 4 and 5, for the duration of the project, replenishing sweeping compound at 5 gallon intervals.
- E. No burning of debris will be allowed on site.
- F. Final Cleaning for the project will be performed by the General Construction. This includes thoroughly cleaning and washing the inside and outside of all windows, cleaning and dusting of all surfaces, mopping of hard floors & vacuuming of carpet. Mechanical or Electrical equipment such as lights and fixtures, are to be Final Cleaned by the respective Mechanical or Electrical Contractor.
- G. At time of acceptance, the building or any portion thereof shall be turned over to the Owner in such condition that it may be occupied without additional cleaning.

5. Include (furnish and install unless otherwise noted):

- A. [General](#) - Provide all labor, material, equipment and accessories required to furnish, deliver and install the work associated with this scope of work in accordance with the contract documents. All work is to be performed according to applicable manufacturer's warranties, good construction practice and in a warrantable fashion.
- B. [Critical Submittals](#) – Provide Critical submittals as outlined in the instructions to bidders as either an attachment to your bid, or as post bid information.
- C. [Jobsite Coordination](#) – Contractors for each of the packages must work together to coordinate work patterns to keep work flow moving at the site.
- D. [Mock-up Units](#) – As per specification.
- E. [Temporary weather tight enclosures](#) - This Prime Contractor shall be prepared to install and maintain temporary weather tight enclosures at all window and door openings as may be required and directed by the Construction Manager for your work.
- F. [Labor and Equipment Allowance](#) – Provide five (5) man-days of a laborer for the Owner's use, as directed by the Construction Manager. Laborer is to be equipped with hand tools such as broom, wheelbarrow, camera, etc. Include an allowance of \$1,000 for these hand tools, camera, film & processing. These items shall be individually listed in the schedule of values.
- G. [Job Site Materials](#) – All materials shall be in-hand and ready to be installed no later the start of construction.
- H. [Door Hardware](#) – Provide door hardware for doors furnished under this contract.
- I. [Demolition](#) – Remove existing doors per the contract documents for this contract. Coordinate with abatement & MEP removals.
- J. [Glazing & Security Glazing](#) – Furnish and Install on doors & frames provided by others.
- K. [Security Glazing Film](#) – Furnish and Install per the contract documents.

6. Exclude:

7. Scope Clarifications:

- A. See the “General Items - All Prime Contracts” and the “Scope Clarifications List” for additional work under this contract. The “[Scope Clarifications List](#)” is included in this document to give specific examples and further define which contract does what work items. The list does not exhaustively list every detail, but is intended to show specific examples of the type of work done under a particular contract.

8. Allowance:

- A. As stated in Section [012100](#) an Allowance for Changes in the Scope of Work is specified. Include the amount stated in Section [012100](#) for this Contract in your base bid. Also include any other allowances that may be specified elsewhere, for this contract, in your base bid.

9. Alternates:

- A. See Section [012300 – Alternates](#) for a general description of project alternates and see the bid form for your contract for the exact implications to your contract if any.

Contract 4 – Mechanical Construction (MC)

1. Perform all work of the following specification sections:

- A. 078413 – PENETRATION FIRE STOPPING
- B. DIVISION 23 – HEATING, VENTILATING, AND AIR CONDITONING (HVAC) / All Sections

2. Temporary Facilities:

- A. See Spec Section 015000 – Temporary Facilities and Controls for a listing of all Temporary Facilities to be provided by this Contractor for use by other Trade Contractors the Owner or the Owner’s agents. Temporary Facilities shall be maintained at all times throughout the duration of the project. Additionally, each trade contractor shall provide any additional temporary facilities it may require for its own use unless specifically provided by other trade contractors for your use.

3. Permits, inspections & certifications:

- A. Obtain any permits, inspections, or certifications from governing authorities having jurisdiction over the work required to be performed by this Trade Contractor.
- B. Exclude obtaining the Project Building Permit as this will be furnished by the Owner.
- C. Each Prime Contractor shall be present for building inspections as may be required and when requested by the Construction Manager.

4. Clean up:

- A. This Prime Contractor is to stockpile its debris and load it into the General Construction’s dumpster on a daily basis. The General Construction will provide dumpsters for the use of Contracts 2, 3, 4 and 5. The General Construction will provide a minimum of two (2) 30 cubic yard boxes for the period that construction is scheduled and will pay all costs for the proper disposal of the debris.
- B. Do not use the owner’s or any other prime contractor’s dumpster for anything.
- C. General Construction is to broom sweep, all areas soiled by contracts 2, 3, 4 and 5 on every Friday for the duration of the project.
- D. General Construction is to provide a continuous supply of sweeping compound, for use by Contracts 2, 3, 4 and 5, for the duration of the project, replenishing sweeping compound at 5 gallon intervals.
- E. No burning of debris will be allowed on site.
- F. Final Cleaning for the project will be performed by the General Construction. This includes thoroughly cleaning and washing the inside and outside of all windows, cleaning and dusting of all surfaces, mopping of hard floors & vacuuming of carpet. Plumbing, Mechanical or Electrical equipment such as lights and fixtures, are to be Final Cleaned by the respective Plumbing, Mechanical or Electrical Contractor.
- G. At time of acceptance, the building or any portion thereof shall be turned over to the Owner in such condition that it may be occupied without additional cleaning.

5. Include (furnish and install unless otherwise noted):

- A. [General](#) - Provide all labor, material, equipment and accessories required to furnish, deliver and install the work associated with this scope of work in accordance with the contract documents. All work is to be performed according to applicable manufacturer's warranties, good construction practice and in a warrantable fashion.
- B. [Critical Submittals](#) – Provide Critical submittals as outlined in the instructions to bidders as either an attachment to your bid, or as post bid information.
- C. [Jobsite Coordination](#) – Contractors for each of the packages must work together to coordinate work patterns to keep work flow moving at the site.
- D. Set your own embedded items including sleeves in concrete or masonry work.
- E. [Piping Removal](#): Demolish / Remove plumbing and/or hydronic piping per the contract documents.
- F. Fire safe your penetrations through all rated construction.
- G. Furnish and install drilled anchors and drilled anchor bolts as required to install your work.
- H. Job-Site Materials – All materials shall be in-hand and ready to be installed no later the start of construction.

6. Exclude:

- A. Exclude asbestos abatement removals as this work have been assigned to Contract 2 (GC).
- B. Exclude final electrical connection to mechanical equipment. This has been assigned to Contract 5 (EC).

7. Scope Clarifications:

- A. See the “General Items - All Prime Contracts” and the “Scope Clarifications List” for additional work under this contract. The “[Scope Clarifications List](#)” is included in this document to give specific examples and further define which contract does what work items. The list does not exhaustively list every detail, but is intended to show specific examples of the type of work done under a particular contract.

8. Allowance:

- A. As stated in Section [012100](#) an Allowance for Changes in the Scope of Work is specified. Include the amount stated in Section [012100](#) for this Contract in your base bid. Also include any other allowances that may be specified elsewhere, for this contract, in your base bid.

9. Alternates:

- A. See Section [012300 – Alternates](#) for a general description of project alternates and see the bid form for your contract for the exact implications to your contract if any.

Contract 5 – Electrical Construction (EC)

1. Perform all work of the following specification sections:

- A. 078413 – PENETRATION FIRE STOPPING
- B. DIVISION 26 – ELECTRICAL / All Sections
- C. DIVISION 27 – COMMUNICATION / All Sections
- D. DIVISION 28 – ELECTRONIC SAFETY AND SECURITY / All Sections

2. Temporary Facilities to be provided by this Contractor for use by other Trade Contractors:

- A. See Spec Section 01 50 00.1 Titled “Temporary Conditions Applicable to All Scopes” for a listing of all Temporary Facilities to be provided by this Contractor for use by other Trade Contractors the owner or the owner’s agents. Temporary Facilities shall be maintained at all times throughout the duration of the project. Additionally, each trade contractor shall provide any additional temporary facilities it may require for its own use unless specifically provided by other trade contractors for your use.
- B. Temporary Electric Power and Light: Provide and maintain Temporary Electric Power and Light as specified below. Temporary services are to be in compliance with UL and OSHA regulations and all other applicable codes.
 - 1. Temporary Lighting: Energize temporary lighting to provide a level of lighting that meets all codes and OSHA regulations. In no case are lighting levels to be less than 10 lumens at the floor. Provide the Construction Manager a lighting level meter. Temporary lighting is only required in work areas and egress areas.

3. Permits, inspections & certifications:

- A. Obtain any permits, inspections, or certifications from governing authorities having jurisdiction over the work required to be performed by this Trade Contractor.
- B. Exclude obtaining the Project Building Permit as this will be furnished by the Owner.
- C. Each Prime Contractor shall be present for building inspections as may be required and when requested by the Construction Manager.

4. Clean up:

- A. This Prime Contractor is to stockpile its debris and load it into the General Construction’s dumpster on a daily basis. The General Construction will provide dumpsters for the use of Contracts 2, 3, 4 and 5. The General Construction will provide a minimum of two (2) 30 cubic yard boxes for the period that construction is scheduled and will pay all costs for the proper disposal of the debris.
- B. Do not use the owner’s or any other prime contractor’s dumpster for anything.
- C. General Construction is to broom sweep, all areas soiled by contracts 2, 3, 4 and 5 on every Friday for the duration of the project.
- D. General Construction is to provide a continuous supply of sweeping compound, for use by Contracts 2, 3, 4 and 5, for the duration of the project, replenishing sweeping compound at 5 gallon intervals.
- E. No burning of debris will be allowed on site.
- F. Final Cleaning for the project will be performed by the General Construction. This includes thoroughly cleaning and washing the inside and outside of all windows, cleaning and dusting of all surfaces, mopping of hard floors & vacuuming of carpet. Plumbing, Mechanical or Electrical equipment such as lights and fixtures, are to be Final Cleaned by the respective Plumbing, Mechanical or Electrical Contractor.

- G. At time of acceptance, the building or any portion thereof shall be turned over to the Owner in such condition that it may be occupied without additional cleaning. Include (furnish and install unless otherwise noted):

5. Include:

- A. [General](#) - Provide all labor, material, equipment and accessories required to furnish, deliver and install the work associated with this scope of work in accordance with the contract documents. All work is to be performed according to applicable manufacturer’s warranties, good construction practice and in a warrantable fashion.
- B. [Critical Submittals](#) – Provide Critical submittals as outlined in the instructions to bidders as either an attachment to your bid, or as post bid information.
- C. [Jobsite Coordination](#) – Contractors for each of the packages must work together to coordinate work patterns to keep work flow moving at the site.
- D. [Hangers, Sleeves and Supports](#) - Furnish and install all hangers, sleeves and supports required for the completion of your work.
- E. [Fixtures & Devices](#) – Coordinate the installation and/or relocation of fixtures and devices with other trades.
- F. Set your own embedded items including sleeves in concrete or masonry work.
- G. Fire safe your penetrations through all rated construction.
- H. Furnish and install drilled anchors and drilled anchor bolts as required to install your work.
- I. Job-Site Materials – All materials shall be in-hand and ready to be installed no later the start of construction.
- J. [Labor and Equipment Allowance](#) – Provide two (2) man-days of a laborer for the Owner’s use, as directed by the Construction Manager. Laborer is to be equipped with hand tools such as broom, wheelbarrow, camera, etc. Include an allowance of \$1,000 for these hand tools, camera, film & processing. These items shall be individually listed in the schedule of values.

6. Exclude:

- A. Exclude asbestos abatement removals as this work have been assigned to Contract 2 (GC).

7. Scope Clarifications:

- A. See the “General Items - All Prime Contracts” and the “Scope Clarifications List” for additional work under this contract. The “[Scope Clarifications List](#)” is included in this document to give specific examples and further define which contract does what work items. The list does not exhaustively list every detail, but is intended to show specific examples of the type of work done under a particular contract.

8. Allowance:

- A. As stated in Section [012100](#) an Allowance for Changes in the Scope of Work is specified. Include the amount stated in Section [012100](#) for this Contract in your base bid. Also include any other allowances that may be specified elsewhere, for this contract, in your base bid.

9. Allowance:

- A. See Section [012300 – Alternates](#) for a general description of project alternates and see the bid form for your contract for the exact implications to your contract if any.

**SECTION 012100
ALLOWANCES**

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
 - 1. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to the Contractor. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
 - 1. Contingency allowances.

1.02 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

1.03 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

1.04 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.

1.05 COORDINATION

- A. Coordinate allowance items with other portions of the Work.

1.06 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed by Architect/Construction Manager for Owner's purposes.
- B. Contractor's overhead and profit for work ordered by Owner under the contingency allowance is included in the Contract Sum and is not part of the Allowance.
- C. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.07 ALLOWANCE DISBURSEMENT "REQUEST FOR PROPOSALS"

- A. Submit proposals for changes in the scope in the form of the "Request for Proposal" as described in Division 01, Section "CONTRACT MODIFICATION PROCEDURES".
- B. Once all parties have agreed to the terms and methods of the change, a Change Order will be issued.

1.08 UNUSED MATERIALS

- A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
 - 1. If requested by Architect, prepare unused material for storage by Owner when it is not economically practical to return the material for credit. If directed by Architect, deliver
-

unused material to Owner's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.02 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.

3.03 SITE CONSTRUCTION SCHEDULE OF ALLOWANCES

- A. SC-1: Contingency Allowance: Include in the Base Bid an Allowance of **5% of the Base Bid** for use according to the Owners instructions. Unused allowance will be credited back to the Owner at the completion of the project.
 - 1. Contractor overhead and profit is provided in Base Bid.

3.04 GENERAL CONSTRUCTION SCHEDULE OF ALLOWANCES

- A. GC-1: Contingency Allowance: Include in the Base Bid an Allowance of **5% of the Base Bid** for use according to the Owners instructions.
 - 1. Contractor overhead and profit is provided in the Base Bid.

3.05 MECHANICAL CONSTRUCTION SCHEDULE OF ALLOWANCES

- A. MC-1: Contingency Allowance: Include in the Base Bid an Allowance of **5% of the Base Bid** for use according to the Owners instructions. Unused allowance will be credited back to the Owner at the completion of the project.
 - 1. Contractor overhead and profit is provided in the Base Bid.

3.06 ELECTRICAL CONSTRUCTION SCHEDULE OF ALLOWANCES

- A. EC-1: Contingency Allowance: Include in the Base Bid an Allowance of **5% of the Base Bid** for use according to the Owners instructions.
 - 1. Contractor overhead and profit is provided in the Base Bid.

3.07 WINDOW CONSTRUCTION SCHEDULE OF ALLOWANCES

- A. WC-1: Contingency Allowance: Include in the Base Bid an Allowance of **5% of the Base Bid** for use according to the Owners instructions. Unused allowance will be credited back to the Owner at the completion of the project.
 - 1. Contractor overhead and profit is provided in the Base Bid.

END OF SECTION

**SECTION 012300
ALTERNATES**

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

1.02 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.

1.03 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
1. Include as part of each alternate miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. List of Alternates: Alternates, if any, are included on the Form of Proposal.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

3.01 SCHEDULE OF ALTERNATES

- A. SITE CONSTRUCTION
1. Alternate No. SC -1: Site Work.
 - a. Alternate: Provide all site construction work relative to providing new vestibule at Phoenicia Elementary School as indicated in the drawings.
- B. GENERAL CONSTRUCTION
1. Alternate No. GC -1: Phoenicia Elementary School Vestible.
 - a. Base Bid: Provide all general construction work as indicated in the drawings and as specified in Division 01 11200 Section 1.09.
 - b. Alternate: Provide all general construction work relative to providing new vestibule at Phoenicia Elementary School as indicated in the drawings.
- C. MECHANICAL CONSTRUCTION
1. Alternate No. MC -1: Phoenicia Elementary School Vestible.
 - a. Base Bid: Provide all mechanical construction work as indicated in the drawings and as specified in Division 01 11200 Section 1.10.
 - b. Alternate: Provide all mechanical construction work relative to constructing the new vestibule at Phoenicia Elementary School as indicated on Sheet PES H200.
- D. ELECTRICAL CONSTRUCTION
1. Alternate No. EC -1: Phoenicia Elementary School Vestible.
-

- a. Base Bid: Provide all electrical construction work as indicated in the drawings and as specified in Division 01 11200 Section 1.11.
- b. Alternate: Provide all electrical construction work relative to constructing the new vestibule at Phoenicia Elementary School as indicated on Sheet PES E101.
- c.

E. WINDOW CONSTRUCTION

- 1. Alternate No. WC -1: Phoenicia Elementary School Vestibule.
 - a. Base Bid: Provide all Window construction work as indicated in the drawings and as specified in Division 01 11200 Section 1.12.
 - b. Alternate: Provide all Window construction work relative to providing new vestibule at Phoenicia Elementary School as indicated in the drawings.

END OF SECTION

**SECTION 012500
SUBSTITUTION PROCEDURES**

PART 1 GENERAL

1.01 GENERAL

- A. Should the Contractor desire to substitute other articles, materials, apparatus, products or processes than those specified or approved as equal, the Contractor shall apply to the Architect in writing for approval of such substitution. It should be noted that the bid shall not be based on a substituted article, material, apparatus, product or process. With the application shall be furnished such information as required by the Architect to demonstrate that the article, material, apparatus, product or process he wishes to use is the equivalent of that specified in quality, finish, design, efficiency and durability and has been elsewhere demonstrated to be equally serviceable for the purpose for which it is intended. The Contractor shall set forth the reasons for desiring to make the substitution and shall further state what difference, if any, will be made in the construction schedule and the contract price for such substitution should it be accepted; it being the intent hereunder that any savings shall accrue to the benefit of the Owner.
- B. The Architect shall reject any such desired substitution as not being specifically named in the contract, or if he shall determine that the adjustment in price in favor of the Owner is insufficient, the Contractor shall immediately proceed to furnish the designated article, material, apparatus, product or process.
- C. Request for substitutes shall conform to the requirements of this Article.
- D. Requests for substitutions shall, include full information concerning differences in cost, and any savings in cost resulting from such substitutions shall be passed on to the Owner.
- E. Requests for utilization of substitutes will be reviewed during the course of the project. The impact on the project and the timeliness of submission will be of key consideration.
- F. The approval of utilization of a substitute is subject to the sole and final discretion of the Architect.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.

1.03 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.
- B. Substitute Items (Or Equal): If in Architect/Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item it will be considered a proposed substitute item.

1.04 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use **form provided in Project Manual**.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication, or installation cannot be provided, if applicable.
-

- b. Coordination information, including a list of changes or 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.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project.
 - j. 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.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. 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.
 - m. 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.
 - n. See additional requirements in Article 2.3 DETAILED SUBSTITUTION PROCEDURES
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within **five** days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within **10** days of receipt of request, or **five** days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.05 QUALITY ASSURANCE

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

PART 2 PRODUCTS

2.01 SUBSTITUTION PROCEDURES (GENERAL)

- A. Conditions: After the "Notice of Award" and prior to the Contractor entering into a Formal Contract with the Owner, the 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:

1. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 2. Substitution results in substantial cost savings to the Owner or substantial performance improvements.
 3. Substitution request is fully documented and properly submitted.
 4. Requested substitution will not adversely affect Contractor's construction schedule.
 5. Requested substitution has received necessary approvals of authorities having jurisdiction.
 6. Requested substitution is compatible with other portions of the Work.
 7. Requested substitution has been coordinated with other portions of the Work.
 8. Requested substitution provides specified warranty.
 9. 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.
 10. The substitution is submitted in compliance with Article 2.3 DETAILED SUBSTITUTION PROCEDURES
- B. If the Contractor does not present "Substitutions" in the time frame noted above any future requests to substitute products will not be considered, unless the substitution is for cause.
- C. Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions.

2.02 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than **20** days prior to time required for preparation and review of related submittals.
1. Architect will consider Contractor's request for substitution when the following conditions are present.
 - a. The specified product is not available
 - b. The specified product cannot be delivered in the time frame required under the Project Schedule.
 2. 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. Requested substitution provides sustainable design characteristics that specified product provided.
 - c. Substitution request is fully documented and properly submitted.
 - d. Requested substitution will not adversely affect Contractor's construction schedule.
 - e. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - 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.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received **within 10 days after the Notice of Award** and based on the following
1. The proposed product substitution will result in a significant cost savings to the Owner.
 2. The proposed product has substantial performance improvements.
 3. The proposed product can be provided much earlier in the schedule enhancing the project completion date.
-

4. The proposed product warranty is superior to the specified item.

2.03 DETAILED SUBSTITUTION REVIEW PROCEDURES

- A. The Architect in addition to the requirements listed above will require compliance with the following requirements and procedures.
 1. Requests for approval of substitutions will be received and considered from Prime Contractors only and not from manufacturers, suppliers, Subcontractors, or other third parties.
 2. If the materials and equipment submitted are offered as substitutions to the Contract Documents or approved equal, the Contractor shall advise the Owner and the Architect of the requested substitutions and comply with the requirements hereinafter specified in this Article.
 3. Where the acceptability of substitution is conditioned upon a record of and the proposed substitution does not fulfill this requirement, the Architect, at the Architect's sole discretion, may accept the substitution if the Contractor provides a bond or cash deposit which guarantees replacement at no cost to the Owner for any failure occurring within a specified time. The substitution item must meet all other technical requirements contained in the Specification.
 4. The Contractor shall furnish such information as required by the Architect to demonstrate that the equal article, material, apparatus, product or process is the equivalent of that specified in quality, finish, design, efficiency and durability and has been elsewhere demonstrated to be equally serviceable for the purpose for which it is intended and/or that it offers substantial benefits to the Owner in saving of time and/or cost. The Contractor shall set forth the reasons for desiring to make this substitution.
 5. Contractor shall submit:
 - a. For each proposed request for approved substitute sufficient details, complete descriptive literature and performance data together with samples of the materials, where feasible, to enable the Architect to determine if the proposed request for approval should be granted, including manufacturer's brand or trade names, model numbers, description of specification of item, performance data, test reports, samples, history of service, and other data as applicable.
 - b. Certified tests, where applicable, by an independent laboratory attesting to the performance of the substitute.
 - c. A list of installations where the proposed substitute equipment or materials is performing under similar conditions as specified.
 - d. A list of installations where the proposed substitute equipment or materials is performing under similar conditions as specified.
 6. Where the approval of a substitute requires revision or redesign of any part of Work, including that of other Contracts, all such revision and redesign, and all new drawings and details required therefore, shall be provided by the Contractor at its own cost and expense, and shall be subject to the approval of the Architect.
 7. In the event that the Architect is required to provide additional services, then the Architect's charges for such additional services shall be paid by the Contractor to the Owner.
 8. Any modifications in the Work required under other contracts to accommodate the changed design will be incorporated in the appropriate contracts and any resulting increases in contract prices will be charged to the Contractor by the Owner who initiated the changed design.
 9. In all cases, the Architect shall be the judge as to whether a proposed substitute is to be approved. The Contractor shall be bound by the Architect's decision. No substitute items shall be used in the Work without written approval of the Architect.
 10. In making request for approval of substitute, Contractor represents that:
 - a. Contractor has investigated proposed substitute and determined that it is equal to or superior in all respects to the product, manufacturer or method specified or offers other specified advantages to the Owner.

- b. Contractor will provide the same or better warranties or bonds for proposed substitute as for product, manufacturer or method specified.
 - c. Contractor waives all claims for additional costs or extension of time related to proposed substitute that subsequently may become apparent.
 - d. Contractor shall have and make no claim for an extension of time or for damages by reason of the time taken by the Architect in considering a substitute proposed by the Contractor or by reason of failure of the Architect to approve a substitute proposed by the Contractor. Any delays arising out of consideration, approval, or utilization of a substitute shall be the sole responsibility of the Contractor requesting the substitute and it shall arrange its operations to make up the time lost.
11. Proposed substitute will not be accepted if:
- a. Acceptance will require substantial revision of Contract Documents.
 - b. Acceptance will substantially change design concepts or Technical Specifications.
 - c. Acceptance will delay completion of the Work, or the Work of other Contractors.
 - d. If the Substitute item is not accompanied by formal request for approval of substitute from Contractor.
12. The Architect reserves the right to disapprove, for aesthetic reasons, any material or equipment on the basis of design or color considerations alone, without prejudice to the quality of the material or equipment, if the manufacturer cannot meet the required colors or design.
13. All requests for approval of substitutes of materials or other changes from the contract requirements shall be accompanied by an itemized list of all other items affected by such substitution or change. The Architect shall have the right, if such is not done, to rescind any approvals for substitutions and to order such Work removed and replaced with Work conforming to the specified requirements of the contract, all at the Contractor's expense, or to assess all additional costs resulting from the substitution to the Contractor.
14. Approval of a substitute will not relieve Contractor from the requirement to submit Shop Drawings or any of the provisions of the Contract Documents.
15. In the event that the Architect is required to provide additional services as a result of a request for approval of a substitute results in changes by the Contractor in dimension, weight, power requirements, etc., of the equipment and accessories furnished, or as a result of Contractor's errors, omissions or failure to conform to the requirements of the Contract Documents or if the Architect is required to examine and evaluate any changes proposed by the Contractor solely for the convenience of the Contractor, or for evaluation of deviations from Contract Documents, then the Architect's charges in connection with such additional services shall be paid by the Contractor.
16. Structural design shown on the Drawings is based upon the configuration of and maximum loading for major items of equipment as indicated on the Drawings and as specified. If the substituted equipment furnished differs from said features, the Contractor shall pay to the Owner all costs of redesign and for any construction changes required to accommodate the equipment furnished, including the Architect's charges in connection therewith.
- B. The Contractor shall respond to required submittals with complete information and with a degree of accuracy to achieve approvals within two (2) submissions. All costs to the Architect involved with subsequent submissions of Shop Drawings, Samples or other items requiring approval, will be paid by the Contractor to the Owner, by deducting such costs from payments due for Work completed. In the event an approved item is requested by the Contractor to be changed or substituted for, all costs involved in the reviewing and approval process will likewise be back charged to the Contractor unless determined by the Architect that the need for such substitution and/or deviation from Contract Documents is beyond the control of the Contractor.

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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**SECTION 012519
EQUIVALENTS**

PART 1 GENERAL

1.01 SUMMARY:

- A. Requirements set forth herein pertain to products specified in divisions included in project manual.

1.02 DEFINITIONS:

- A. For the purpose of this contract, the words "similar", "equal to", "or equal", "equivalent" and such other words of similar content and meaning, shall be deemed to mean similar and equal to one of named products.
- B. For the purpose of bidding documents, the word "products" shall be deemed to include the words "articles", "materials", "items", "equipment" and "methods". Whenever in contract documents one or more products are specified, words "similar, equivalent, and equal to" shall be deemed inserted.

1.03 EQUIVALENTS:

- A. Where, in these specifications or on drawings, certain kinds, types, brands, or manufacturers of materials are named, they shall be regarded as required standard of quality. Where two or more are named these are presumed to be equal, and Contractor may select one of those items.
- B. If Contractor desires to use any kind, type, brand, or manufacturer of material other than those named in specification, he may submit the request for approval to the Architect well in advance of the bid date.
- C. Requests for approval of proposed equivalents will be received by Architect only from the Contractor.
- D. If the Architect approves a proposed equivalent prior to receipt of Bids, such approval will be set forth in an Addendum.
- E. After the bid opening the apparent low bidder or bidders will be notified by the Architect or Owner and shall submit to the Architect in writing, within ten (10) calendar days what equivalent kind, type, brand, or manufacture is included in bid in lieu of specified items. No equivalents will be considered after this submission.
- F. Contractor shall have burden of proving, at Contractor's own cost and expense, to satisfaction of Owner/Architect, that proposed product is similar and equal to named product. In making such determination Owner/Architect will be sole judge of objective and appearance criteria that proposed product must meet in order for it to be approved.
 - 1. Supporting data on equivalency is responsibility of bidder. For each equivalent to base specification, included in products list, submit information describing in specific detail -
 - a. Wherein it differs from quality and performance required by base specification.
 - b. Changes required in other elements of work because of equivalent.
 - c. Effect on construction schedule.
 - d. Any required license fees or royalties.
 - e. Availability of maintenance service, and source of replacement materials.
 - f. Such other information as may be required by Owner.
- G. Owner, through Architect, shall be judge of acceptability of proposed equivalents. Risk of whether bid equivalents will be accepted is borne by Contractor.

1.04 CONTRACTOR'S REPRESENTATION:

- A. Submission of an equivalent product and/or material constitutes a representation that Contractor:
 - 1. Has investigated proposed product and determined it is equal to or superior in all respects to that specified.
-

2. Will provide same warranties or bonds for equivalent as for product specified.
3. Will coordinate installation of an accepted equivalent into work and make such other changes as may be required to make work complete in all respects.
4. Waives all claims for additional costs, under his responsibility, which may subsequently become apparent.
5. Will provide, at own cost and expense, any different quantity and/or arrangement of ductwork, piping, wiring, conduit or any part of work from that specified, detailed or indicated in Contract Documents if required for proper installation of an approved equivalent.
6. Will provide, at own cost and expense, all such revision and redesign and all new drawings and details required by Architect for approval if proposed equivalent product requires a revision or redesign of any part of work covered by this contract.
7. Provide complete documentation on both the product specified and the proposed substitute, including the following information as appropriate:
 - a. Point-by-point comparison of specified and proposed substitute product data, fabrication drawings, and installation procedures.
 - b. Copies of current, independent third-party test data of salient product or system characteristics.
 - c. Samples where applicable or when requested by Architect.
 - d. Detailed comparison of significant qualities of the proposed substitute with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - e. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - f. Research reports, where applicable, evidencing compliance with building code in effect for Project .
 - g. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, which will become necessary to accommodate the proposed substitute.
8. Provide certification by manufacturer that the substitute proposed is equal to or superior to that required by the Procurement and Contracting Documents, and that its in-place performance will be equal to or superior to the product or equipment specified in the application indicated.
9. Bidder, in submitting the Procurement Substitution Request, waives the right to additional payment or an extension of Contract Time because of the failure of the substitute to perform as represented in the Procurement Substitution Request.

1.05 EQUIVALENT CERTIFICATION:

- A. Contractor must sign the "Equivalent Certification" following this specification section and deliver it to the Architect along with a complete list of proposed equivalents within ten (10) calendar days after notification from the Architect or Owner. This is mandatory and must be done prior to award of contracts.

EQUIVALENT CERTIFICATION

Project Name:
Project Address:
Project No.:

REVIEWED MATERIAL:

AIA A701-2018 Instructions to Bidders
AIA A201-2017 or A232(CMa) General Conditions of the Contract
Specification Section: 012519 - Equivalents
Specification Section: 012500 - Substitution Procedures
Specification Section: 016000 - Product Requirements

CHECK THE FOLLOWING THAT APPLIES:

<input type="checkbox"/> No equivalents are proposed.
<input type="checkbox"/> Proposed equivalents are attached with supporting data as per Section 012519.

ALL EQUIVALENTS ARE HEREBY PRESENTED TO ARCHITECT AND OWNER FOR APPROVAL. NO FUTURE EQUIVALENTS WILL BE CONSIDERED.

Contractor Signature:
Printed Name of Contractor:
Date:

Signature of Reviewer:
Printed Name of Reviewer:
Approved as Noted Date:

END OF SECTION

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SECTION 012600
CONTRACT MODIFICATION PROCEDURES**PART 1 GENERAL****1.01 SUMMARY**

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.02 NO COST CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on the Information Bulletin bound in the Project Forms Section of Project Manual.

1.03 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request, or **10** days when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include costs of labor and supervision directly attributable to the change.
 - 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times.
 - 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.

1.04 ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, base each Change Order proposal on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
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2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
 3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
 4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the Purchase Order amount or Contractor's handling, labor, installation, overhead, and profit. Submit claims within 5 days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. Owner will reject claims submitted later than 5 days after such authorization.
1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
 2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

1.05 ADMINISTRATIVE CHANGE ORDERS

- A. Adjustment from Allowances: Refer to Division 01 Section "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.
- B. Adjustments from Unit Prices: Refer to Division 01 Section "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit price work.

1.06 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701-Change Order.

1.07 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on the Information Bulletin bound in the Project Forms Section of Project Manual.
1. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - a. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
 2. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 - a. 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 APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

**SECTION 012900
PAYMENT PROCEDURES**

PART 1 GENERAL

1.01 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.02 SCHEDULE OF VALUES

- A. Schedule of Values: 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. Coordination: Correlate line items in the schedule of values with other required administrative forms and schedules, including the following:
1. Application for Payment forms with continuation sheets. (AIA G702 and G703)
 2. Submittal schedule.
 3. Submit the schedule of values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- C. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the schedule of values.
1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 2. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Change Orders (numbers) that affect value.
 - d. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.
 3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports.
 4. **Each school building shall be separately itemized and detailed.**
 5. The following line items must be included on the continuation sheet.
 - a. Project Bonds and Insurances
 - b. Mobilization
 - c. Shop Drawings
 - d. Project Meetings
 - e. Temporary Heat (where applicable)
 - f. Progress Cleaning
 - g. Lawn and Tree Watering (where applicable to establish new lawns and trees)
 - h. Punch List
 - i. Final Cleaning
 - j. Close Out documents and Warranties
 6. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 7. Submit draft of AIA Document G703 Continuation Sheets.
 8. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by
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measured quantity. Use information indicated in the Contract Documents to determine quantities.

9. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
10. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.
11. Submit Schedule of Values to the Architect and Construction Manager.

1.03 APPLICATIONS FOR PAYMENT

- A. Submit draft Applications for Payment to the Construction Manager and Architect for review prior to submitting final versions.
 - B. Each Application for Payment shall be consistent with previous applications and payments as certified by Construction Manager and Architect, and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
 - C. 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 **five** days prior to due date for review by Architect. Work to be projected out to the end of the pay period.
 - D. Application for Payment Forms: Use **AIA Document G732 and AIA Document G703** as form for Applications for Payment.
 - E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Incomplete applications will be returned without action.
 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 4. The OWNER shall retain five percent (5%) of the amount due on each Application for both the work completed and materials stored, unless stated otherwise in Owner Contractor Agreement. The OWNER reserves the right to retain a greater percentage in the event the CONTRACTOR fails to make satisfactory progress or in the event there is other specific cause for greater withholding.
 - F. 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. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
 2. 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.
 - G. **Provide copies of payroll records (including subcontractors) that are signed and notarized, documenting compliance with prevailing wage requirements.**
 - H. Transmittal: **Submit three** signed and notarized original copies of each Application for Payment to **Architect** by a method ensuring receipt. Include waivers of lien and similar attachments.
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- I. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
 - 1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 - 2. When an application shows completion of an item, submit conditional final or full waivers.
 - 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 - 4. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.

 - J. Initial Application for Payment: Administrative actions and submittals that must precede submittal of first Application for Payment include the following:
 - 1. List of Substitutions
 - 2. Contractor or Notice to Proceed.
 - 3. Performance and Payment bonds.
 - 4. Liability, Auto, and Umbrella Insurance.
 - 5. Worker Compensation certificates.
 - 6. Proposed schedule of values for approval.

 - K. Initial Application for Payment: Administrative actions and submittals that must coincide with submittal of first Application for Payment include the following:
 - 1. Approved Schedule of values.
 - 2. List of subcontractors.
 - 3. Contractors Safety Program.
 - 4. Contractor's construction schedule (preliminary if not final).
 - 5. Products list (preliminary if not final).
 - 6. Submittal schedule (preliminary if not final).
 - a. First Payment WILL NOT be processed without a Submittal Schedule.
 - 7. Emergency Contacts List.
 - 8. Certified Payroll.
 - 9. Schedule of unit prices.
 - 10. List of Contractor's staff assignments.
 - 11. List of Contractor's principal consultants.
 - 12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 - 13. Minutes or report of preconstruction conference.

 - L. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
 - 1. Administrative actions and submittals that shall precede or coincide with this application include:
 - a. Occupancy permits and similar approvals
 - b. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion
 - c. Record Drawings and Specifications
 - d. Operations and Maintenance Manuals
 - e. Maintenance Instructions and Training
 - f. Start-up performance reports
 - g. Test/adjust/balance records
 - h. Warranties (guarantees) and maintenance agreements
 - i. Final cleaning
 - j. Change-over information related to Owner's occupancy, use, operation and maintenance
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- k. Application for reduction of retainage and consent of surety
- l. Advice on shifting insurance coverages
2. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
3. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- M. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
 1. Ensure that incomplete Work is not accepted and will be completed without undue delay.
 2. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 3. Evidence of completion of Project closeout requirements.
 4. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 5. Updated final statement, accounting for final changes to the Contract Sum.
 6. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 7. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 8. AIA Document G707, "Consent of Surety to Final Payment."
 9. Evidence that all claims have been settled.
 10. Final liquidated damages settlement statement.
 11. Removal of temporary facilities and services.
 12. Removal of surplus materials, rubbish, and similar elements.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 013100
PROJECT MANAGEMENT AND COORDINATION**PART 1 GENERAL****1.01 SUMMARY**

- A. Section includes administrative provisions for coordinating construction operations including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Administrative and supervisory personnel.
 - 3. Coordination drawings.
 - 4. Requests for Information (RFIs).
 - 5. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

1.02 DEFINITIONS

- A. RFI: Request from Owner, Architect, or Contractor seeking information from each other during construction.

1.03 INFORMATIONAL SUBMITTALS

- A. Use the Architect's Newforma Info Exchange when up loading Submittals.
- 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. Use form provided in specification Section 006000 of the Project Manual. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.
- C. Key Personnel Names: Within 5 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
 - 1. Each Contractor to furnish a 24hr. emergency contact person and cellular phone number.
 - 2. Post copies of listing in project meeting room, or field office, and by each field telephone. Keep list current.

1.04 COORDINATION

- A. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
 - B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
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1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
 2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Preinstallation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.
 9. Project closeout activities.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1.05 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings in accordance with requirements in individual Sections, where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.
 - g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire protection, fire alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work. Provide required information for work sequence to interface with the installation work.
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2. Plenum Space: Indicate sub framing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
 3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire protection, fire alarm, and electrical equipment.
 4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
 5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
 6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
 7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inch diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire alarm locations.
 - c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
 - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
 8. Fire Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
 9. Review areas for required access and indicate the need for access doors for access to shutoffs electrical boxes Etc.
 10. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are the Contractor's responsibility. If the Architect determines that the coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, the Architect will so inform the Contractor, who shall make changes as directed and resubmit.
 - a. Failure to provide the required coordination drawings as required by this specification section may result in withholding a portion of the Contractor payment requests until such coordination drawings are received.
 11. Coordination Drawing Prints: Prepare and submit coordination drawing prints in accordance with requirements of Division 01 Section "Submittal Procedures."
- C. Architect provides PDF Files: For Projects where Project Building Information Modeling Protocol **(BIM) is NOT executed.**
1. Architect will **not** furnish Contractor with digital drawings for the preparation of coordination drawings.
 2. The Architect will provide digital PDF's of Contract Drawings for the purpose of producing coordination drawings.
 - a. Contract documents are graphic representations of approximate locations of materials. Therefore, information contained within these files should not be assumed to be accurate and users of the Files accept full responsibility for verifying the accuracy and completeness of the Files with field conditions and the contract documents.
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1.06 REQUESTS FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 - 1. Do not submit an RFI if information is readily available in the Contract Documents.
 - a. Construction Manager will return with no response RFI's where information is available to the contractor as indicated on the Contract Documents.
 - 2. Construction Manager will return RFI's submitted by other entities controlled by Contractor with no response.
 - 3. Coordinate and submit RFI's in a prompt manner so as to avoid delays.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 - 1. Project name.
 - 2. Project number.
 - 3. Date.
 - 4. Name of Contractor.
 - 5. Name of Architect.
 - 6. RFI number, numbered sequentially.
 - 7. RFI subject.
 - 8. Specification Section number and title and related paragraphs, as appropriate.
 - 9. Drawing number and detail references, as appropriate.
 - 10. Field dimensions and conditions, as appropriate.
 - 11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 - 12. Contractor's signature.
 - 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI's sent without the required content information will not be considered a formal RFI.
- D. RFI Forms: Form provided in specification Section 006000 of the Project Manual, or Software-generated form with substantially the same content as indicated above, acceptable to Architect.
- E. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFI's received by Architect after 1:00 p.m. will be considered as received the following working day.
 - 1. The following RFI's will be refused without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for 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 RFI's or inaccurately prepared RFI's.
 - 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
 - 3. Architect's action on RFI's 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 in writing within 5 days of receipt of the RFI response.

1.07 ARCHITECT'S WEB SITE

- A. The contractor will use Newforma Info Exchange for Submittals, Shop Drawings and RFI's. Project Web site shall include the following functions:
1. Project directory.
 2. Project correspondence.
 3. Meeting minutes.
 4. Contract modifications forms and logs.
 5. RFI forms and logs.
 6. Task and issue management.
 7. Photo documentation.
 8. Schedule and calendar management.
 9. Submittals forms and logs.
 10. Payment application forms.
 11. Drawing and specification document hosting, viewing, and updating.
 12. Online document collaboration.
 13. Reminder and tracking functions.
 14. Archiving functions.

1.08 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times. All Prime Contractors are required to attend Project Meetings.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, and Architect, within three days of the meeting.
- B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to all parties, but no later than 15 days after execution of the Agreement.
1. Conduct the conference to review responsibilities and personnel assignments.
 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractors and their superintendents; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to decide matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing and long-lead items.
 - d. Designation of key personnel and their duties.
 - e. Procedures for project communications.
 - f. Procedures for processing field decisions and Change Orders.
 - g. Procedures for RFIs.
 - h. Testing and inspecting requirements.
 - i. Procedures for processing Applications for Payment.
 - j. Distribution of the Contract Documents.
 - k. Submittal procedures using Newforma Info Exchange.
 - l. Preparation and updating of record documents.
 - m. Use of the premises.
 - n. Work restrictions.
 - o. Working hours.
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- p. Owner's occupancy requirements and restrictions.
 - q. Responsibility for temporary facilities and controls.
 - r. Procedures for moisture and mold control.
 - s. Procedures for disruptions and shutdowns.
 - t. Construction waste management and recycling.
 - u. Parking availability.
 - v. Office, work, and storage areas.
 - w. Equipment deliveries and priorities.
 - x. First aid.
 - y. Security.
 - z. Progress cleaning.
4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
- 1. 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 and Owner of scheduled meeting dates.
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility problems.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written recommendations.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
 - 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the
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Work and reconvene the conference at earliest feasible date.

- D. Progress Meetings: Architect will conduct progress meetings at weekly intervals.
1. Coordinate dates of meetings with preparation of payment requests.
 2. Required Attendees: In addition to representatives of Owner and Architect, each Prime 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 decide matters relating to the Work.
 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Progress cleaning.
 - 10) Status of correction of deficient items.
 - 11) Field observations.
 - 12) Status of RFIs.
 - 13) Status of proposal requests.
 - 14) Pending changes.
 - 15) Status of Change Orders.
 4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- E. Coordination Meetings: Conduct Project coordination meetings at weekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of
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- schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
- b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Change Orders.
3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.
- F. Project Closeout Meeting: Architect will schedule and conduct a Project closeout meeting, at a time convenient to Owner and Contractor, but no later than 30 days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 2. Required Attendees: Authorized representatives of Owner, Owner's Commissioning Authority (if applicable), Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; 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.
 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation and completion of Contractor's punch list.
 - b. Responsibility for removing temporary facilities and controls.
 - c. Owner's partial occupancy requirements.
 - d. Coordination of separate contracts for owner related work prior to occupancy.
 - e. Installation of Owner's furniture, fixtures, and equipment.
 - f. [Requirements for preparing, completing and submitting sustainable design documentation.]
 - g. Requirements for preparing operations and maintenance data.
 - h. Requirements for the Submittal of written warranties.
 - i. Requirements for demonstration and training.
 - j. Requirements for submission of record documents, record specifications and record submittals.
 - k. Responsibility and schedule for final cleaning
 - l. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
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PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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**SECTION 013200
CONSTRUCTION PROGRESS DOCUMENTATION**

PART 1 GENERAL**1.01 SUMMARY**

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Start-up construction schedule.
 - 2. Contractor's construction schedule.
 - 3. Daily construction reports.
 - 4. Field condition reports.
 - 5. Special reports.

1.02 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format[s]:
 - 1. PDF electronic file.
- B. Start-up construction schedule.
- C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
- D. Daily Construction Reports: Submit at **weekly** intervals.
- E. Field Condition Reports: Submit at time of discovery of differing conditions.
- F. Special Reports: Submit at time of unusual event.

1.03 QUALITY ASSURANCE

- A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:
 - 1. Review software limitations and content and format for reports.
 - 2. Verify availability of qualified personnel needed to develop and update schedule.
 - 3. Discuss phasing, work stages, area separations, interim milestones, and partial Owner occupancy.
 - 4. Review delivery dates for Owner-furnished products.
 - 5. Review schedule for work of Owner's separate contracts.
 - 6. Review time required for review of submittals and resubmittals.
 - 7. Review requirements for tests and inspections by independent testing and inspecting agencies.
 - 8. Review time required for completion and startup procedures.
 - 9. Review and finalize list of construction activities to be included in schedule.
 - 10. Review submittal requirements and procedures.
 - 11. Review procedures for updating schedule.

1.04 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.
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PART 2 PRODUCTS**2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL**

- A. Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial Completion.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
 - B. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
 - 1. Activity Duration: Define activities and days
 - 2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - 3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 - 4. Startup and Testing Time: Include not less than 15 days for startup and testing.
 - 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 - 6. Punch List and Final Completion: Include not more than 30 days for punch list and final completion.
 - C. Schedule Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule and show how the sequence of the Work is affected.
 - 1. Phasing: Arrange list of activities on schedule by phase.
 - 2. Work under More Than One Contract: Include a separate activity for each contract.
 - 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 - 4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 - 5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 - 6. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 - 7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Submittals.
 - b. Purchases.
 - c. Mockups.
 - d. Sample testing.
 - e. Deliveries.
 - f. Installation.
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- g. Tests and inspections.
 - h. Adjusting.
 - i. Startup and placement into final use and operation.
8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
- a. Structural completion.
 - b. Permanent space enclosure.
 - c. Completion of mechanical installation.
 - d. Completion of electrical installation.
 - e. Substantial Completion.
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion, and any defined interim milestones.
- E. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
1. Unresolved issues.
 2. Unanswered RFIs.
 3. Rejected or unreturned submittals.
 4. Notations on returned submittals.
- F. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- G. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.02 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of Prime contractors at Project site.
 2. List of subcontractors at Project site.
 3. Approximate count of personnel at Project site.
 4. Equipment at Project site.
 5. Material deliveries.
 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 7. Accidents.
 8. Meetings and significant decisions.
 9. Unusual events (refer to special reports).
 10. Stoppages, delays, shortages, and losses.
 11. Meter readings and similar recordings.
 12. Emergency procedures.
 13. Orders and requests of authorities having jurisdiction.
 14. Change Orders received and implemented.
 15. Construction Change Directives received and implemented.
 16. Services connected and disconnected.
 17. Equipment or system tests and startups.
 18. Partial completions and occupancies.
 19. Substantial Completions authorized.
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- B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.03 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within **one** day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: 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. Advise Owner in advance when these events are known or predictable.

PART 3 EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate final completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION

**SECTION 013300
SUBMITTAL PROCEDURES**

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. This specification describes the procedures for submission of submittals and shop drawings.
 - 1. The Contractor will be required to use the Construction Manager's file exchange application (ProCore) for the transfer of Submittals, Shop Drawings and RFI's. There will be **no exceptions** to this requirement. The contractor will be given a login and password free of charge. For more information follow the procedure below.
 - a. Information and instructions for use are available for review by the contractor by contacting the Construction Manager. The Contractor is to provide an email address for the file to be sent. A PDF file will be emailed to the requesting contractor.

1.02 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.03 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 insufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file of 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.

1.04 SUBMITTAL GENERAL ADMINISTRATIVE REQUIREMENTS

- A. The Contractor shall prepare a Submittal Log containing the information required to be submitted under the Submittal article from each respective Specification Section. With each item listed the Contractor shall provide anticipated dates for submission to the Architect. The Architect will review and accept or request that corrections be made for subsequent acceptance. This acceptance will constitute an approval for the submittal, shop drawings and sample submissions to commence. **No Submittals or Shop Drawings will be reviewed by the Architect until an approved Submittal Schedule is in place.**
 - B. The contractor shall prepare expected submittals in Newforma that correspond to all submittals listed on the submittal schedule at the time of submission of the submittal log. These expected submittals are to follow the naming conventions laid out in section "1.5 Submittal Schedule" and "1.6 Submittal Identification"
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- C. The Contractor is responsible for all costs for creating electronic files for the submittal process. The Architect will not provide this service.
1. The Submittal Cover Sheet located in Specification Section 006000 Project Forms shall be used for all Submittals.
 - a. An electronic form of the submittal cover is available from the Architect.
 2. The Submittal Cover sheet when scanned to a .PDF shall be the first page viewed in the individual file.
 - a. Each product submitted within a specification section shall have a Submittal Cover sheet attached. Combined submittals with one cover page will not be accepted
 - b. Each Submittal Cover sheet shall be filled in completely. **Files that are sent with the Submittal Cover Sheet missing or not filled in correctly will not be reviewed.** The Architect will send a notice that the submittal is missing information. If the Contractor fails to correct or provide the proper submittal within 15 days, notice will be provided, and the submittal will be REJECTED.
 3. The Contractor(s) will be provided with a link to upload files to the Newforma Info Exchange. The site address and a "log in" will be provided to the Contractor(s) free of charge.
 4. A read only Record Submittal Log and RFI Log will be available from the Newforma Info Exchange for the Contractors reference in checking the status of the submittals and shop drawings.
- D. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Coordinate transmittals of different types of submittals from related section for parts of the work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received. Delays associated with the above are the not the Architects responsibility and rests solely with the Contractor.
- E. Architect's Digital Data Files: For Projects where Project Building Information Modeling Protocol is NOT executed. Provide digital PDF's only.
1. Architect will not furnish Contractor with digital drawings for the preparation of shop drawings.
 2. The Architect will provide digital PDF's of Contract Drawings for the purpose of producing project record drawings.
 - a. Contract documents are graphic representations of approximate locations of materials. Therefore, information contained within these files should not be assumed to be accurate and users of the Files accept full responsibility for verifying the accuracy and completeness of the Files with field conditions and the contract documents.
 3. [Document Transfer Agreement - For Projects where Architect's work files are not a deliverable: The Contractor shall execute an Electronic Document Transfer Agreement for all electronic transfers of files, other than PDFs. The contractor must provide acknowledgement, accept the information regarding drawings, ownership and Limitations of Liability. Agreement is found with Project Forms.
 - a. The following plot files will by furnished for each appropriate discipline:
 - 1) Floor plans.
 - 2) Reflected ceiling plans.
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1.05 SUBMITTAL SCHEDULE

- A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
1. Submit a preliminary if not final Submittal Schedule for approval a minimum of 15 days after award of contract. Failure to submit a submittal schedule within the required time frame will result in the refusal by the Architect to review any submittals. Delays associated with failure to receive the Submittal Schedule are the not the Architects responsibly and rest solely with the Contractor.
- B. The information is required to be submitted under the Submittal article from each respective Specification Section. With each item listed the Contractor shall provide anticipated dates for submission to the Architect. The Architect will review and accept or request that corrections be made for subsequent acceptance. This acceptance will constitute a review for the submittal, shop drawings and sample submissions may commence. No Submittals or Shop Drawings will be reviewed by the Architect until an approved Submittal Schedule is in place.
1. The Submittal Schedule shall be coordinated with the overall Project Schedule to ensure that submittals are submitted and reviewed so as not to delay the Project Schedule.
 2. The Architect will not be responsible for ensuring that all required Shop Drawings, Product Data, Samples or similar submittals that are required to be submitted and reviewed under the Contract Documents are submitted by the Contractor. Submissions of Shop Drawings, Product Data, Samples or similar submittals are the Contractor's sole responsibility. Delays associated with the contractor's failure to provide the required submittals are the Contractors responsibility.
 3. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 4. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 30 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 5. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.
 6. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal Category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's [and Construction Manager's] final release or approval.
 - g. Scheduled dates for purchasing.
 - h. Scheduled date of fabrication.
 - i. Scheduled dates for installation.

1.06 SUBMITTAL IDENTIFICATION

- A. Submittal Cover Sheet: Attach one cover sheet for each product, shop drawing or sample. DO NOT combine submittals together with one cover sheet for multiple items. They will not be reviewed.
- B. Submittal Information: Include the following information in each submittal. Use the submittal cover form found in specification section 006000 Project Forms. An electronic form can be sent to the contractor upon request
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1. Contractor, Address, Phone/fax and or Email
 2. Contractors Submittal Number.
 3. Architects Project Number.
 4. Project Name (if not filled in by the Architect)
 5. Type of submittal being sent (select box)
 6. Product Identification including the following: Provide one submittal cover sheet for each product within a specification section
 - a. Specification Section Number
 - b. Contract Drawing Number
 - c. Product Name
 - d. Specification Reference: Part/Paragraph
 - e. Detail Reference
 - f. Manufacturer
 7. Contractors Approval: The contractor must acknowledge that they have reviewed the submittal for conformance with the Contract Documents and must sign and date the approval.
 8. Deviation from the Contract Documents: Where the submittal may not meet all of the requirements of the specified item. The contractor must indicate how the submitted item differs from the specified item.
 9. Contractor Comments: Any additional comments by the contractor should be indicated in this space. (Provide an attachment sheet for any other information required that will not fit on the cover sheet.)
- C. Deviations and Additional Information: On each individual submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information, revisions, line by line comparison and other information requested by Architect [and Construction Manager]. Indicate by highlighting on each submittal or noting on attached separate sheet. Identify options requiring selection by Architect.
- D. File Naming (for uploading): Each submittal or shop drawing file uploaded to the project on the Newforma Info Exchange, shall have in the file name, the specification section number followed by the submittal number, the submittal abbreviation and the specification section name. For re-submissions an R1 would be added following submittal number. The file name must include the following information:

Example:

081416	001	PD	Flush Wood Doors
Spec Section	Submittal No.	Submittal Abbr	Specification Name

File to Read: 081416-001 PD - Flush Wood Doors

Re-submission to Read:081416-001-R1-Flush Wood Doors

Submittal Abbr. required to be used in the file name on submittals are as follows:

- CD - Coordination Drawings
 - CERT - Certification(s)
 - CLC - Calculations
 - DD - Design Data
 - EJ - Engineer's Judgement
 - LEED - LEED or PD/LEED
 - O&M - Operations and Maintenance Manuals
 - PD - Product Data
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PHOTO - Photo
QD - Qualification Data
RPT - Report
SAMP - Sample
SCH - Schedule
SEL - Make A Selection
SD - Shop Drawing(s)
STDY - Study
TR - Test Results
WAR - Warranty

- E. When uploading submittals or RFI's to the Newforma Info Exchange, complete the online transmittal. The information required is derived from the contractor's submittal cover sheet or RFI. Instructions using the Newforma Info Exchange are available from CPL. These instructions can be emailed to the contractor.

1.07 SUBMITTAL DATA AND TESTING REQUIREMENTS

- A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment. Each product within a specification section shall have a separate submittal cover.
1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable. Send full submittals for each product. Partial submittals will not be reviewed until all required submittal information is received. The architect will not be responsible for project delays due to the contractor's failure to submit the required submittal information in a complete package.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams that show factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.
- B. Shop Drawings: Prepare project-specific information for each shop drawing. 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.
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- c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Description any conflicts with other trades.
 - h. Seal and signature of professional engineer if specified.
2. BIM Incorporation: When Project uses BIM through the Construction Stage and Contractor is required to prepare Shop Drawings for incorporation into the BIM. Revise as required to reflect Project scope agreements. [Develop and Incorporate] [Construction Manager will incorporate Contractor's] shop drawings and data files into BIM established for Project.
 - a. Prepare design drawings and data files in the following format - Refer to these executed AIA Documents – required for BIM incorporation;
 - 1) AIA Document G201 – 2013 Project Digital Data Protocol Form
 - 2) AIA Document G202 – 2013 Project Building Information Modeling Protocol Form
 - 3) AIA Document E203–2013, Building Information Modeling and Digital Data Exhibit
 - b. Refer to Section 013100 "Project Management and Coordination" for requirements for coordination drawings.]]
- C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.
1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package. If samples are delivered with product data, only the samples will be reviewed. The Product Data must be uploaded to the Newforma Info Exchange. A duplicate submittal cover sheet is to be uploaded to the Newforma Info exchange as a record of sample delivery.
 - a. The Product Data is to be loaded concurrent with the delivery of samples. Samples may be delivered/given to the Architect. In the remarks column of the transmittal place "given to the Architect"
 2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
 - a. Project name and submittal number.
 - b. Generic description of Sample.
 - c. Product name and name of manufacturer.
 - d. Sample source.
 - e. Number and title of applicable Specification Section.
 - f. Specification paragraph number and generic name of each item.
 - g. In addition to all hard copy and physical samples submitted, duplicate digital submittal is to be produced for review, record and tracking purposes through Newforma Info Exchange. Include same information as above as well as a high resolution, color, digital image of all samples with labeled information clearly visible for each physical sample.
 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.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 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 [one] or Insert number full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected
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- from manufacturer's product line. Architect [, through Construction Manager,] will return submittal with options selected.
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 [three] or Insert number sets of Samples. Architect [and Construction Manager] will retain [two] or Insert number Sample sets; remainder will be returned. [Mark up and retain one returned Sample set as a project record Sample.]
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least [three] or Insert number sets of paired units that show approximate limits of variations.
 - D. Information requirements for each submittal: Where submittal is requiring Schedules, Product Data, Qualification Data, Design Data, Certificates and Tests use the following protocol.
 1. Schedules: 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:
 2. Product Data. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 - a. Manufacturer and product name, and model number if applicable.
 - b. Number and name of room or space.
 - c. Location within room or space.
 3. 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.
 4. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.
 5. Certificates:
 - a. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
 - b. Insert definition of Contractor certificates here if required by individual Specification Sections. See the Evaluations.
 - c. 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.
 - d. 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.
 - e. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.

- f. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
 - g. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.
 - h. 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.
 - i. 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.
 - j. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
 - k. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
6. Test and Research Reports:
- a. 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 substrate preparation and primers required.
 - b. 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.
 - c. 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.
 - d. 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.
 - e. 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.
 - f. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1) Name of evaluation organization.
 - 2) Date of evaluation.
 - 3) Time period when report is in effect.
 - 4) Product and manufacturers' names.
 - 5) Description of product.
 - 6) Test procedures and results.
 - 7) Limitations of use.
- E. Submit the following submittals: Within 15 days of contract award.
- 1. Submittal Schedule including dates of anticipated review and approval.
 - a. No submittals will be reviewed without an approved Submittal Schedule in place.
 - 2. Subcontractor 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:
 - a. Name, address, telephone number and email address of entities performing subcontract or supplying products.
 - b. Number and title of related Specification Section(s) covered by subcontract.
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3. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."
 4. Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."
- F. Submit with in the first 30 days after Contract Award
1. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014329 "Special Inspections."
 2. 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.
 3. 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.
- G. Submit Field Test Reports during construction within 15 days of the testing date and as follows:
1. 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.
- H. Submit a minimum 30 days prior to Project Closeout:
1. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
 2. Maintenance Data: Comply with requirements specified in Division 01 Section 017823 "Operation and Maintenance Data."

1.08 SUBMITTAL PROCESSING

- A. Processing Time: Allow time for submittal review, including time for re-submittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.
 - B. The architect will not be responsible for project delays due to the contractor's failure to submit the required submittal information in time to allow for review based on the stipulated review time and to meet the project schedule.
 - C. Initial Review: Allow 10 Calendar days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 - D. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - E. Re-submittal Review: Allow 10 Calendar days for review of each re-submittal.
 - F. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 Calendar days for initial review of each submittal.
 - G. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 Calendar days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
 - H. Where submittal are required to be approved that are part of an assembly or for items such as finishes where color selections are required. The submittal will be retained until all of the information related to these systems and color selections is provided and accepted.
 - I. Products with multiple submittals may be held until all necessary information has been submitted for architect to make a complete review. Submittals dependent on coordinating information from related or dependent products; or products with critical interface with other
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products may be held until all information is submitted for architect to make a complete review and coordinate all required information. (example door frames will not be reviewed without door hardware)

- J. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 - 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are marked with reviewed notation from Architect's [and Construction Manager's] action stamp.
- K. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

1.09 SUBMITTAL PROCEDURES

- A. 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.
 - B. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
 - C. 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.
 - D. 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.
 - E. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
 - F. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
 - G. 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.
 - H. 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.
 - 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. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
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- J. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "Quality Requirements."
- K. 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.
- L. 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.
- M. 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.
- N. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- O. 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.

1.10 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Contractors Approval: Provide Contractor's approval signature and date on the Submittal Cover sheet certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1.11 ARCHITECT'S ACTION

- A. Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will respond to each submittal indicating one of the following actions required:
 - 1. No Exceptions Taken: Architect takes no exception to the submittal. This part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
 - 2. Furnish as Corrected: No exceptions taken except what is identified by the Architect. The part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance. Furnish any additional related information as requested.
 - 3. Revise and Re-Submit: Revise the submittal based on the Architects comments and resubmit the submittal. Do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - a. Do not permit submittals marked "Revise and Resubmit" to be used at the Project Site, or elsewhere where Work is in progress.
 - 4. Rejected: The submittal is rejected. See Architects comments on why submittal was rejected.
 - a. Submittal has not been reviewed by the Contractor and so noted.
 - b. Submittal has been prepared without due regard for information called for or logically implied by the Contract Documents.

- c. Information is not sufficiently complete or accurate to verify that work represented is in accordance with the Contract Documents.
- d. Do not permit submittals marked "Rejected" to be used at the Project Site, or elsewhere where Work is in progress.
- 5. No Action Taken: The submittal is not required and will not be reviewed.
- B. Submittals by Newforma Info Exchange: Architect [and Construction Manager] will indicate, on Newforma Info Exchange, the appropriate action.
- C. Informational Submittals: Architect will review each submittal and will not return it or will return it if it does not comply with requirements. The Architects action will be noted in the Newforma Info Exchange.
- D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect. The Architects action will be noted in the Newforma Info Exchange and noted as a partial review until a full submittal can be received.
- E. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for re-submittal without review.
- F. Submittals not required by the Contract Documents will not be reviewed and will receive no action.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

**SECTION 014000
QUALITY REQUIREMENTS**

PART 1 GENERAL

1.01 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, Commissioning Authority, or authorities having jurisdiction are not limited by provisions of this Section.

1.02 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. Mockups: Full size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
 - 1. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.
 - 2. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.
 - D. Preconstruction Testing: Tests and inspections performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
 - E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
 - F. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
 - G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
 - H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
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- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade or trades.
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five 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.

1.03 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.
 - 1. The design professional shall be licensed to perform professional design services in the jurisdiction of the project location.

1.04 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.

1.05 ACTION SUBMITTALS

- A. Shop Drawings: For integrated exterior mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
 - 1. Indicate manufacturer and model number of individual components.
 - 2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.06 INFORMATIONAL SUBMITTALS

- A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems.
 - 1. Seismic-force resisting system, designated seismic system, or component listed in the designated seismic system quality assurance plan prepared by the Architect.
 - 2. Main wind-force resisting system or a wind-resisting component listed in the wind-force-resisting system quality assurance plan prepared by the Architect.
 - B. 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.
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- C. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
1. Specification Section number and title.
 2. Entity responsible for performing tests and inspections.
 3. Description of test and inspection.
 4. Identification of applicable standards.
 5. Identification of test and inspection methods.
 6. Number of tests and inspections required.
 7. Time schedule or time span for tests and inspections.
 8. Requirements for obtaining samples.
 9. Unique characteristics of each quality-control service.

1.07 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 re-inspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of technical representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
 2. Statement that equipment complies with requirements.
 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 4. Statement whether conditions, products, and installation will affect warranty.
 5. Other required items indicated in individual Specification Sections.
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- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.08 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 with **5** years experience 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 with **5** years experience 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 with **5** years experience 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 to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. 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.
- H. 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.
- I. 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.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.

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- d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
 - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - f. When testing is complete, remove test specimens, assemblies, mockups; do not reuse products on Project.
2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location indicated or, if not indicated, as directed by Architect.
 2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
 3. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
 4. Demonstrate the proposed range of aesthetic effects and workmanship.
 5. Obtain Architect's approval of mockups before starting corresponding Work, fabrication, or construction.
 - a. Allow seven days for initial review and each re-review of each mockup.
 6. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
 7. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 8. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 9. Demolish and remove mockups when directed unless otherwise indicated.

1.09 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 re-inspecting 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.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
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6. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
- 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/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Cooperate with Architect, Commissioning Authority, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 1. Notify Architect, Commissioning Authority, 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.

1.10 QUALITY-CONTROL PLAN

- A. Contractor's Quality-Control Plan, The Contractor shall submit quality-control plan within 10 days of Notice of Award, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner's quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.
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- B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
 - 1. Contractor-performed tests and inspections, including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
 - 2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
 - 3. Owner-performed tests and inspections indicated in the Contract Document, including tests and inspections indicated to be performed by Commissioning Authority.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports, including log of approved and rejected results. Include Work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming Work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.11 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: **Owner will engage** a qualified **testing agency / special inspector** to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
 - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
 - 2. Notifying Architect, Commissioning Authority, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 - 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect, Owner, and Commissioning Authority, with copy to Contractor and to authorities having jurisdiction.
 - 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 - 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 - 6. Retesting and re-inspecting corrected work.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.01 TEST AND INSPECTION LOG

- A. Prepare a record of tests and inspections. Include the following:
 - 1. Date test or inspection was conducted.
 - 2. Description of the Work tested or inspected.
 - 3. Date test or inspection results were transmitted to Architect.
 - 4. Identification of testing agency or special inspector conducting test or inspection.
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- B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's and Owner's reference during normal working hours.

3.02 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

**SECTION 014119
REGULATORY REQUIREMENTS - NYS EDUCATION DEPARTMENT****PART 1 GENERAL****1.01 SUMMARY**

- A. Section includes:
 - 1. "Uniform Safety Standards for School Construction and Maintenance Projects" for maintaining a Certificate of Occupancy during construction.

1.02 REFERENCES

- A. Section 155.5 of the Regulations of the New York State Commissioner of Education "Uniform Safety Standards for School Construction and Maintenance Projects".

PART 2 PRODUCTS (NOT APPLICABLE)**PART 3 EXECUTION****3.01 GENERAL REQUIREMENT**

- A. The occupied portion of any school building shall always comply with the minimum requirements necessary to maintain a certificate of occupancy.

3.02 HAZARDOUS BUILDING MATERIALS

- A. Surfaces that will be disturbed during renovation or demolition have been tested for lead and asbestos. Results of the testing are available, upon request, from the Owner.

3.03 GENERAL SAFETY AND SECURITY STANDARDS FOR CONSTRUCTION

- A. General safety and security standards for construction projects include the following:
 - 1. All construction materials shall be stored in a safe and secure manner.
 - 2. Fences around construction supplies or debris shall be maintained.
 - 3. Gates shall always be locked unless a worker is in attendance to prevent unauthorized entry.
 - 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. Workers shall be required to wear photo-identification badges at all times for identification and security purposes while working at occupied sites.

3.04 SEPARATION OF CONSTRUCTION AREAS FROM OCCUPIED AREAS

- A. 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.
 - 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.
 - 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.
 - 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."

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3.05 MAINTAINING EXITING DURING CONSTRUCTION

- A. The Contractor will prepare a plan detailing how exiting required by the applicable building code will be maintained during construction. The plan shall indicate temporary construction required to isolate construction equipment, materials, people, dust, fumes, odors, and noise during the construction period. Temporary construction details shall meet code-required fire ratings for separation and corridor enclosure. At a minimum, required exits, temporary stairs, ramps, exit signs, and door hardware shall be provided at all times.

3.06 MAINTAINING VENTILATION DURING CONSTRUCTION

- A. The Contractor will prepare a plan detailing how adequate ventilation will be maintained during construction. The plan shall indicate ductwork that must be rerouted, disconnected, or capped in order to prevent contaminants from the construction area from entering the occupied areas of the building. The plan shall also indicate how required ventilation to occupied spaces affected by the construction will be maintained during the project.

3.07 NOISE ABATEMENT DURING CONSTRUCTION

- A. 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
- B. Noise level measurements (dba) shall be taken with a type 2 sound level meter in the occupied space in a location closest to the source of noise.
- C. Each prime contractor shall have a type 2 sound level meter available on the project site at all times for use by the architect/engineer for the entire duration of the construction project.

3.08 CONTROL OF CHEMICAL FUMES, GASES AND OTHER CONTAMINANTS DURING CONSTRUCTION

- A. The contractor shall be responsible for the control of chemical fumes, gases, and other contaminants produced by, including but not limited to, welding, gasoline or diesel engines, roofing, paving, or painting, to ensure they do not enter occupied portions of the building or air intakes.
1. Contractors shall provide a plan indicating how and where welding, gasoline engine, roofing, paving, painting or other fumes will be exhausted from the work site. Contractors shall provide all temporary means to assure that fresh air intakes do not draw in such fumes.
 2. If any portion of the work will generate toxic gases that cannot be contained in an isolated area, the work shall be done when school classes and programs are not in session. The contractor shall include costs associated with this requirement in his bid. The building shall be properly ventilated and, the material shall be given proper time, as recommended by the manufacturer, to cure "off-gas" before re-occupancy.
 3. The contractor shall maintain all manufacturers' Material Safety Data Sheets (MSDS) at the site for all products used in the project. Copies of the MSDS sheets shall be given to the Architect and to the School District. MSDS sheets shall be provided to anyone who requests them.

3.09 CONTROL OF OFF-GASSING DURING CONSTRUCTION

- A. The contractor shall be responsible to ensure that activities and materials which result in "off-gassing" of volatile organic compounds such as glues, paints, furniture, carpeting, wall covering, drapery, etc. are scheduled, cured or ventilated in accordance with manufacturers recommendations before a space can be occupied.
1. Contractor shall provide, in their schedules for work of the construction, proper time for "off-gassing" or volatile organic compounds introduced during construction before occupancy is allowed. Specific attention is warranted for activities including glues, adhesives, paint, furniture, carpeting, wall coverings, and drapery. Manufacturers shall be
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contacted to obtain information regarding appropriate temperatures and times needed to cure or ventilate the product during use and before safe occupancy of the space can be assured. The contractor shall include the above-mentioned information and shall clearly highlight the information, as part of the shop drawing submittal.

2. Building materials or furnishings which "off-gas" chemical fumes, gases, or other contaminants shall be aired out in a well ventilated heated warehouse before it is brought to the project for installation or, the manufacturer's recommended "off-gassing" periods must be scheduled between installation and use of the space.
3. The contractor shall maintain all manufacturers' Material Safety Data Sheets (MSDS) at the site for all products used in the project. Copies of the MSDS sheets shall be given to the Architect and to the School District. MSDS sheets shall be provided to anyone who requests them.

3.10 ASBESTOS-CONTAINING BUILDING MATERIALS

- A. Large and small asbestos abatement projects as defined by 12NYCRR56 shall not be performed while the building is occupied. The term "building", as referenced in this section, means a wing or major section of a building that can be completely isolated from the rest of the building with sealed noncombustible 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.
- B. 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.
- C. For clearance sampling, the air sampling technician shall provide aggressive air sampling per Rule 56 and as follows: First direct the exhaust of a leaf blower, against all walls, ceilings, floors, ledges, and other surfaces in the work area. Continue agitation for at least five minutes per every 1,000 sf of floor space. Following this aggressive agitation, the air-sampling technician shall use at least one 20-inch fan per 10,000 cubic feet of work area space for continuous agitation. The fan shall be operated on low speed and pointed toward the ceiling. Sampling pumps shall be started after the fans are started and stopped before the fans are stopped.
 1. Samples shall be logged on a permanently bound logbook at the laboratory. No whiteout will be used to make corrections.
 2. All lab counts, data and analysis shall be recorded on a lab summary sheet for each sample.
 3. Per the requirements of the New York State Education Department all Final Air Clearance Samples shall be (TEM) Transmission Electron Microscopy methodology.

3.11 LEAD-CONTAINING BUILDING MATERIALS

- A. Surfaces that will be disturbed by reconstruction have been tested for the present of lead based paint materials. This information is provided in order that proper measures are taken, to train and protect workers per OSHA regulations. Refer to Division 0 Existing Hazardous Material Information for testing results.
- B. 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.

END OF SECTION

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**SECTION 014120
WORK RESTRICTIONS**

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 USE OF PREMISES

- A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.
 - 1. Owner Occupancy: Allow for Owner occupancy of the entire site and building. The Owner's educational programs shall continue throughout the duration of construction. No work shall be done while school is in session.
 - 2. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- B. Use of Existing Building: Maintain existing building in a weathertight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.

1.03 OCCUPANCY REQUIREMENTS

- A. Full Owner Occupancy: Owner will occupy site and existing buildings during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations.
- B. Partial Owner Occupancy: Owner reserves the right to occupy and to place and install equipment in completed areas of all buildings, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
 - 1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
 - 2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
 - 3. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will provide, operate, and maintain mechanical and electrical systems serving occupied portions of building.
 - 4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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**SECTION 014200
REFERENCES**

PART 1 GENERAL

1.01 KEY DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.02 DEFINITIONS

- A. Air Handling Unit: A blower or fan used for the purpose of distributing supply air to a room, space or area.
 - B. Approved Agency: An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved according to the requirements established in this Section and as required by the Code Official having jurisdiction over this project.
 - C. Architect: Other terms including "Architect/Engineer" and "Engineer" have the same meaning as "Architect".
 - D. Company Field Adviser: An employee of the Company which lists and markets the primary components of the system under the name who is certified in writing by the Company to be technically qualified in design, installation, and servicing of the required products or an employee of an organization certified by the foregoing Company to be technically qualified in design, installation, and servicing of the required products. Personnel involved solely in sales do not qualify.
 - E. Concealed Location: A location that cannot be accessed without damaging permanent parts of the building structure or finish surface. Spaces above, below or behind readily removable panels or doors shall not be considered as concealed.
 - F. Concealed Piping: Piping that is located in a concealed location. (See "concealed location".)
 - G. Connect: A term contraction and unless otherwise specifically noted is to mean "The labor and materials necessary to join or attach equipment, materials or systems to perform the functions intended".
 - H. Drain: Any pipe that carries wastewater or water-borne wastes in a building drainage system.
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- I. Drainage Fittings: Type of fitting or fittings utilized in the drainage system. Drainage fittings are similar to cast-iron fittings, except that instead of having a bell and spigot, drainage fittings are recessed and tapped to eliminate ridges on the inside of the installed pipe.
 - J. Drainage System: Piping within a public or private premise that conveys sewage, rainwater or other liquid wastes to a point of disposal. A drainage system does not include the mains of a public sewer system or a private or public sewage treatment or disposal plant.
 - 1. Building Gravity: A drainage system that drains by gravity into the building sewer.
 - 2. Sanitary: A drainage system that carries sewage and excludes storm, surface and ground water.
 - 3. Storm: A drainage system that carries rainwater, surface water, condensate, cooling water or similar liquid wastes.
 - K. Duct: A tube or conduit utilized for conveying air. The air passages of self-contained systems are not to be construed as air ducts.
 - L. Duct System: A continuous passageway for the transmission of air that, in addition to ducts, includes duct fittings, dampers, plenums, fans and accessory air-handling equipment and appliances.
 - M. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
 - N. Headroom: Minimum clearance between the floor and the underside of the point of lowest installed mechanical construction above. In case of stairways and walkways, the minimum clearance between the step or surface of the walkway and the lowest installed mechanical construction above the stairway or the walkway.
 - O. Include: When used in any form other than "inclusive", is non-limiting and is not intended to mean "all-inclusive."
 - P. 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."
 - Q. Inspection Certificate: Identification applied on a product by an approved agency containing the name of the manufacturer, the function and performance characteristics, and the name and identification of an approved agency that indicates that the product or material has been inspected and evaluated by an approved agency.
 - R. Installer: An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.
 - 1. Trades: Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
 - 2. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.
 - 3. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade-union jurisdictional settlements and similar conventions.
 - S. Label: An identification applied on a product by the manufacturer that contains the name of the manufacturer, the function and performance characteristics of the product or material, and the
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name and identification of an approved agency and that indicates that the representative sample of the product or material has been tested and evaluated by an approved agency.

- T. Location:
1. Damp Location: Partially protected locations under canopies, marquees, roofed open porches and like locations, and interior locations subject to moderate degrees of moisture, such as some basements, some barns and some cold-storage warehouses.
 2. Dry Location: A location not normally subject to dampness or wetness. A location classified as dry may be temporarily subject to dampness or wetness, as in the case of a building under construction.
 3. Wet Location: Installations underground or in concrete slabs or masonry in direct contact with the earth and locations subject to saturation with water or other liquids, such as vehicle-washing areas, and locations exposed to weather and unprotected.
- U. Manufacturer's Designation: Identification applied on a product by the manufacturer indicating that a product or material complies with a specified standard or set of rules (see also "Inspection Certificate," "Label" and "Mark").
- V. Mark: An identification applied on a product by the manufacturer indicating the name of the manufacturer and the function of a product or material (see also "Inspection Certificate," "Label" and "Manufacturer's Designation").
- W. Mechanical: Other terms including "HVAC", "Plumbing", "Sprinkler", "Laboratory Equipment", "Food Service Equipment", "Laundry Equipment", and "Refrigeration" have the same meaning as "Mechanical".
- X. Owner: Onteora Central School District
- Y. Piping: This term includes pipe, tube and appurtenant fittings, flanges, valves, traps, hangers and supports.
- Z. Piping, Concealed: Piping built into construction and not accessible without removal of construction Work such as masonry, plaster or other finish material, and piping installed in floors, furred spaces, suspended ceilings, non-walk-in tunnels, conduits, and behind removable panels and cabinet doors.
- AA. Piping, Distribution: Domestic water supply piping, starting with a connection to service piping, and continuing throughout the building to point of connection to equipment and fixture supply piping.
- BB. Piping, Exposed: Piping directly accessible by normal accesses without removal of any construction Work or material.
- CC. Piping, Service: Underground domestic water supply piping with a connection to a water main or supply as noted, and continuing to and into a building and terminating with the exposed fitting inside the building.
- DD. Piping, Tunnel: Piping installed in walk-in or non-walk-in tunnels or conduits up to first shut-off valve inside building.
- EE. Plumbing System: Includes the water supply and distribution pipes; plumbing fixtures and traps; water-treating or water-using equipment; soil, waste and vent pipes; and sanitary and storm sewers and building drains, in addition to their respective connections, devices and appurtenances within a structure or premises.
- FF. Product: As used includes materials, systems and equipment.
- GG. Registered Design Professional: An individual who is a registered architect (RA) in accordance with Article 147 of the New York State Education Law or a licensed professional engineer (PE) in accordance with Article 145 of the New York State Education Law.
- HH. Space, Finished: A space which has a finishing material applied to walls or ceilings, such as paint, plaster, ceramic tile, enamel glazing, face brick, vinyl wall covering, etc. to provide a finished appearance or which will have such finishes applied under a related Contract.
- II. Space, Unfinished: A space which does not meet the definition of a finished space.
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- JJ. Special Inspection: Inspection as herein required of the materials, installation, fabrication, erection, or placement of components and connections requiring special expertise to ensure compliance with approved construction documents and referenced standards.
- KK. Steam-Heating Boiler: A boiler operated at pressures not exceeding 15 psi for steam.
- LL. Supplier: Any person or organization who supplies materials or equipment for the work, including that fabricated to a special design.
- MM. Utility: Any gas, steam, water, sanitary sewer, storm sewer, electrical or other such service.
- NN. Water Supply System: The water service pipe, water distribution pipes, and the necessary connecting pipes, fittings, control valves and all appurtenances in or adjacent to the structure or premises.
 - 1. Chilled: Water-cooled by refrigeration.
 - 2. Cold: Water with at temperature between 33 degrees F and 80 degrees F and which is neither cooled nor heated mechanically.
 - 3. Domestic: Water for use in buildings, except water used in connection with space heating and space cooling.
 - 4. High Temperature: Water with a supply water temperature above 350 degrees.
 - 5. Hot: Water at a temperature greater than or equal to 110°F.

1.03 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Conflicting Requirements: 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 uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.
 - 1. 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.
- D. 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.

1.04 ABBREVIATIONS AND ACRONYMS

A.

AA	Aluminum Association, Inc. (The)
AABC	Associated Air Balance Council
AAALAC	Association for Assessment and Accreditation of Laboratory Animal Care
AAMA	American Architectural Manufacturers Association

AASHTO	American Association of State Highway and Transportation Officials
ACI	ACI International (American Concrete Institute)
ACPA	American Concrete Pipe Association
AF&PA	American Forest & Paper Association
AGA	American Gas Association
AGC	Associated General Contractors of America (The)
AHA	American Hardboard Association (part of CPA)
AI	Asphalt Institute
AIA	American Institute of Architects (The)
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ALSC	American Lumber Standard Committee, Incorporated
AMCA	Air Movement and Control Association International, Inc.
ANSI	American National Standards Institute
AOSA	Association of Official Seed Analysts, Inc.
APA	Architectural Precast Association
APA	APA - The Engineered Wood Association
ARI	Air-Conditioning & Refrigeration Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	ASME International
ASSE	American Society of Sanitary Engineering
ASTM	ASTM International

AWCMA	American Window Covering Manufacturers Association (WCSC)
AWI	Architectural Woodwork Institute
AWPA	American Wood-Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Industry Association (The)
CBM	Certified Ballast Manufacturers
CCC	Carpet Cushion Council
CDA	Copper Development Association
CISCA	Ceilings & Interior Systems Construction Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CPA	Composite Panel Association
CRI	Carpet & Rug Institute (The)
CRSI	Concrete Reinforcing Steel Institute
CSI	Cast Stone Institute
CSI	Construction Specifications Institute (The)
CTI	Cooling Technology Institute
DHI	Door and Hardware Institute
EIA	Electronic Industries Alliance
EIMA	EIFS Industry Members Association
EJCDC	Engineers Joint Contract Documents Committee

EJMA	Expansion Joint Manufacturers Association, Inc.
ESD	ESD Association
FM Approvals	Factory Mutual Approvals
FSA	Fluid Sealing Association
GA	Gypsum Association
GANA	Glass Association of North America
GSI	Geosynthetic Institute
HI	Hydraulic Institute
HI	Hydronics Institute
HMMA	Hollow Metal Manufacturers Association
HPVA	Hardwood Plywood & Veneer Association
ICEA	Insulated Cable Engineers Association, Inc
ICRI	International Concrete Repair Institute, Inc.
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The)
IESNA	Illuminating Engineering Society of North America
IEST	Institute of Environmental Sciences and Technology
IGCC	Insulating Glass Certification Council
IGMA	Insulating Glass Manufacturers Alliance
ILI	Indiana Limestone Institute of America, Inc.
IPCEA	Insulated Power Cable Engineer Associates
ISO	International Organization for Standardization
ISSFA	International Solid Surface Fabricators Association

ITU	International Telecommunication Union
KCMA	Kitchen Cabinet Manufacturers Association
LEED	Leadership in Energy and Environmental Design
MBMA	Metal Building Manufacturers Association
MFMA	Maple Flooring Manufacturers Association, Inc.
MFMA	Metal Framing Manufacturers Association, Inc.
MIA	Marble Institute of America
MPI	Master Painters Institute
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc.
NAAMM	National Association of Architectural Metal Manufacturers
NACE	NACE International
NADCA	National Air Duct Cleaners Association
NAIMA	North American Insulation Manufacturers Association
NCMA	National Concrete Masonry Association
NCPI	National Clay Pipe Institute
NCTA	National Cable & Telecommunications Association
NEBB	National Environmental Balancing Bureau
NECA	National Electrical Contractors Association
NeLMA	Northeastern Lumber Manufacturers' Association
NEMA	National Electrical Manufacturers Association
NETA	National Electrical Testing Association
NFHS	National Federation of State High School Associations

NFPA	National Fire Protection Association
NFRC	National Fenestration Rating Council
NGA	National Glass Association
NHLA	National Hardwood Lumber Association
NLGA	National Lumber Grades Authority
NOFMA	NOFMA: The Wood Flooring Manufacturers Association
NRCA	National Roofing Contractors Association
NRMCA	National Ready Mixed Concrete Association
NSF	NSF International (National Sanitation Foundation International)
NSSGA	National Stone, Sand & Gravel Association
NTMA	National Terrazzo & Mosaic Association, Inc. (The)
NWWDA	National Wood Window and Door Association (WDMA)
PCI	Precast/Prestressed Concrete Institute
PDCA	Painting & Decorating Contractors of America
PDI	Plumbing & Drainage Institute
PGI	PVC Geomembrane Institute
PTI	Post-Tensioning Institute
RCSC	Research Council on Structural Connections
RFCI	Resilient Floor Covering Institute
SAE	SAE International
SDI	Steel Deck Institute
SDI	Steel Door Institute
SEFA	Scientific Equipment and Furniture Association

SEI/ASCE	Structural Engineering Institute/American Society of Civil Engineers
SGCC	Safety Glazing Certification Council
SIA	Security Industry Association
SIGMA	Sealed Insulating Glass Manufacturers Association
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SPIB	Southern Pine Inspection Bureau (The)
SPRI	Single Ply Roofing Industry
SSINA	Specialty Steel Industry of North America
SSPC	SSPC: The Society for Protective Coatings
STI	Steel Tank Institute
SWRI	Sealant, Waterproofing, & Restoration Institute
TCA	Tile Council of America, Inc.

1.05 FEDERAL GOVERNMENT AGENCIES:

- A. 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. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CE	Army Corps of Engineers
CPSC	Consumer Product Safety Commission
DOC	Department of Commerce
DOD	Department of Defense
DOE	Department of Energy
EPA	Environmental Protection Agency

FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FDA	Food and Drug Administration
GSA	General Services Administration
HUD	Department of Housing and Urban Development
NIST	National Institute of Standards and Technology
OSHA	Occupational Safety & Health Administration
PHS	Office of Public Health and Science
SD	State Department
TRB	Transportation Research Board
USDA	Department of Agriculture
USPS	Postal Service

- B. Codes, 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.

ADAAG	Americans with Disabilities Act (ADA) Accessibility Guidelines
BCNYS	Building Code of New York State
CFR	Code of Federal Regulations
DOD	Department of Defense Military Specifications and Standards
FS	Federal Specification
MILSPEC	Military Specification and Standards

1.06 NEW YORK STATE GOVERNMENT AGENCIES:

- A. 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.

DASNY	Dormitory Authority of the State of New York
DEC	Department of Environmental Conservation

DHCR	Division of Housing and Community Renewal
DOH	Department of Health
NYSDOL	New York State Department of Labor
DOS	Department of State
DOT	Department of Transportation
NYSPA	New York State Power Authority
OGS	Office of General Services
OCFS	Office of Children and Family Services
OMRD	Office of Mental Retardation and Developmental Disabilities
OPRHP	Office of Parks, Recreation and Historic Preservation
NYSED	New York State Education Department (Department of Education)
SHPO	State Historic Preservation Office
SUCF	State University Construction Fund
SUNY	State University of New York

1.07 NEW YORK STATE CODES

- A. 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.
 - 1. BCNYS Building Code of New York State
 - 2. 9-NYCRR New York State Dept. of Labor Title 9 State Building Code
 - 3. 10-NYCRR New York State Dept. of Labor Title 10 State Hospital Code
 - 4. 19-NYCRR Charter XXXIII, Sub Charter A, Uniform Fire Prevention and Building Code
- B. Where these abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.
 - 1. BCNYS Building Code of New York State
 - 2. ECCNYS Energy Conservation Code of New York State
 - 3. PCNYS Plumbing Code of New York State of New York State
 - 4. MCNYS Mechanical Code of New York State
 - 5. FGCNYS Fuel Gas Code of New York State
 - 6. FCNYS Fire Code of New York State

1.08 OTHER TERMS OR ACRONYMS:

- A. Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name in the following list.

1. Asbestos Containing Materials
2. Acoustical Tile
3. Infection Control Risk Assessment
4. Resilient Vinyl Tile
5. Suspended Acoustical Tile
6. Spray on Fire Resistive Materials
7. Thermal Systems Insulation
8. Vinyl Asbestos Tile
9. Vinyl Composition Tile

1.09 OTHER TERMS OR ACRONYMS:

- A. Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name in the following list.
- a. Asbestos Containing Materials
 - b. Acoustical Tile
 - c. Infection Control Risk Assessment
 - d. Resilient Vinyl Tile
 - e. Suspended Acoustical Tile
 - f. Spray on Fire Resistive Materials
 - g. Thermal Systems Insulation
 - h. Vinyl Asbestos Tile
 - i. Vinyl Composition Tile

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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 <p>NYS EDUCATION DEPARTMENT Office of Facilities Planning 89 Washington Avenue, Room 1060 EBA Albany, NY 12234</p>		<p>STATEMENT OF SPECIAL INSPECTIONS AND TESTS As required by the Building Code of NYS (2020 BCNYS)</p> <p style="color: red; font-style: italic;">Note: The code listings below are not to be considered all inclusive.</p>	
<p>BCNYS § 1704.2.3 requires the NYS Licensed Design Professional (of record) to complete the Statement of Special Inspections and Tests. Completion of the Statement of Special Inspections & Tests, and; Submission to the Office of Facilities Planning with the Construction Permit Application is a condition for issuance of the Building Permit.</p>			
School District Onteora CSD		Project Title Building & Site Improvements	
Building Phoenicia Elementary School			
SED Project # 621201-06-0011-017		Project Address 11 School Lane Phoenicia, NY 12464	
Architect/Engineer: Brian Cooney, P.E.			
Sign and Stamp:		(Empty space for signature and stamp)	
A/E Firm (or Dba): CPL		Phone 845-567-6700	Date 9/30/2022
Comments:			

INSPECTION AND TESTING Continuous & Periodic is as Defined by the BCNYS CHAPTER 17 All reports to be submitted to the owners representative for use, approval and record.	CONTINUOUS	PERIODIC	REFERENCE STANDARD	BCNYS REFERENCE	CHECK IF REQUIRED	IDENTIFY SPEC SECTION AND PROVIDE CLARIFYING NOTES IF NECESSARY
A. Steel Construction Ch. 22						
1. Material verification of high-strength bolts, nuts and washers.		X	AISC 360	1705.2 2204	<input type="checkbox"/>	
2. Inspection of high-strength bolting.	X	X	AISC 360 ACI 318	1705.2 2204.2	<input type="checkbox"/>	
3. Material verification of Structural Steel. Open Web Steel Joist and Girders. Basic protection of steel members, Seismic Resistance			AISC 360 ASTM A6, A514, A29 SJ100, 200 AISC 341	1705.2 2203, 2205 1705.2 2207	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
4. Spray Applied Fire Resistant Materials & Specialized Finishes			ASTM E605, E736	1705.14 1705.15	<input type="checkbox"/>	
5. Cold Formed Steel Construction- load bearing. Seismic Resistance			AISI S100, S220, S240 ANSI/SDI -NC1.0, RD1.0, SDI-C, ASCE 7, 8 AISI S400	1704.2.5 2210 2211	<input type="checkbox"/> <input type="checkbox"/>	
6. Material verification of weld filler materials.			AWS D1.1, D1.3	1705.2 2204.1	<input type="checkbox"/>	
7. Inspection of welding:			ACI 318: 26.6.4	T 1705.3 2204	<input type="checkbox"/>	
a. Structural steel	X	X	AWS D1.1, D1.3	1705.2	<input type="checkbox"/>	
b. Reinforcing steel	X	X	AWS D1.1, D1.3	1705.3.1	<input type="checkbox"/>	
c. Cold Formed Steel Deck			AISC S100, ASCE 7, 8	1705.2.2	<input type="checkbox"/>	
8. Inspection of steel frame joint details.		X		1705.2	<input type="checkbox"/>	

INSPECTION AND TESTING Continuous & Periodic is as Defined by the BCNYS CHAPTER 17 All reports to be submitted to the owners representative for use, approval and record.		CONTINUOUS	PERIODIC	REFERENCE STANDARD	BCNYS REFERENCE	CHECK IF REQUIRED	IDENTIFY SPEC SECTION AND PROVIDE CLARIFYING NOTES IF NECESSARY
B. Concrete Construction		Ch. 19					
1.	Inspection of reinforcing steel, including prestressing tendons, and verify placement.		X	Ch. 21, 22 ACI 318; Ch 20, 25.2, 25.3, 26.6.1, 26.6.3 AISC 360	T 1705.3 1901 1905	<input checked="" type="checkbox"/>	
2.	Inspection of reinforcing steel bar welding.			ACI 318, AWS D1.4	T 1705.3	<input type="checkbox"/>	
3.	Inspection of anchors to be installed in concrete prior to and during placement.	X		ACI 318: 17.8.2, 17.8.2.4	T 1705.3	<input type="checkbox"/>	
4.	Verify use of required design mix.		X	ACI 318: Ch. 19, 26.4.3, 26.4.4	T 1705.3 1904 1908	<input checked="" type="checkbox"/>	
5.	Sampling fresh concrete: slump, air content, temperature, strength test specimens.	X		ASTM C172, C31 ACI 318: 26.5, 26.9, 26.10, 26.11	T 1705.3 1901 1905 1908	<input checked="" type="checkbox"/>	
6.	Inspection of placement for proper application techniques.	X		ACI 318: 26.5	T 1705.3	<input checked="" type="checkbox"/>	
7.	Inspection for maintenance of specified curing temperature and techniques.		X	ACI 318: 26.5	T 1705.3 1908 1909	<input checked="" type="checkbox"/>	
8.	Inspection of prestressed concrete.	X		ACI 318: 26.10	T 1705.3	<input type="checkbox"/>	
9.	Erection of precast concrete members.		X	ACI 318: 26.9	T 1705.3	<input type="checkbox"/>	
10.	Verification of in-situ concrete strength prior to stressing of tendons and prior to removal of shores and forms from beams and slabs.		X	ACI 318: 26.11.2	T 1705.3	<input type="checkbox"/>	
11	Inspection of formwork		X	ACI 318: 26.11.1.2 (b)	T 1705.3	<input checked="" type="checkbox"/>	

C. Masonry Construction					Ch. 21		
INSPECTION AND TESTING Continuous & Periodic is as Defined by the BCNYS CHAPTER 17 All reports to be submitted to the owners representative for use, approval and record.	CONTINUOUS	PERIODIC	REFERENCE STANDARD		BCNYS REFERENCE	CHECK IF REQUIRED	IDENTIFY SPEC SECTION AND PROVIDE CLARIFYING NOTES IF NECESSARY
<p>L1 = Level 1 Inspection required for nonessential facilities.</p> <p>L2 = Level 2 Inspection required for essential facilities.</p> <p>* In general, schools are not considered essential facilities unless they are a designated emergency shelter.</p>			ASTM E119 UL 263 ASTM C1364 ASTM C1670 ASTM A706 ASCE 7, 8	TMS 402, 403, 404, 504, 602	1705.4 2101 1604		
1. <u>Verify to ensure compliance:</u>							
a. Proportions of site prepared mortar and grout.		X L1 & L2			1705.4 2103.2	<input type="checkbox"/>	
b. Placement of masonry units and construction of mortar joints.		X L1 & L2			1705.4 T 1705.3	<input type="checkbox"/>	
c. Location and placement of reinforcement, connectors, tendons, anchorages.		X L1 & L2			1705.45 2103.4 T 1705.3	<input type="checkbox"/>	
d. Prestressing technique.		X L1			1705.4	<input type="checkbox"/>	
Grout space prior to grouting.	X L2				1705.4	<input type="checkbox"/>	
e. Grade and size of prestressing tendons and anchorages.		X L1			1705.4	<input type="checkbox"/>	
Placement of grout.	X L2				1705.4	<input type="checkbox"/>	
f. Grout specs prior to grouting.	X L2				1705.4	<input type="checkbox"/>	
2. <u>Inspection program shall verify:</u>							
a. Size and location of structural elements.		X L1 & L2			1704.5 1705.4	<input type="checkbox"/>	
b. Type, size, and location of anchors.	X L2	X L1			1705.4 T 1705.3	<input type="checkbox"/>	
c. Specified size, grade, and type of reinforcement.		X L1 & L2			1704.5	<input type="checkbox"/>	
d. Welding of reinforcing bars.	X L1 & L2				1704.5	<input type="checkbox"/>	
e. Cold/hot weather protection of masonry construction.		X L1 & L2			1704.5, 2104.3, 2104.4	<input type="checkbox"/>	
f. Prestressing force measurement and application.	X L2	X L1			1704.5	<input type="checkbox"/>	
3. <u>Verification accessory placement prior to grouting:</u>	X L2	X L1			1704.5, 2105.2.2, 2105.3	<input type="checkbox"/>	
4. Grout placement.	X L1				1704.5	<input type="checkbox"/>	
5. Preparation of grout specimens, mortar specimens, and/or prisms.	X L1 & L2				1704.5, 2105.2.2, 2105.3	<input type="checkbox"/>	
6. Compliance with documents and submittals.		X L1 & L2			1704.5	<input type="checkbox"/>	

INSPECTION AND TESTING Continuous & Periodic is as Defined by the BCNYS CHAPTER 17 All reports to be submitted to the owners representative for use, approval and record.	CONTINUOUS	PERIODIC	REFERENCE STANDARD	BCNYS REFERENCE	CHECK IF REQUIRED	IDENTIFY SPEC SECTION AND PROVIDE CLARIFYING NOTES IF NECESSARY
D. Wood Construction Ch. 23						
1. Fabrication process of prefabricated Wood Structural Elements and assemblies.		X	Ch. 16 AWC, APA, CPA, DOC PS1, PS2	1704.6, 1705.5 2302, 2303 2304	<input type="checkbox"/>	
2. High-load diaphragms Seismic Resistance		X		1704, 1705, 1704.6 2304, 2305 2306, 2307, 2308	<input type="checkbox"/>	
E. Soils Ch. 18						
1. Geotechnical Investigations, Excavations, Grading, Fill Damp-proofing/ Water-Proofing		X	ASTM, NYS DOT OSHA Appendix J- BCNYS	1704, 1706 1803, 1804, 1805	<input checked="" type="checkbox"/>	
2. Flood & Stormwater Hazards [per BCNYS 106]		X	<u>Local Highway Authority</u> <u>Flood Plain Admin.</u> Appendix G- BCNYS	1703 1610, 1611, 1612 1805.1.2.1	<input type="checkbox"/> <input type="checkbox"/>	
F. Specialized Foundations- Piers, Piles Ch. 16						
1. Deep Foundation Elements: Driven Piles Cast in Place Helical Piles		X		T 1705.7 T 1705.8 1705.7 1705.8 1705.9	<input type="checkbox"/>	
G. Exterior Wall Coverings Ch. 14						
1. Exterior Insulation and Finish Systems (EIFS) MCM, HPL, Other Combustible Materials		X	ASTM E2568, E2273, E2570 E2393, E84 Ch. 16 NFPA 268, 275, 285, 286	1405, 1406, 1407, 1408 1704.2, 1705.12.5 1705.16	<input type="checkbox"/>	
H. Misc.						
1. Access Floors and Storage Racks Other Architectural, MEP Components Seismic Resistance		X		1705.12	<input type="checkbox"/>	
2. In-Situ Testing		X		1604.6, 1708	<input type="checkbox"/>	
3. Pre-Construction Load Testing		X		1604.7, 1709	<input type="checkbox"/>	
4. Fire Resistant Penetrations & Joints Fire Stops Testing for Smoke Control		X	Ch. 7 ASTM E119 UL 263	1705.17 1705.18	<input type="checkbox"/>	
5. Pre-Submission: Inventory of all Fire-Resistant-Rated Construction- Level 2 Alterations and greater [per BCNYS 106]	X		verification required EBCNYS Ch. 3 C. of E. 155 Regulations.	FCNYS 701.6 BCNYS 703.7 19CRR-NY XXXII	<input type="checkbox"/>	
6. Pre-Submission: Hazardous Material Survey Water Quality Survey	X X		verification required <u>ACM Letter- Certificate</u> C. of E. 155 Regulations.	US-EPA NYS-DOH	<input type="checkbox"/>	
7. Other:					<input type="checkbox"/>	

 <p>NYS EDUCATION DEPARTMENT Office of Facilities Planning 89 Washington Avenue, Room 1060 EBA Albany, NY 12234</p>	<p>STATEMENT OF SPECIAL INSPECTIONS AND TESTS As required by the Building Code of NYS (2020 BCNYS)</p> <p style="color: red; font-style: italic;">Note: The code listings below are not to be considered all inclusive.</p>
<p>BCNYS § 1704.2.3 requires the NYS Licensed Design Professional (of record) to complete the Statement of Special Inspections and Tests. Completion of the Statement of Special Inspections & Tests, and; Submission to the Office of Facilities Planning with the Construction Permit Application is a condition for issuance of the Building Permit.</p>	
School District Onteora CSD	Project Title Building & Site Improvements
Building Woodstock Elementary School	
SED Project # 621201-06-0009-016	Project Address 8 West Hurley Road, Woodstock, NY 12498
Architect/Engineer:	
	Sign and Stamp:
A/E Firm (or Dba): CPL	
	Phone 845-567-6700
	Date
Comments:	

INSPECTION AND TESTING Continuous & Periodic is as Defined by the BCNYS CHAPTER 17 All reports to be submitted to the owners representative for use, approval and record.	CONTINUOUS	PERIODIC	REFERENCE STANDARD	BCNYS REFERENCE	CHECK IF REQUIRED	IDENTIFY SPEC SECTION AND PROVIDE CLARIFYING NOTES IF NECESSARY
A. Steel Construction Ch. 22						
1. Material verification of high-strength bolts, nuts and washers.		X	AISC 360	1705.2 2204	<input type="checkbox"/>	
2. Inspection of high-strength bolting.	X	X	AISC 360 ACI 318	1705.2 2204.2	<input type="checkbox"/>	
3. Material verification of Structural Steel. Open Web Steel Joist and Girders. Basic protection of steel members, Seismic Resistance			AISC 360 ASTM A6, A514, A29 SJ100, 200 AISC 341	1705.2 2203, 2205 1705.2 2207	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
4. Spray Applied Fire Resistant Materials & Specialized Finishes			ASTM E605, E736	1705.14 1705.15	<input type="checkbox"/>	
5. Cold Formed Steel Construction- load bearing. Seismic Resistance			AISI S100, S220, S240 ANSI/SDI -NC1.0, RD1.0, SDI-C, ASCE 7, 8 AISI S400	1704.2.5 2210 2211	<input type="checkbox"/> <input type="checkbox"/>	
6. Material verification of weld filler materials.			AWS D1.1, D1.3	1705.2 2204.1	<input type="checkbox"/>	
7. Inspection of welding:			ACI 318: 26.6.4	T 1705.3 2204	<input type="checkbox"/>	
a. Structural steel	X	X	AWS D1.1, D1.3	1705.2	<input type="checkbox"/>	
b. Reinforcing steel	X	X	AWS D1.1, D1.3	1705.3.1	<input type="checkbox"/>	
c. Cold Formed Steel Deck			AISC S100, ASCE 7, 8	1705.2.2	<input type="checkbox"/>	
8. Inspection of steel frame joint details.		X		1705.2	<input type="checkbox"/>	

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B. Concrete Construction		Ch. 19					
1.	Inspection of reinforcing steel, including prestressing tendons, and verify placement.		X	Ch. 21, 22 ACI 318; Ch 20, 25.2, 25.3, 26.6.1, 26.6.3 AISC 360	T 1705.3 1901 1905	<input type="checkbox"/>	
2.	Inspection of reinforcing steel bar welding.			ACI 318, AWS D1.4	T 1705.3	<input type="checkbox"/>	
3.	Inspection of anchors to be installed in concrete prior to and during placement.	X		ACI 318: 17.8.2, 17.8.2.4	T 1705.3	<input type="checkbox"/>	
4.	Verify use of required design mix.		X	ACI 318: Ch. 19, 26.4.3, 26.4.4	T 1705.3 1904 1908	<input type="checkbox"/>	
5.	Sampling fresh concrete: slump, air content, temperature, strength test specimens.	X		ASTM C172, C31 ACI 318: 26.5, 26.9, 26.10, 26.11	T 1705.3 1901 1905 1908	<input type="checkbox"/>	
6.	Inspection of placement for proper application techniques.	X		ACI 318: 26.5	T 1705.3	<input type="checkbox"/>	
7.	Inspection for maintenance of specified curing temperature and techniques.		X	ACI 318: 26.5	T 1705.3 1908 1909	<input type="checkbox"/>	
8.	Inspection of prestressed concrete.	X		ACI 318: 26.10	T 1705.3	<input type="checkbox"/>	
9.	Erection of precast concrete members.		X	ACI 318: 26.9	T 1705.3	<input type="checkbox"/>	
10.	Verification of in-situ concrete strength prior to stressing of tendons and prior to removal of shores and forms from beams and slabs.		X	ACI 318: 26.11.2	T 1705.3	<input type="checkbox"/>	
11	Inspection of formwork		X	ACI 318: 26.11.1.2 (b)	T 1705.3	<input type="checkbox"/>	

C. Masonry Construction					Ch. 21		
INSPECTION AND TESTING Continuous & Periodic is as Defined by the BCNYS CHAPTER 17 All reports to be submitted to the owners representative for use, approval and record.	CONTINUOUS	PERIODIC	REFERENCE STANDARD		BCNYS REFERENCE	CHECK IF REQUIRED	IDENTIFY SPEC SECTION AND PROVIDE CLARIFYING NOTES IF NECESSARY
<p>L1 = Level 1 Inspection required for nonessential facilities.</p> <p>L2 = Level 2 Inspection required for essential facilities.</p> <p>* In general, schools are not considered essential facilities unless they are a designated emergency shelter.</p>			ASTM E119 UL 263 ASTM C1364 ASTM C1670 ASTM A706 ASCE 7, 8	TMS 402, 403, 404, 504, 602	1705.4 2101 1604		
1. <u>Verify to ensure compliance:</u>							
a. Proportions of site prepared mortar and grout.		X L1 & L2			1705.4 2103.2	<input type="checkbox"/>	
b. Placement of masonry units and construction of mortar joints.		X L1 & L2			1705.4 T 1705.3	<input type="checkbox"/>	
c. Location and placement of reinforcement, connectors, tendons, anchorages.		X L1 & L2			1705.45 2103.4 T 1705.3	<input type="checkbox"/>	
d. Prestressing technique.		X L1			1705.4	<input type="checkbox"/>	
Grout space prior to grouting.	X L2				1705.4	<input type="checkbox"/>	
e. Grade and size of prestressing tendons and anchorages.		X L1			1705.4	<input type="checkbox"/>	
Placement of grout.	X L2				1705.4	<input type="checkbox"/>	
f. Grout specs prior to grouting.	X L2				1705.4	<input type="checkbox"/>	
2. <u>Inspection program shall verify:</u>							
a. Size and location of structural elements.		X L1 & L2			1704.5 1705.4	<input type="checkbox"/>	
b. Type, size, and location of anchors.	X L2	X L1			1705.4 T 1705.3	<input type="checkbox"/>	
c. Specified size, grade, and type of reinforcement.		X L1 & L2			1704.5	<input type="checkbox"/>	
d. Welding of reinforcing bars.	X L1 & L2				1704.5	<input type="checkbox"/>	
e. Cold/hot weather protection of masonry construction.		X L1 & L2			1704.5, 2104.3, 2104.4	<input type="checkbox"/>	
f. Prestressing force measurement and application.	X L2	X L1			1704.5	<input type="checkbox"/>	
3. <u>Verification accessory placement prior to grouting:</u>	X L2	X L1			1704.5, 2105.2.2, 2105.3	<input type="checkbox"/>	
4. Grout placement.	X L1				1704.5	<input type="checkbox"/>	
5. Preparation of grout specimens, mortar specimens, and/or prisms.	X L1 & L2				1704.5, 2105.2.2, 2105.3	<input type="checkbox"/>	
6. Compliance with documents and submittals.		X L1 & L2			1704.5	<input type="checkbox"/>	

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D. Wood Construction Ch. 23						
1. Fabrication process of prefabricated Wood Structural Elements and assemblies.		X	Ch. 16 AWC, APA, CPA, DOC PS1, PS2	1704.6, 1705.5 2302, 2303 2304	<input type="checkbox"/>	
2. High-load diaphragms Seismic Resistance		X		1704, 1705, 1704.6 2304, 2305 2306, 2307, 2308	<input type="checkbox"/>	
E. Soils Ch. 18						
1. Geotechnical Investigations, Excavations, Grading, Fill Damp-proofing/ Water-Proofing		X	ASTM, NYS DOT OSHA Appendix J- BCNYS	1704, 1706 1803, 1804, 1805	<input type="checkbox"/>	
2. Flood & Stormwater Hazards [per BCNYS 106]		X	<u>Local Highway Authority</u> <u>Flood Plain Admin.</u> Appendix G- BCNYS	1703 1610, 1611, 1612 1805.1.2.1	<input type="checkbox"/> <input type="checkbox"/>	
F. Specialized Foundations- Piers, Piles Ch. 16						
1. Deep Foundation Elements: Driven Piles Cast in Place Helical Piles		X		T 1705.7 T 1705.8 1705.7 1705.8 1705.9	<input type="checkbox"/>	
G. Exterior Wall Coverings Ch. 14						
1. Exterior Insulation and Finish Systems (EIFS) MCM, HPL, Other Combustible Materials		X	ASTM E2568, E2273, E2570 E2393, E84 Ch. 16 NFPA 268, 275, 285, 286	1405, 1406, 1407, 1408 1704.2, 1705.12.5 1705.16	<input type="checkbox"/>	
H. Misc.						
1. Access Floors and Storage Racks Other Architectural, MEP Components Seismic Resistance		X		1705.12	<input type="checkbox"/>	
2. In-Situ Testing		X		1604.6, 1708	<input type="checkbox"/>	
3. Pre-Construction Load Testing		X		1604.7, 1709	<input type="checkbox"/>	
4. Fire Resistant Penetrations & Joints Fire Stops Testing for Smoke Control		X	Ch. 7 ASTM E119 UL 263	1705.17 1705.18	<input type="checkbox"/>	
5. Pre-Submission: Inventory of all Fire-Resistant-Rated Construction- Level 2 Alterations and greater [per BCNYS 106]	X		verification required EBCNYS Ch. 3 C. of E. 155 Regulations.	<u>FCNYS 701.6</u> <u>BCNYS 703.7</u> 19CRR-NY XXXII	<input type="checkbox"/>	
6. Pre-Submission: Hazardous Material Survey Water Quality Survey	X X		verification required <u>ACM Letter- Certificate</u> C. of E. 155 Regulations.	US-EPA NYS-DOH	<input type="checkbox"/>	
7. Other:					<input type="checkbox"/>	

STATEMENT OF SPECIAL
INSPECTIONS AND TESTS
COVER

SECTION 014534
STATEMENT OF SPECIAL INSPECTIONS AND TESTS COVER

PART 1 GENERAL

1.01 SUMMARY

- A. Attached is NYS Education Department Statement of Special Inspections and Tests.
 - 1. The document is provided for the Contractor's reference.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 015000
TEMPORARY FACILITIES AND CONTROLS**PART 1 GENERAL****1.01 SUMMARY**

- A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection.
- B. Temporary utilities include, but are not limited to, the following:
 - 1. Water service and distribution.
 - 2. Temporary electric power and light.
 - 3. Temporary heat.
 - 4. Ventilation and Humidity Control
 - 5. Telephone service.
 - 6. Sanitary facilities, including drinking water.
 - 7. Storm and sanitary sewer.
- C. Support facilities include, but are not limited to, the following:
 - 1. Field offices and storage containers.
 - 2. Temporary roads and paving.
 - 3. Dewatering facilities and drains.
 - 4. Temporary partitions and enclosures.
 - 5. Hoists and temporary elevator use.
 - 6. Temporary project identification sign and project signage.
 - 7. Waste disposal services and dumpsters.
 - 8. Construction aids and miscellaneous services and facilities.
- D. Security and protection facilities include, but are not limited to, the following:
 - 1. Temporary fire protection.
 - 2. Barricades, warning signs, and lights.
 - 3. Tree and plant protection.
 - 4. Security enclosure and lockup.
 - 5. Temporary enclosures.
 - 6. Temporary partitions.
 - 7. Sidewalk Bridge for maintaining legal exits.
 - 8. Enclosure fence for the work site.
 - 9. Environmental protection.
- E. Related Sections:
 - 1. Division 01 Section "Summary" for work restrictions and limitations on utility interruptions.

1.02 INFORMATIONAL SUBMITTALS

- A. Temporary Utilities: The contractor shall submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.
 - B. Implementation and Termination Schedule: Within 15 days of the date established for submittal of the Contractor's Construction Schedule, the contractor shall submit a schedule indicating implementation and termination of each temporary utility for which the Contractor is responsible.
 - C. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
 - D. Erosion and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent
 - E. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention
-

program.

- F. **Moisture-Protection Plan:** Describe procedures and controls for protecting materials and construction from water absorption and damage, including delivery, handling, and storage provisions for materials subject to water absorption or water damage, discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water damaged Work.
 - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
 - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
 - 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- G. **Dust-Control and HVAC-Control Plan:** Submit coordination drawing and narrative that indicates the dust-control and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
 - 1. Locations of dust-control partitions at each phase of the work.
 - 2. HVAC system isolation schematic drawing.
 - 3. Location of proposed air filtration system discharge.
 - 4. Other dust-control measures.
 - 5. Waste management plan.
- H. **Accessible Temporary Egress:** Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.03 DEFINITIONS

- A. **Temporary Enclosure:** As determined by Architect, temporary roofing is complete, insulated, all exterior wall openings are closed with temporary closures.
- B. **Permanent Enclosure:** As determined by Architect, permanent roofing is complete, insulated, and weather tight; exterior walls are insulated and weather tight; and all openings are closed with permanent construction or substantial temporary closures.
- C. **Temporary Facilities:** Construction, fixtures, fittings, and other built items required to accomplish the work but which are not incorporated into the finished work.
- D. **Temporary Utilities:** A type of temporary facility, primary sources of electric power, water, natural gas supply, etc., obtained from public utilities, other main distribution systems, or temporary sources constructed for the project, but not including the fixtures and equipment served.
- E. **Temporary Services:** Activities required during construction, which do not directly accomplish the work.

1.04 QUALITY ASSURANCE

- A. **Regulations:** The contractor shall comply with industry standards and with applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
 - 1. Building code requirements.
 - 2. Health and safety regulations.
 - 3. Utility company regulations.
 - 4. Police, fire department and rescue squad rules.
 - 5. Environmental protection regulations.
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- B. Standards: The Contractor shall comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."
 - C. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with the normal application of trade regulations and union jurisdictions.
 - D. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
 - E. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.05 USE CHARGES

- A. General: Installation, and removal of, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction.
 - 1. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
 - 2. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
 - 3. Gas Service from Existing System: Gas Service from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- B. Cost or use charges for temporary facilities are not chargeable to the Owner or the Architect. The Architect will not accept a prime contractor's cost or use charges for temporary services or facilities as a basis of claim for an adjustment in the Contract Sum or the Contract Time.
- C. Other entities using temporary services and facilities include, but are not limited to, the following:
 - 1. Other nonprime contractors.
 - 2. The Owner's work forces.
 - 3. Occupants of the Project.
 - 4. The Architect.
 - 5. Testing agencies.
 - 6. Personnel of government agencies.

1.06 PROJECT CONDITIONS

- A. Temporary Utilities: The contractor shall prepare a schedule indicating dates for implementation and termination of each temporary utility for which the Contractor is responsible. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of permanent service.
 - B. Conditions of Use: Keep temporary services and facilities clean. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.
 - C. Temporary Use of Permanent Facilities: If the Owner permits temporary use of the permanent facilities the Installer of each permanent service shall assume responsibility for its operation, maintenance, and protection during use as a construction facility prior to the Owner's
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acceptance, regardless of previously assigned responsibilities.

PART 2 PRODUCTS

2.01 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. Portable 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 and bottom rails.
- C. General: The contractor shall provide new materials. If acceptable to the Architect, undamaged, previously used materials in serviceable condition may be used. Provide materials suitable for use intended.
- D. Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry."
 - 1. For signs and directory boards, provide exterior-type, Grade B-B high-density concrete form overlay plywood of sizes and thicknesses indicated.
 - 2. For fences and vision barriers, provide minimum 3/8-inch- thick exterior plywood.
 - 3. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch thick exterior plywood.
- E. Gypsum Wallboard: Provide 5/8 type x gypsum wallboard on interior walls of temporary offices or temporary partitions.
- F. Roofing Materials: Provide UL Class A roofing materials on roofs of job-built temporary offices, shops, and sheds.
- G. Paint: Comply with requirements of Division 9 Section "Painting."
- H. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
- I. Water: Provide potable water approved by local health authorities.
- J. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- K. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches.
- L. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.02 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
 - B. Common-Use Field Office (if needed for the Owner, Architect or Construction Manager): Of sufficient size to accommodate needs of user and construction personnel office activities and to accommodate project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
 - 1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
 - 2. Conference room of sufficient size to accommodate meetings of 15 individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- square tack and marker boards.
 - 3. Drinking water and private toilet.
 - 4. Coffee machine and supplies.
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5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
 6. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations. Coordinate with Owner if use of existing building for storage and protection of materials is to be incorporated into Project.
1. Store combustible materials apart from building.

2.03 EQUIPMENT

- A. General: The contractor shall provide new equipment. If acceptable to the user, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4-inch heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.
- C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
- D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
- E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.
- G. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- H. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.
1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.
- I. HVAC Equipment: If temporary heat will be needed after building enclosure: Upon Building enclosure or unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction and clean HVAC system as required in Division 01 Section "Closeout Procedures".
 4. Air Filtration Units: HEPA primary and secondary filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 EXECUTION**3.01 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.

3.02 TEMPORARY UTILITY INSTALLATION

- A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
 - 2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
 - 3. Obtain easements to bring temporary utilities to the site where the Owner's easements cannot be used for that purpose.
- B. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- C. The contractor shall provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
- D. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
 - 1. Connect temporary sewers to sewage disposal systems as directed by authorities having jurisdiction.
- E. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged.
 - 1. Filter out excessive amounts of soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
 - 2. Connect temporary sewers to the municipal system as directed by sewer department officials.
 - 3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. Following heavy use, restore normal conditions promptly.
- F. Sanitary Facilities: The General Contractor will provide temporary toilets for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
 - 1. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
 - 2. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.
- G. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- H. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- I. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics at each building addition and maintain them during construction period. Include overload-protected

disconnects, automatic ground-fault interrupters.

1. Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
 2. Install electric power service underground, except where overhead service must be used.
 3. Power Distribution System: Install wiring overhead and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 V, ac 20 ampere rating, and lighting circuits may be nonmetallic-sheathed cable where overhead and exposed for surveillance.
 4. Provide temporary power in the areas of renovation where the existing receptacles have been removed and the proximity to power source exceeds 50'.
- J. Temporary Lighting: When an overhead floor or roof deck has been installed, provide temporary lighting with local switching.
1. Install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions.
 2. Operate temporary lighting that will fulfill security and protection requirements without operating the entire system. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions.
 - a. Security lighting for building exteriors shall be continuously operational and maintained.
 - b. Temporary lighting shall be maintained in accordance with OSHA standards for power and foot candle levels in all areas while workers occupy the space.
 3. Provide temporary lighting in the areas of renovation where the existing fixtures have been removed and the new lighting has not been installed.
- K. Temporary Heating: Provide temporary heating 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. Coordinate ventilation requirements to produce the ambient condition required and minimize energy consumption. Direct fired propane or Kerosene salamanders will not be permitted.
1. Temporary Heat: Provide temporary heat in all existing areas that are under construction and/or have their permanent heat temporarily or permanently shut off for construction reasons.
 2. Provide temporary heat in all new construction areas as soon as each area of new construction is fully enclosed: walls, temporary roofs, and either windows and doors or temporary windows and doors.
 3. Temporary heat provided shall be sufficient to maintain all areas of new, fully enclosed construction (and renovated areas of existing construction that, due to construction, are temporarily without permanent heat), including concealed ceiling or chase spaces, to a minimum 50°F, 24 hours a day, in winter weather as cold as 15°F outside.
 4. Temporary heat must not damage any materials, new or existing, within or without the Project limits, on school property, nor shall it cause noxious odors or fumes or some other nuisance.
 5. Temporary heat must be installed, operated, maintained, and dismantled in a safe, legal manner.
 6. Provide adequate ventilation as required by Codes and labor laws in all areas of Project limits as part of the work of this Section.
- L. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
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- M. Drinking-Water Facilities: The Contractor shall provide containerized, tap-dispenser, bottled-water drinking-water units, including paper cup supply.

3.03 SUPPORT FACILITIES INSTALLATION

- A. Temporary Roads and Paved Areas: Provide temporary roads and paved areas as required to accommodate the work. Coordinate location of same with the Owner.
1. Construct and maintain temporary roads and parking areas to support the indicated (H-20 minimum) loading adequately and to withstand exposure to traffic during the construction period.
 2. Temporary Roads and Parking areas: Use granular materials that will support the intended loading and traffic and maintain the areas throughout the construction period.
 3. Extend temporary roads in and around the construction area as necessary to accommodate delivery and storage of materials, equipment usage, administration, and supervision.
 4. Provide dust-control treatment that is nonpolluting and non-tracking. Reapply treatment as required to minimize dust.
- B. 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.
- C. Temporary Parking: **Use designated areas of Owner's existing** parking areas for construction personnel.
- D. Temporary Parking/Staging and Access Roads
1. Provide access for suitable parking areas. Re-grade and re-seed any areas disturbed by parking/ staging.
 2. Parking Areas: Includes contractors' employees and construction vehicle parking. Minimum of 6-inch reference Item. #304.3 course.
 3. Access Roads: Includes access roads for delivery through staging area to building work areas, and to equipment and storage areas and sheds. Minimum of 10-foot wide, 9-inch reference Item. #304.3 course.
 4. Traffic Regulations:
 - a. Access through Owner's entrances shall be limited
 - b. Utilize only entrances/temporary roads as designated
 - c. Maintain all site traffic regulations
- 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 nor endanger permanent Work or temporary facilities.
 2. Remove snow and ice as required to minimize accumulations.
- 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 Division 01 Section "Execution" for progress cleaning requirements.
- G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- H. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
1. Do not load elevators beyond their rated weight capacity.
 2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become
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damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

- I. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.
- J. 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.
- K. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
 - B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 - 1. Comply with work restrictions specified in Division 01 Section "Summary."
 - C. Temporary Erosion and Sedimentation Control: 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.
 - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
 - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from the project site during the course of the project.
 - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
 - 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.
 - F. Enclosure Fence: When excavation begins the contractor will install an enclosure fence with lockable entrance gates. Install in a manner that will prevent the public and animals from easily entering the site, except by the entrance gates.
 - 1. Provide open-mesh, 6' high chain link fence with posts.
 - 2. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
 - 3. Provide min. 2 double swing access gates and man gates. Each gate is to have a chain and padlock.
 - 4. Provide (2) keys for each lock to the Owner.
 - 5. Remove fence as soon as practicable.
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- G. 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. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.
- H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- I. Project Identification and Temporary Signs: Prepare Project identification and other signs in sizes indicated. Install signs where indicated to inform public and persons seeking entrance to Project. Do not permit installation of unauthorized signs.
1. Engage an experienced sign painter to apply graphics for Project identification signs. Comply with details indicated.
 2. Prepare temporary signs to provide directional information to construction personnel and visitors.
 3. Construct signs of exterior-type Grade B-B high-density concrete form overlay plywood. Support on posts or framing of preservative-treated wood or steel.
 - a. Size: 4-feet by 8-feet by 3/4-inch thick.
 4. Paint sign panel and applied graphics with exterior-grade alkyd gloss enamel over exterior primer.
 5. See Example Project Sign at the end of this section
- J. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors for each site. Unauthorized signs are not permitted.
1. For construction traffic control/flow at entrances/exits, as designated by the Owner.
 2. For warning signs as required
 3. Per OSHA standards as necessary
 4. For trailer identification
 5. For "No Smoking" safe work site at multiple locations.
- K. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- L. 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. Construct covered walkways using scaffold or shoring framing.
 2. 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.
 3. Paint and maintain appearance of walkway for duration of the Work.
- M. Temporary Enclosures: Provide temporary enclosure for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.
1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 sq. ft. or less with plywood or similar materials.
 3. Close openings through floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
 4. Where temporary wood or plywood enclosure exceeds 100 sq. ft. in area, use UL labeled, fire-retardant-treated material for framing and main sheathing.
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- N. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
1. Temporary partitions shall be installed at all openings where additions connect to existing buildings, and where required to protect areas, spaces, property, personnel, building occupants; to separate and control dust, debris, noise, access, sight, fire areas, safety and security.
 2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
 3. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
 4. Insulate partitions to control noise transmission to occupied areas.
 5. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
 6. Protect air-handling equipment.
 7. Provide walk-off mats at each entrance through temporary partition.
- O. 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.
1. 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.
 2. Prohibit smoking in construction areas.
 3. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
 4. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.
 5. Store combustible materials in containers in fire-safe locations
 6. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
- P. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Coordinate with the installation and release of material to minimize the opportunity for theft and vandalism.

3.05 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture-Protection Plan: Provide written plan for addressing any trapping of water in finished work. Document all visible signs of mold that may appear during construction. Protect stored materials and installed Work in accordance with Moisture and Mold Protection Plan.
- B. Exposed Construction Phase: 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.
- C. Partially Enclosed Construction Phase: After installation of weather barriers but before Permanent Enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
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1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
 2. Keep interior spaces reasonably clean and protected from water damage.
 3. Periodically collect and remove waste containing cellulose or other organic matter.
 4. Discard or replace water-damaged material.
 5. Do not install material that is wet.
 6. Discard, replace or clean stored or installed material that begins to grow mold.
 7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.
- D. Controlled Construction Phase of Construction: After completing and sealing of the permanent 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. The Contractor is to provide temporary dehumidification and ventilation until the building systems are operational and the spaces are substantially completed.
 3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
 - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective.
 - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record daily readings over a forty-eight hour period. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
 - c. Remove materials that cannot be completely restored to their manufactured moisture level in 48 hours.

END OF SECTION

**SECTION 015000.01
TEMPORARY CONDITIONS APPLICABLE TO ALL SCOPES**

KEY

A	TEMPORARY ROADS AND PARKING
B	SNOW REMOVAL
C	TEMPORARY SITE FENCING
D	FIELD ENGINEERING
E	FIRE EXTINGUISHERS
F	CONSTRUCTION MANAGERS FIELD OFFICES
G	BUILDING ENCLOSURE AND BUILDING ACCESS
H	Not Used
I	TEMPORARY ROOF ENCLOSURE
J	ROOF DRAINAGE
K	TEMPORARY BUILDING HEAT
L	TEMPORARY CONSTRUCTION HEAT
M	TEMPORARY WATER
N	TEMPORARY TOILETS
O	TEMPORARY LIGHTING AND ELECTRIC
P	TEMPORARY SIGNAGE
Q	UTILITY USAGE CHARGES
R	EXHAUST AIR
S	Not Used
T	Not Used
U	Not Used
V	Not Used
W	FINAL CLEANING
X	REBAR CAPS
Y	DUST CONTROL
Z	TEMPORARY PARTITIONS
AA	TEMPORARY RAILINGS
BB	RIGGING

A. TEMPORARY ROADS AND PARKING

1. Road Cleaning: Each Prime contractor shall maintain public roads, and keep all building access roads, parking areas and walkways in an acceptably clean condition. This includes the removal of dirt due to your operations daily if required. Additionally, the Site Contractor (SC) shall sweep all roadways and paths leading to and from the project site as required to maintain them in a clean safe condition due to all project traffic a maximum of once a week for the duration of the project.

2. Temporary Pavement:

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- a. In areas where shown on the phasing plans; the Site Contractor (SC) shall construct and maintain roadways and parking areas to top of base course for temporary access. Roadway section shall be as defined on the civil drawings. The Site Contractor (SC) shall be responsible for any additional costs required such as cleaning prior to tack-coating, and possible sub base repair required due to the phased installation of pavement and sub-base in these areas (as indicated in the construction schedule):
 - b. The Site Contractor (SC) shall repair /replace roadway and parking bases prior to placing pavement. Repair shall include, but not be limited to:
 1. Repair anywhere another Trade Contractor has to perform excavation through or across the area.
 2. Remove and replace any material contaminated due to construction activities.
 3. Repair any soft spots should they develop.
3. Temporary Roads and Access to the Work
- a. The Site Contractor (SC) is responsible to construct, maintain, and restore temporary access roadways, staging areas, and parking lots areas to the extent as shown on the phasing plans. The Site Contractor (SC) shall install temporary access roadways, staging areas, and parking lots as soon as possible (see schedule for further details), and maintain as required to allow construction access to site as well as district and/or public access to the existing facility throughout the construction.
 - b. In addition to the work shown on the phasing plans, the Site Contractor (SC) shall grade & maintain grades and site drainage around buildings so that concrete trucks, 4 wheel drive lulls, and cranes will be able to travel and get maintain access to the work. In the event a concrete truck, 4-wheel drive lull, or a crane gets stuck, the Site Contractor (SC) will provide towing to and from the work area at no cost to the contractor or owner.
 - c. Each Prime Contractor shall be responsible for any additional access roadways and pathways that may be required above and beyond what Site Contractor (SC) is responsible for. This shall include the installation, maintenance, removal and restoration of existing areas. Coordinate this with the Construction Manager before work is implemented.
 - d. The Site Contractor (SC) shall provide watering of temporary roadways to control dust as/if required and directed by the CM.

B. SNOW REMOVAL: (NOT USED)

C. TEMPORARY SITE FENCING:

1. Temporary Fence: The Site Contractor (SC) shall provide site fencing as shown. The exact location of fencing will be determined in the field, however it has been generally delineated on the Site Phasing plans (SPP series as included in division 1); at all times it is required to contain the construction work areas from that of the owner and the public. Each Prime Contractor shall coordinate with the Construction manager throughout the project to alter any fencing locations as needed to allow for the work to occur while keeping the necessary separations between construction and the schools daily functions. Construction fencing may be used or rented fence as long as it looks reasonably new and is erected neatly in straight lines. Unless specifically labeled otherwise, all fence is to be 6' high chain link

fence with posts at 6' on center and a horizontal pipe at the top of the fence; or Pre-manufactured panels may be used so long as they are sandbagged and wire tied together as required to keep the construction area secure (Fence to be equal to "Rent-a-Fence" (www.rentnational.com)). Location of the fence is to be approved by the Construction Manager. Any vehicle gates shall be a minimum of 20' wide (Some double gates are also required – See plan), and any man gates shall be a minimum of 4' wide. Furnish and install self-closing hinges on the 4 foot gates. Provide chains and locks (all keyed alike) for each gate opening. Provide the Construction Manager with five (5) sets of keys; and include the maintenance of all items associated with the temporary site fencing. Install all fencing as soon as practical See construction schedule for start dates.

D. FIELD ENGINEERING:

1. The SC shall provide the services of a licensed Surveyor to stake out two (2) perpendicular lines and one (1) vertical benchmark. Include 8 monuments (4 to establish each line). Monuments to be 6 x 6 wood posts flush with grade and extending 4 feet below grade Maintain monuments or points through project completion.

E. FIRE EXTINGUISHERS:

1. The General Construction Contractor (GC) shall provide and maintain in a fully charged condition a minimum of Five (5) large fire extinguishers of the all hazard type throughout the construction period. Fire extinguishers are to be mounted on 4' high portable red stands and located where approved by the Construction Manager. Additionally; the General Construction Contractor (GC) shall increase the quantities as required so that in no event shall there be less than the required quantities of fire extinguishers per OSHA or the NYS Building code.

F. CONSTRUCTION MANAGERS FIELD OFFICES:

- a. Field Office - The General Contractor (GC) shall provide fit-up within an existing space within the Onteora Woodstock ES building for the exclusive use of the Construction Manager, this office is to be set up & furnished within 10 days after award of the contract and is to remain on site until the completion of the work. Assume relocating the office one time as construction evolves. The contents of the office should be insured by the General Construction Contractor (GC) The field office is to be equipped as follows:
1. Air Conditioning / Provide Window Air Conditioning for each office window as well as the conference room. AC Shall be capable to support the needs for up to 20 people for job meetings / the EC shall provide any necessary power to support the Window Air Conditioners as provided by the GC – See item “O” Below.
 2. Minimum furnishings to be provided and maintained include:
 - a. fire extinguisher
 - b. Project size first aid kit
 - c. Two (2) desks 3 ft x 5 ft with drawers / Provide desk lamps as may be necessary due to existing conditions
 - d. Two (2) desk chairs
 - e. One (1) 3 ft x 6 ft drafting tables and with lights
 - f. Four (4) 4-drawer legal file cabinets, lockable
 - g. Two (2) all metal plan racks to hold 8 racks of drawings
 - h. Ten (10) folding chairs
 - i. Two (2) 5 shelf bookcases
 - j. Three (3) 30” x 96” folding tables
 - k. Two (2) white boards
 3. Include additional equipment for the Construction Manager’s field office as follows (including service, maintenance and supplies):
 - a. Copy machine with automatic sheet feeder and which can switch between, 8 1/2x11, legal, and 11x17 sizes without changing cassettes; and have the capacity to scan via a feeder assembly a 10 page 11x17 document to a PDF, and has all appropriate software available to allow it to be interfaced with a Microsoft compatible computer using a current software configuration.
 4. High speed business class Internet connection – Provided by the Onteora School District.
 5. Install Polycom speaker for phone conference calls.
 6. Include a bottled water base unit and a continuous supply of bottled water for the field office.
 7. Include janitor services to clean the field office weekly. Dust all surfaces weekly. Sweep & mop the floors weekly. Clean the windows monthly.

G. BUILDING ENCLOSURE AND BUILDING ACCESS:

1. The General Construction Contractor (GC) shall provide weather and security enclosure to the building as may be required for their work. Review all aspects of the temporary enclosure with BBL's superintendent prior to ordering materials. Maintain temporary enclosures as required to ensure against damage. Do not remove temporary enclosure unless: (a) weather forecast is favorable, (b) contractor is prepared to either reinstall the removed enclosure, or install permanent construction the same day as the removal, & (c) BBL's superintendent has no issues with its removal.
2. Enclosures must not damage permanent surfaces.
3. The General Construction Contractor (GC) shall be responsible to secure the building nightly throughout their duration on the project. At a minimum, this shall consist of closing and locking all means of access into the building, closing and latching all windows, doors, vents, hatches, and other possible access points such as skylight openings or access areas.
4. In the event any enclosure is damaged by weather, immediately make repairs without additional cost to Owner or BBL.
5. Maintain the building weather-tight at all times.
6. Modifications to the enclosure during the course of construction is the responsibility of the contractor that needs the modifications.

H. Not Used:**I. TEMPORARY ROOF ENCLOSURE:**

1. Each Prime contractor shall install and maintain a weather tight temporary roof over all roof penetrations / unsealed roof areas and/or unfinished roof edges due to his work. This work shall also be maintained throughout construction until a permanent roof repair has been completed.

J. ROOF DRAINAGE: (NOT USED)**K. TEMPORARY BUILDING HEAT: (NOT USED)****L. TEMPORARY CONSTRUCTION HEAT: (NOT USED)****M. TEMPORARY WATER:**

1. The Mechanical Construction Contractor (MC) shall provide and maintain Temporary construction water as specified below:
 - a. Install a temporary 3/4" hose bib (or maintain an existing one, if it exists) within 5' of the building for use by all contractors within 2 weeks of start of construction. Temporary lines shall be frost-protected and of frost-free material.

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- b. Include the relocation and removal of these items as required and necessary to maintain pace with the construction schedule.
 - c. Temporary Water Service shall not be used for potable water.
 2. Contractors may use the owner's water service for temporary construction use; however, any modifications to the same to accommodate the connectivity is the responsibility of the contractor requiring the water

N. TEMPORARY TOILETS:

1. The General Construction Contractor (GC) shall provide and maintain a minimum of 4 temporary toilets. Actual toilet needs may vary throughout construction, but at no time shall there be less than 1 toilet per 20 workers at each site. The General Construction Contractor (GC) shall include any associated costs for setting, hoisting, and toilet relocations (at least 3 per unit).
 - a. Locate all temporary toilets where directed by the Construction Manager.
 - b. Include periodic cleaning as required to service the project. Cleaning shall be conducted on a weekly basis, as a minimum.
 - c. Remove temporary toilets when directed by the Construction Manager.

O. TEMPORARY LIGHTING AND ELECTRIC:

1. The Electrical Construction Contractor (EC) shall provide and maintain Temporary Electric Light and Power as specified below/whichever is more stringent. Temporary services are to be in compliance with UL and OSHA regulations and all other applicable codes. Include any utility company charges as may be required for your work. In no case are temporary services to be less than the following:
 - a. Temp Power:
 1. The Electrical Construction Contractor (EC) shall maintain temporary power using the existing service from the street. In addition to the maintaining the existing power panels the EC shall provide up to five (5) 200-amp temporary service panels located throughout the work area specifically for temporary construction lighting and power needs as noted below: relocate these as required as construction continues as necessary to maintain adequate power and lighting for the work under construction.
 2. The Owner is to pay all power consumption bills for temporary power within the building while using his existing service.
 - b. Temp Building Lighting and Power distribution: the EC shall provide all additional temp power, and lighting for the balance of the project including:
 1. Temporary Interior Building Lighting: Energize temporary lighting to provide a level of lighting that meets all codes and OSHA regulations. In no case are lighting levels to be less than 15 foot candles at the floor. Provide the Construction Manager a lighting level meter. Temporary lighting is only required in work areas and egress areas.
 2. Modify and Maintain Temporary Light and Power: Modify, relocate and maintain these services as required by the progress of the project.

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3. Use of permanent lights and receptacles: Energize and maintain lamps for permanent lighting within one week of completion of ceiling grid in an area. Energize permanent receptacles where deemed necessary by the Construction Manager. Remove temporary light and power equipment when replaced by permanent lighting and power equipment. (Please note: regardless of prior use, all warranties shall start on the date of substantial completion)
 4. Additional Lighting and Power: Prime Contractors requiring lighting levels or power requirements greater than those listed above shall provide their own supplemental lighting and or power this includes any power or lighting for electric arc welding, temporary light towers, and the prime contractor office trailers.
 5. GFI Protection: All Contractors shall provide their own GFI Protection for tools and equipment in accordance with OSHA requirements.
2. Lighting and power for Hazmat removal work: Contract #1 (GC) shall provide separate power and lighting as/if required by OSHA for all Hazmat removal work.

P. TEMPORARY SIGNAGE:

1. The GC shall:
 - a. Provide four (4) 2'x2' water resistant professionally printed signs and associated fasteners for installation to fencing or existing site elements; additionally, provide posts as needed for signage.

Q. UTILITY USAGE CHARGES:

1. The owner will pay for all utility usage charges for the use of all permanent utilities including fuel costs so long that permanent heaters are being used. GC shall pay all fuel costs for all non-permanent heat. Each Prime contractor shall pay all fuel costs for any work item specific temporary heat required for his work outside of the building area or prior to temporary enclosure and non-permanent heat.

R. EXHAUST AIR:

1. During periods when Contractors are painting/gluing or creating odors, and school is in session, the MC contractor will ensure there is sufficient ventilation & air being exhausted to the outside, to prevent odors from entering building areas occupied by students or school staff. MC contractor is to create a negative air pressure in the space being painted, while maintaining the specified temperature range, if under permanent heat, and insufficient heat is available to compensate for exhaust, the MC shall provide additional heaters as needed to compensate. The MC is to install a fire retardant polyethylene sheet and is to seal up any holes or cracks in existing surfaces (any gap that is caulk able) to create an odor barrier to spaces occupied by students or school staff.

S. (Not Used)

T. (Not Used):

U. (Not Used)

V. (Not Used)

W. FINAL CLEANING:

1. Final Cleaning shall be as defined below; all final cleaning within the buildings shall be assigned to the General Construction Contractor (GC) along with any general cleaning outside the building.

a. General Final Interior Building cleaning for the project will be performed by the General Construction Contractor. This includes washing inside of all windows, cleaning of all surfaces, mopping of hard floors & vacuuming of carpet. The areas to be final cleaned are limited to the areas soiled by the work within the building for this contract. Contractors can use dust curtains, barriers, and existing partitions to limit the extent of final cleaning provided these barriers are maintained and are effective.

b. General Final Exterior Building and Site Cleaning of all areas soiled shall be cleaned back to an as-was condition by the SC. This includes washing and scrubbing the area as needed to return it back to pre-construction condition.

- i. The SC shall conduct a final site cleaning to remove all litter debris, piles of discarded items, stockpiles and so forth when directed by the Construction Manager
- ii. The SC shall complete a final wash-down of sidewalks and pathways when directed by the Construction Manager

X. REBAR CAPS:

1. Any contractor installing rebar shall provide protective safety caps on rebar dowels as required by OSHA and leave them in place until concrete is ready to be poured.

Y. DUST CONTROL:

1. The GC shall provide and maintain dust curtains as required to limit the extent of weekly and final cleaning

Z. TEMPORARY PARTITIONS:

1. The GC shall provide all temporary partitions and doors as indicated on the Phasing Drawings.

AA. TEMPORARY RAILINGS

1. The GC shall provide and maintain temporary railings conforming to OSHA standards for fall protection, at all locations necessary and including the perimeter of floors and around openings through floors. Provide and maintain railings or barriers across window or other wall openings as required to meet OSHA standards for fall protection. As the work progresses, remove or modify all railings as required to continuously meet OSHA standards for fall protection. All railings are to be constructed to minimize the interference to other contractors. Do not provide temporary railings around the roof perimeter, as each contractor working on the roof is to provide his own means of fall protection:
 1. If wire rope cabling is used, the minimum diameter is 3/8", and turnbuckles are to be used every 50 to 60 lineal feet to connect the cable to a column or other structurally sound member. Cables are to be maintained taught and at the correct height.
 2. At locations where loading of materials is anticipated, provide steel or wood railings which have provisions for easy removal and replacement such as having sleeves or bolted anchors to the floor.

BB. RIGGING

1. Each Prime Contractor shall be responsible to provide and maintain their own rigging and for bringing materials into or out of the building. Contractors are to coordinate these activities with the Construction Manager's Superintendent.

END OF SECTION

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**SECTION 016000
PRODUCT REQUIREMENTS**

PART 1 GENERAL

1.01 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.

1.02 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.03 ACTION SUBMITTALS

- A. Submit submittals as required per each individual specification section.

1.04 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.

1.05 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.
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4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
1. Store products to allow for inspection and measurement of quantity or counting of units.
 2. Store materials in a manner that will not endanger Project structure.
 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
 4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 6. Protect stored products from damage and liquids from freezing.
 7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.06 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
1. **Manufacturer's Warranty:** Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 2. **Special Warranty:** Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. **Special Warranties:** Prepare a written document that contains appropriate terms and identification, ready for execution.
1. **Manufacturer's Standard Form:** Modified to include Project-specific information and properly executed.
 2. **Specified Form:** When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. **Submittal Time:** Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 PRODUCTS

2.01 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:**
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1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 3. Products:
 - a. Non-restricted List: Where Specifications include a list of names of available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with substitution requirements for consideration of an unnamed product.
 4. Manufacturers:
 - a. Non-restricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with substitution requirements for consideration of an unnamed manufacturer's product.
 5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with substitution requirements for consideration of an unnamed product by one of the other named manufacturers.
- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
1. If no product is available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.02 EQUIVALENT PRODUCTS

- A. Conditions for Consideration: Architect will consider Contractor's request for equivalent 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.
- B. Refer to specification section 012519 Equivalents for additional equivalent product requirements required to be furnished by the contractor.

PART 3 EXECUTION (NOT USED)

END OF SECTION

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**SECTION 017300
EXECUTION**

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. Installation of the Work.
 - 4. Cutting and patching.
 - 5. Coordination of Owner-installed products.
 - 6. Progress cleaning.
 - 7. Starting and adjusting.
 - 8. Protection of installed construction.

1.02 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.

1.03 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For land surveyor, professional engineer, etc. licensed to practice in New York State.
- B. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.
- C. Cutting and Patching Plan: Submit plan describing procedures at least **10** days prior to the time cutting and patching will be performed. Include the following information:
 - 1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
 - 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
 - 3. Products: List products to be used for patching and firms or entities that will perform patching work.
 - 4. Dates: Indicate when cutting and patching will be performed.
 - 5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
 - a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.
- D. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.04 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
 - B. 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, notify Architect of locations and details of cutting and await directions from Architect before proceeding.
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- 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. Operational elements include the following:
 - a. Primary operational systems and equipment.
 - b. Fire separation assemblies.
 - c. Air or smoke barriers.
 - d. Fire-suppression systems.
 - e. Mechanical systems piping and ducts.
 - f. Control systems.
 - g. Communication systems.
 - h. Fire-detection and -alarm systems.
 - i. Conveying systems.
 - j. Electrical wiring systems.
 - k. Operating systems of special construction.
 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, or that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
 - a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Exterior curtain-wall construction.
 - d. Sprayed fire-resistive material.
 - e. Equipment supports.
 - f. Piping, ductwork, vessels, and equipment.
 - g. Noise- and vibration-control elements and systems.
 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.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 PRODUCTS

2.01 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.
 - C. 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.
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PART 3 EXECUTION

3.01 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. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - 1. Description of the Work.
 - 2. List of detrimental conditions, including substrates.
 - 3. List of unacceptable installation tolerances.
 - 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.02 PREPARATION

- A. Existing Utility Information: Furnish information to local utility and Owner 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 Section 013100 "Project Management and Coordination."

3.03 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
 - B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
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1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 2. Establish limits on use of Project site.
 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 4. Inform installers of lines and levels to which they must comply.
 5. Check the location, level and plumb, of every major element as the Work progresses.
 6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.04 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
1. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. Benchmarks: Establish and maintain a minimum of **two** permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- E. Final Property Survey: Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.

3.05 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.
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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.
- 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. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
 - F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
 - G. 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.
 - H. 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.
 - I. 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.
 - J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.06 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: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 "Summary."
-

- 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. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
 - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, 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 extending to an inside or outside corner of a wall. Provide additional coats until patch blends with adjacent surfaces.
 - 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 - 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition 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.

3.07 OWNER-INSTALLED PRODUCTS

- A. Site Access: Provide access to Project site for Owner's construction personnel.
 - B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.
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1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.08 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
- 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.

3.09 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
 - B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
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- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.10 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.

END OF SECTION

**SECTION 017700
CLOSEOUT PROCEDURES**

PART 1 GENERAL

1.01 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.

1.02 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.03 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

1.04 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.05 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete. The Architect will not perform a punch list inspection until the contractor's punch list is received and reviewed.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 30 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
 - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner. Label with manufacturer's name and model number where applicable.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain **Owner's** signature for receipt of submittals.
 - 5. Submit test/adjust/balance records.

6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 30 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 2. Complete startup and testing of systems and equipment
 3. Submit test/adjust/balance records.
 4. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 5. Perform preventive maintenance on equipment used prior to Substantial Completion. Complete startup testing of systems.
 6. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
 7. Touch up paint and otherwise repair and restore damaged finishes.
 8. Complete final cleaning requirements, including touchup painting
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 30 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - a. The Architects basic services include (1) initial punch list and (1) follow-up punch list inspection to ensure all corrective action and or incomplete work has been finished. The Contractor is responsible to the Owner for all costs incurred by the Architect for additional services to provide multiple punch lists for the same work area. The cost for these additional services, may be deducted from the Contractors Contract by deduct Change Order.
 2. Results of completed inspection will form the basis of requirements for final completion.

1.06 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
 1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Submit pest-control final inspection report.
 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 5. Advise Owner of pending insurance changeover requirements.
 6. Advise Owner of changeover in heat and other utilities.
 7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 8. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
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9. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
 10. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 11. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 12. Prepare and submit Project Record Documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
- B. Inspection: Submit a written request for final inspection to determine acceptance, a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.07 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
1. Organize list of spaces in sequential order, starting with exterior areas first, and proceeding from lowest floor to highest floor.
 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.
 4. Submit list of incomplete items in the following format:
 - a. MS Excel electronic file. Architect will return annotated file.

1.08 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within **15** days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling
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navigation to each item. Provide bookmarked table of contents at beginning of document.

- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 PRODUCTS

2.01 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.
1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 EXECUTION

3.01 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
 - 1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.

- p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
- q. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

3.02 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

END OF SECTION

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**SECTION 017823
OPERATION AND MAINTENANCE DATA****PART 1 GENERAL****1.01 SUMMARY**

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Emergency manuals.
 - 3. Operation manuals for systems, subsystems, and equipment.
 - 4. Product maintenance manuals.
 - 5. Systems and equipment maintenance manuals.

1.02 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.03 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect, and Commissioning Authority (if applicable), will comment on whether content of operations and maintenance submittals are acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
 - 1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer comments on draft submittals.

PART 2 PRODUCTS**2.01 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY**

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:
 - 1. List of documents.
 - 2. List of systems.
 - 3. List of equipment.
 - 4. Table of contents.
- B. 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.

- C. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.02 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
1. Title page.
 2. Table of contents.
 3. Manual contents.
- B. Title Page: Include the following information:
1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name and contact information for Contractor.
 6. Name and contact information for Construction Manager.
 7. Name and contact information for Architect.
 8. Name and contact information for Commissioning Authority.
 9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 10. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

2.03 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
1. Type of emergency.
 2. Emergency instructions.
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3. Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
1. Fire.
 2. Flood.
 3. Gas leak.
 4. Water leak.
 5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
 2. Shutdown instructions for each type of emergency.
 3. Operating instructions for conditions outside normal operating limits.
 4. Required sequences for electric or electronic systems.
 5. Special operating instructions and procedures.

2.04 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor has delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
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5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed and identify color-coding where required for identification.

2.05 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Product Information: Include the following, as applicable:
1. Product name and model number.
 2. Manufacturer's name.
 3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.
 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

2.06 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins.
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2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

PART 3 EXECUTION

3.01 MANUAL PREPARATION

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.
 - B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
 - C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
 - D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
 - E. 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.
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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.
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
1. Do not use original project record documents as part of operation and maintenance manuals.
 2. Comply with requirements of newly prepared record Drawings in Section 017839 "Project Record Documents."
- G. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION

SECTION 017839
PROJECT RECORD DOCUMENTS**PART 1 GENERAL****1.01 SUMMARY**

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
 - 4. Miscellaneous record submittals.
- B. Related Requirements:
 - 1. Division 01 "Multiple Contract Summary" for coordinating project record documents covering the Work of multiple contracts.
 - 2. Division 01 "Execution" for final property survey.
 - 3. Division 01 "Closeout Procedures" for general closeout procedures.
 - 4. Division 01 "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 5. Divisions 02 through 49 Sections for specific requirements for project record documents of the Work in those Sections.

1.02 CLOSEOUT SUBMITTAL

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit **[one][or Insert number]** set(s) of marked-up record prints.
 - 2. Number of Copies: Submit copies of record Drawings as follows:
 - a. Initial Submittal:
 - 1) Submit **[one] [or Insert number]** paper-copy set(s) of marked-up record prints.
 - 2) Submit PDF electronic files of scanned record prints and **[one]** or Insert number of file prints.
 - 3) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - 4) Submit Record Digital Data Files and **[one]** or Insert number set(s) of plots.
 - b. Final Submittal:
 - 1) Submit **[three] [or Insert number]** paper-copy set(s) of marked-up record prints.
 - 2) Submit PDF electronic files of scanned record prints and **[three] [or Insert number]** set(s) of prints.
 - 3) Print each drawing, whether or not changes and additional information were recorded.
 - 4) Submit Record Digital Data Files and **[one] [or Insert number]** set(s) of plots.
 - B. Record Specifications: Submit **[one paper copy] [or Insert number paper copies] [annotated PDF electronic files]** of Project's Specifications, including addenda and contract modifications.
 - C. Record Product Data: Submit **[one paper copy] [or Insert number paper copies] [annotated PDF electronic files and directories]** of each submittal.
 - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
 - D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit **[one paper copy] [or Insert number paper copies] [annotated PDF electronic files and directories]** of each submittal.
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- E. Reports: Submit written report **[weekly]** indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.03 RECORD DRAWINGS

- A. Record Drawings: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
1. Preparation: Mark record drawings to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding archive photographic documentation.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or [Construction] [Work] Change Directive.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
 7. Submit as indicated in the Article 1.2 final submittal.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record drawings with Architect **[and Construction Manager]**. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
 2. Format: Annotated PDF electronic file **[with comment function enabled]**.
 3. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
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4. Refer instances of uncertainty to Architect [**through Construction Manager**] for resolution.
 5. Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
 6. Architect will furnish Contractor one set of digital data PDF files of the Contract Drawings for use in recording information.
 - a. See Section 013300 "Submittal Procedures" for requirements related to use of Architect's digital data files.
- C. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.
1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
 2. Consult Architect [**and Construction Manager**] for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared record Drawings into record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.
 3. Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
 4. Submit as indicated in the Article 1.2 final submittal.

1.04 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
 5. Note related Change Orders [**record Product Data,**] and record Drawings where applicable.
 6. Submit as indicated in the Article 1.2 final submittal

1.05 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders [**record Specifications,**] and record Drawings where applicable.
 4. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.
 5. Submit as indicated in the Article 1.2 final submittal

1.06 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.
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1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.
2. Submit as indicated in the Article 1.2 final submittal

PART 2 PRODUCT (NOT USED)

PART 3 EXECUTION

3.01 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's **[and Construction Manager's]** reference during normal working hours.

END OF SECTION

**SECTION 017900
DEMONSTRATION AND TRAINING****PART 1 GENERAL****1.01 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. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training video recordings.

1.02 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.
- B. Qualification Data: For instructor.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.03 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name and address of videographer.
 - c. Name of Architect.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Date of video recording.
 - 2. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
 - 3. At completion of training, submit complete training manual(s) for Owner's use in PDF electronic file format on compact disc.

1.04 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
 - B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.
 - C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures
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related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.05 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.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

1.06 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, 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. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project record documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. Maintenance service agreements and similar continuing commitments.
 3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
 4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.

- c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
- a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
- a. Diagnostic instructions.
 - b. Test and inspection procedures.
7. Maintenance: Include the following:
- 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. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
8. Repairs: Include the following:
- a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

1.07 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."
- B. Set up instructional equipment at instruction location.

1.08 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
 - B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
 - 2. Owner will furnish an instructor to describe Owner's operational philosophy.
 - 3. Owner will furnish Contractor with names and positions of participants.
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- C. 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 with at least seven days' advance notice.
 - D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
 - E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.
 - F. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.09 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 - 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
 - B. Video: Provide minimum 1080 video resolution converted to format file type acceptable to Owner, on electronic media.
 - 1. Electronic Media: Read-only format compact disc with commercial-grade graphic label or flash drive as acceptable to Owner,
 - 2. File Hierarchy: Organize folder structure and file locations according to project manual table of contents. Provide complete screen-based menu.
 - 3. File Names: Utilize file names based upon name of equipment generally described in video segment, as identified in Project specifications.
 - 4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the Equipment Demonstration and Training DVD that describes the following for each Contractor involved on the Project, arranged according to Project table of contents:
 - a. Name of Contractor/Installer.
 - b. Business address.
 - c. Business phone number.
 - d. Point of contact.
 - e. E-mail address.
 - C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.
 - 1. Film training session(s) in segments not to exceed 15 minutes.
 - a. Produce segments to present a single significant piece of equipment per segment.
 - b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
 - c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.
 - D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.
 - 1. Furnish additional portable lighting as required.
 - E. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed.
 - F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.
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- G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

END OF SECTION

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**SECTION 020800
ASBESTOS ABATEMENT PROCEDURES**

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 Onteora CSD (here-in-after the "Owner") and/or the Owners Representative(s) to support the ***Onteora CSD – Building & Site Improvements.***
- 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. and/or as defined by the Owner(s) and/or Owner's Representative(s). 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 all identified Asbestos-containing Materials (ACM) to building substrate(s); 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.
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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.
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5. Loss of enclosure integrity; special or unusual events, barrier breaches, equipment failures, etc.
 6. Daily cleaning of enclosures.
 7. Personnel air monitoring test results for OSHA Compliance. Results shall be posted at the work site within 24 hours of testing and copies supplied to the Owner within five (5) days of testing. Abnormalities shall be supplied to the Owner immediately.
- C. Documentation with confirmation signature of Consultant's representative of the following shall be provided by the Abatement Contractor at the final closeout of the project.
1. Testing of barriers and enclosure systems using smoke tubes shall be performed prior to the beginning of abatement activities and at least once a day thereafter until satisfactory clearance air monitoring results have been achieved.
 2. Inspection of all plastic barriers.
 3. Removal of all polyethylene barriers.
 4. Consultant's inspections prior to encapsulation.
 5. Removal of waste materials.
 6. Decontamination of equipment (list items).
 7. Consultant's final inspection/final air tests.
- D. The Abatement Contractor shall provide records of all project information, to include the following which shall be submitted upon completion of the project and prior to approval of the Abatement Contractor's payment application:
1. The location and description of the abatement project.
 2. The name, address and social security number of the person(s) who supervised the asbestos project.
 3. Certified payroll documentation Pursuant to Article 8, Section 220 of the NYS Labor Law
 4. Copies of EPA/NYS DOL Asbestos Certificates for all Workers and Supervisors employed on the Project.
 5. Copies of Medical Approval and Respirator Fit Testing for all Asbestos Workers and Supervisors employed on the Project.
 6. Copies of Abatement Contractors Daily Sign-In Sheets & Logs for persons entering and leaving the work area. – Title 12 NYCRR Part 56-7.3.
 7. Copies of Abatement Contractor's personal air sampling laboratory results.
 8. The amounts and type of asbestos materials that was removed, enclosed, encapsulated, or disturbed.
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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): Onteora Central School District
 4166 State Route 28
 Boiceville, NY 12412
 ATTN: Kyle Harjes, Director of Facilities
 Ph. (845) 657-6384
 Fx. (845) 657-6835
 E-mail. kharjes@onteora.k12.ny.us
4. Environmental Consultant(s): Quality Environmental Solutions & Technologies, Inc. (QuES&T)
 1376 Route 9
 Wappingers Falls, New York 12590
 ATTN: Rudy Lipinski, Director of Field Operations
 Ph. (845) 298-6031
 Fx. (845) 298-6251
 E-mail. rlipinski@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.
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4. New York State Department of Health, Title 10 Part 73 Asbestos Safety Program Requirements.
- 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 (cumingtonite-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 ensure 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 emission 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 follow NEMA, NEC, and UL standards.
- H. The Abatement Contractor shall provide identification warning signs at power outlets, which are other than 110-120-volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 plugs into higher voltage outlets. Dry transformers shall be provided where required to provide voltages necessary for work operations. All outlets or power supplies shall be protected by ground fault circuit interrupter (GFCI) at the power source.
- I. The Abatement Contractor shall use only grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Use single lengths or use waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas of work.
- J. The Abatement Contractor shall provide general service incandescent lamps of wattage indicated or required for adequate illumination; Protect lamps with guard cages or tempered glass enclosures; Provide exterior fixtures where fixtures are exposed to moisture.
- K. The Abatement Contractor shall provide temporary heat or air conditioning as necessary to maintain comfortable working temperatures inside and immediately outside the work areas. Heating and A/C equipment shall have been tested and labeled by UL, FM or another recognized trade association related to the fuel being used. Fuel burning heaters shall not be used inside containment areas. The Contractor shall also provide a comfortable working environment for occupied areas that are impacted by the asbestos removal.
- L. The Abatement Contractor shall comply with recommendations of the NFPA standard in regard to the use and application of fire extinguishers. Locate fire extinguishers where they are most convenient and effective for their intended purpose but provide not less than one extinguisher in each work area, equipment room, clean room and outside the work area.

1.08 REMOVAL OF FIXTURES

- A. In locations where the Abatement Contractor is directed to dispose of fixtures, he shall either decontaminate the fixtures and dispose of them as non-asbestos containing materials or he shall place them in an appropriate container and dispose of them as asbestos containing material.
- B. In locations where the Abatement Contractor is directed to remove and reinstall fixtures, the fixtures shall be removed, decontaminated, labeled, protected with plastic and stored by the contractor in a location as directed by the Owner.
- C. Upon completion of the asbestos removal and upon receiving satisfactory clearance air monitoring results, all items to be replaced shall be restored to their original location and reinstalled by the Abatement Contractor.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. GENERAL REQUIREMENTS

- 1. Materials shall be stored off the ground, away from wet or damp surfaces and under protective cover to prevent damage or contamination.

2. Damaged or deteriorating materials shall not be used and shall be removed from the premises.
3. Power tools used to drill, cut into, or otherwise disturb asbestos material shall be equipped with HEPA filtered local exhaust ventilation.
4. The Abatement Contractor shall make available to authorized visitors, ladders and/or scaffolds of sufficient dimension and quantity so that all work surfaces can be easily and safely reached for inspection. Scaffold joints and ends shall be sealed with tape to prevent incursion of asbestos. Scaffolds and ladders shall comply with all applicable codes.

B. PLASTIC BARRIERS (POLYETHYLENE)

1. In sizes and shapes to minimize the number of joints.
 - a. Six mil. (.006") fire-retardant for vertical protection (walls, entrances and openings).
 - b. Six mil. (.006") fire-retardant for horizontal protection (fixed equipment) and heating grilles.
 - c. Six mil. (.006") reinforced fire-retardant for floors of decon units.
2. Provide two (2) layers over all roof, wall and ceiling openings. Floor penetrations shall be sealed with a rigid material prior to plasticizing to prevent tripping and fall hazards. All seams within a layer shall be separated by a minimum distance of six feet and sealed airtight. All seams between layers shall be staggered.
3. Barrier Attachment - Commercially available duct tape (fabric or paper) and spray-on adhesive. Duct tape shall be capable of sealing joints of adjacent sheets of plastic, facilitating attachment of plastic sheets to finished or unfinished surfaces of dissimilar materials and adhering under both dry and wet conditions.

C. SIGNS

1. Danger signs shall be provided and shall conform to 29 CFR 1926.1101 and be 14" x 20". These signs shall bear the following information:

**DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
RESPIRATORS AND PROTECTIVE
CLOTHING
ARE REQUIRED IN THIS AREA**

D. DANGER LABELS AND TAPE

1. Labels shall be affixed to any asbestos contaminated material in accordance with the requirements of 29 CFR 1910.1200 (f) of OSHA's Hazard Communication Standard, and shall contain the following information:

**DANGER
CONTAINS ASBESTOS FIBERS
AVOID BREATHING DUST
CANCER AND LUNG DISEASE HAZARD**

2. A label shall be affixed on each container of asbestos waste in accordance with the requirements of 49 CFR Parts 171 and 172, Hazardous Substances; Final Rule (U.S. Department of Transportation), and shall contain the following information:

**RQ HAZARDOUS SUBSTANCE
SOLID, NOS, ORM-E, NA 9188
(ASBESTOS)**

3. A label shall be affixed on each container of asbestos waste in accordance with the requirements of 40 CFR Part 61.150, NESHAP; Asbestos; Final Rule (USEPA) and shall contain the name of the waste generator and the location at which the waste was generated.
NOTE: All containers marked as above (1,2 and 3) shall be disposed of as asbestos waste.

4. Provide 3" red barrier tape printed with black lettered "DANGER ASBESTOS REMOVAL". Locate barrier tape across all corridors, entrances and access routes to asbestos work area.

E. PROTECTIVE EQUIPMENT

1. Respiratory Requirements

- a. Where fiber levels permit, and in compliance with regulatory requirements, Powered Air Purifying Respirators are the minimum allowable respiratory protection permitted to be utilized during removal operations.
- b. Where not in violation of NIOSH, OSHA, and any other regulatory requirements, the Abatement Contractor shall provide the following minimum respiratory protection to the maximum use concentrations indicated:

<u>MSHA/NIOSH Approved Respiratory Protection</u>	<u>Maximum Use Concentration</u>
Half-Mask Air Purifying with HEPA Filters	10x PEL
Full-Facepiece Air Purifying HEPA Filters and Quantitative Fit Test	10x PEL
Powered Air Purifying (PAPR), Loose fitting Helmet or Hood, HEPA Filter	25x PEL
Powered Air Purifying (PAPR), Full Facepiece, HEPA Filter	50x PEL

Supplied Air, Continuous Flow Loose fitting Helmet or Hood	25x PEL
Supplied Air, Continuous Flow Full Facepiece, HEPA Filter	50x PEL
Full Facepiece-Supplied Air Pressure Demand, HEPA Filter	100x PEL
Full Facepiece-Supplied Air Pressure Demand, with Aux. SCBA, Pressure Demand or Continuous Flow	>100x PEL

2. Disposable Clothing -"Tyvek" manufactured by Dupont or approved equal.
3. NIOSH approved safety goggles to protect eyes.
4. Polyethylene bags, 6 mil. (.006") thick (use double bags).

NOTE: Workers must always wear disposable coveralls and respirator masks 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. Watertight, 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 and/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.
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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 recontainerized 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[j].

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.
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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
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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:

**DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD**

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:

**Onteora Central School District
4166 State Route 28
Boiceville, New York 12412
ATTN: Kyle Harjes – Director of Facilities**

- 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 "ABATEMENT WORK"

(Please see attached Drawings for approximate locations)

1) PHOENICIA ELEMENTARY SCHOOL (EXTERIOR ABATEMENTS)

- Abatement Contractor responsible for total and complete removal and disposal of approximately 25 SF of non-friable presumed asbestos-containing Damp Proofing behind non-ACM brick facade, as detailed on the attached ACM Location Drawing. Removals shall include all facade system layers to the interior of the building. Abatement Contractor responsible to provide all equipment and all demolition required to access materials, as well as providing environmental protection upon completion of abatement. Coordinate exact removal location with demolition drawings and General Contractor. See below for breakdown:
 - Main Office to New Security Vestibule (25 SF)

4) WOODSTOCK ELEMENTARY SCHOOL (INTERIOR/EXTERIOR ABATEMENTS)

- Abatement Contractor responsible for total and complete removal and disposal of approximately 330 LF of non-friable asbestos-containing Door Frame Caulk (Metal Frame-to-Masonry Façade), as detailed on the attached ACM Location Drawing. Abatement Contractor responsible to provide all equipment and all demolition required to access materials, as well as providing environmental protection upon completion of abatement. Coordinate exact removal location with demolition drawings and General Contractor.
- Abatement Contractor responsible for total and complete removal and disposal of approximately 100 SF of non-friable asbestos-containing Floor Tiles, Mastics and/or Floor Fillers, as detailed on the attached ACM Location Drawing. Removals shall include all flooring system layers to building substrate(s) beneath. After final air clearance, flooring substrates shall be washed with a neutralizing agent to prepare the substrate to accept new floor covering(s) and eliminate residual odors. See below for breakdown:
 - Entry/Exit Vestibule Outside of Classroom #19 (35 SF)
 - Entry/Exit Vestibule Between Classrooms #18 & #16 (50 SF)
 - Entry/Exit Vestibule in Classroom #20 (15 SF)

END OF LOCATION OF WORK

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.

**Asbestos Employee Medical Examination Statement
Certificate of Worker Release
Asbestos Employee Training Statement
CERTIFICATE OF WORKERS'S ACKNOWLEDGEMENT**

PROJECT NAME: **Onteora CSD: Building & Site Improvements**

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 your employer to 1) supply proper respiratory protection devices and training on their use 2) provide training on safe work practices and on use of the equipment used on the project 3) provide a medical examination meeting the requirements of 29 CFR 1926.1101. Your signature on this certificate, documents that your employer has fulfilled these contractual obligations and 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: _____ Date _____

Printed Name: _____ SS#: _____

Witness: _____ Date: _____

ASSOCIATED ASBESTOS REMOVAL LOCATION DRAWINGS

➤ **Onteora CSD: Building & Site Improvements**

- ❖ **AA000** – Asbestos Abatement Notes
- ❖ **PES-AA100** – Phoenicia Elementary School Vestibule Abatement Plan
- ❖ **WES-AA101** – Woodstock Elementary School Door Abatement Plan

END OF SECTION 020800

**SECTION 024119
SELECTIVE REMOVAL**

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section Includes:
 - 1. Removal of selected portions of building or structure.
 - 2. Removal of selected site elements.
 - 3. Salvage of existing items to be reused or recycled.

1.03 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. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.04 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, removal 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 removal remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.05 PREINSTALLATION MEETINGS

- A. Pre-removal Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be selectively removed.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective removal schedule and verify availability of materials, personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective removal operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.06 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
 - B. Schedule of Selective Removal Activities: Indicate the following:
 - 1. Detailed sequence of selective 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.
 - 4. Use of elevator and stairs.
 - 5. Coordination of Owner's continuing occupancy of portions of existing building.
 - C. Pre-removal Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by removal operations.
 - D. 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.

1.07 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.

1.08 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.09 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective removal area. Conduct selective removal so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 - 1. Before selective removal, Owner will remove the following items:
 - a. Any items to be retained by the Owner will have been removed by the Owner prior to start of work.
- 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 removed. 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 removal operations.
 - 1. Maintain fire-protection facilities in service during selective removal operations.
- G. Although care has been taken to ensure their accuracy, the locations shown for existing partitions, equipment, and structures indicated to be removed, nor their quantity, are guaranteed. It is the Contractor's responsibility to verify these conditions in the field during the bidding process before commencing work. No claims for extra payment due to incorrect locations, dimensions or quantities of items will be considered by the Owner.

1.10 COORDINATION

- A. Arrange selective removal schedule so as not to interfere with Owner's operations.

PART 1 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 1 EXECUTION

3.01 EXAMINATION

- A. Disconnect and cap utilities before starting selective removal operations.
 - B. 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 removal operations.
-

1. Perform surveys as the Work progresses to detect hazards resulting from selective removal activities.
- C. Verify that hazardous materials have been remediated before proceeding with selective removal operations.

3.02 PREPARATION

- A. Refrigerant: Before starting removal, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.03 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 removed.
 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 removal and that maintain continuity of services/systems to other parts of building.
 3. Disconnect 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 Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - e. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - f. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.04 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 removal area and to and from occupied portions of building.
 2. Provide temporary weather protection, during interval between selective removal 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 removal operations.
 4. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 5000 "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 removed.
 1. Strengthen or add new supports when required during progress of selective removal.
 - C. Remove temporary barricades and protections where hazards no longer exist.
-

3.05 SELECTIVE REMOVAL, GENERAL

- A. General: Remove existing construction to the extent indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective removal systematically, from higher to lower level. Complete selective removal operations above each floor or tier before disturbing supporting members on the next lower level.
 - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - 5. Maintain fire watch during and for at least 2 hours after flame-cutting operations.
 - 6. Maintain adequate ventilation when using cutting torches.
 - 7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 9. Locate selective removal equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 10. Dispose of demolished items and materials promptly.
- B. Site Access and Temporary Controls: Conduct selective removal 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. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective removal.

3.06 SELECTIVE REMOVAL 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 the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.
 - E. Roofing: Remove no more existing roofing than what can be covered in one day by new temporary roofing and so that building interior remains watertight and weathertight.
 - 1. Remove existing roof membrane, flashings, copings, and roof accessories.
 - 2. Remove existing roofing system down to substrate.
-

3.07 DISPOSAL OF REMOVED MATERIALS

- A. Remove waste materials from Project site.
 - 1. Do not allow removed 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 removed materials.

3.08 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective removal operations. Return adjacent areas to condition existing before selective removal operations began.

END OF SECTION

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SECTION 028300 – LEAD SAFE WORK PRACTICES

PART 1 - GENERAL

1.1 DESCRIPTION/SCOPE OF WORK

- A. The work covered by these specifications shall consist of furnishing all labor, materials, tools, and equipment necessary to control and mitigate potential lead-based paint (LBP) hazards during demolition/renovation activities pertaining to the ***Onteora CSD: Building & Site Improvements.***

The following is a detailed listing of identified Lead-based Paint(s) and/or Lead-containing Material(s), above the EPA action level of 1.0 mg/sq. cm.:

<u>TABLE II: IDENTIFIED LEAD-BASED PAINT</u> ONTEORA CSD PHOENICIA ELEMENTARY SCHOOL & WOODSTOCK ELEMENTARY SCHOOL (CONSTRUCTION AREAS)				
Location	LBP Component	Substrate	Color	LBP Condition
<i>PHOENICIA ELEMENTARY SCHOOL</i>				
Stage, Exterior	Door Casing	Metal	White	Poor
Corridor Outside Boiler Room, Exterior	Door Casing	Metal	Beige	Good
Building Exterior, Window Wall	Window Wall Panel	Wood	White	Good
<i>WOODSTOCK ELEMENTARY SCHOOL</i>				
Gymnasium, Doors	Door & Window Panels	Metal	Grey	Good
It should be noted that several components tested did in fact contain minimal lead-levels below the EPA threshold level of 1.0 mg/sq. cm for classification as Lead-Based Paint (LBP) and are considered lead-containing coatings by the OSHA Regulation, "Lead Exposure in Construction" (29 CFR 1926.62). OSHA does not recognize a minimum limit for lead concentrations in paint for the purposes of disturbance. Monitoring of workers performing demolition/cleaning/disturbance of painted surfaces shall be completed to document personnel occupational exposure. Items containing any amount of lead concentration are considered lead-containing coatings per 29 CFR 1926.62, OSHA Lead Exposure in Construction.				

The work of this Contractor shall include the following, and shall be as required by specific work-related tasks and disturbance(s) of above-referenced Lead-based Paint(s) and/or Lead-containing Material(s), above the EPA action level of 1.0 mg/sq. cm:

- 1) Personnel air monitoring and analysis.
- 2) Waste characterization and classification.

- 3) Transportation/disposal off-site of LBP wastes/debris and lead-contaminated waste/debris generated from LBP disturbance(s).
- B. Manual demolition, scraping and manual sanding of lead-based paint surfaces and power tool cleaning with dust collection systems shall be performed in conjunction with engineering and work practice controls meeting the requirements of 29 CFR 1926.62(e)(1).
 - C. Components with lead-based paint shall be removed intact to the extent practicable. A 6-mil polyethylene drop cloth shall be placed on either side of the component, prior to its removal, to catch any paint chips that may become dislodged. The component shall be wrapped in a layer of 6-mil polyethylene for movement to the disposal container. Follow proper disposal requirements. The area around the component removal shall be wet wiped and HEPA vacuumed, including the tent enclosure. The polyethylene sheeting shall be carefully folded in on itself and placed in a 6-mil disposal bag. Containment debris shall be properly disposed of as lead-based waste.
 - D. Chemical stripping should be used for LBP removal on surfaces that will be subjected to welding, cutting or torch burning. No chemical strippers containing methylene chloride shall be used by the Contractor on this project. Abrasive blasting, heat stripping, uncontained hydroblasting, welding, cutting or torch burning shall not be performed on surfaces where LBP is present. Abrasive blasting, heat stripping, uncontained hydroblasting, welding, cutting or torch burning shall only be performed on bare metal substrate.
 - E. The Contractor's use of a subcontractor shall not relieve the Contractor of full responsibility for the work to be performed.
 - F. If available, the Contractor may submit exposure assessment data obtained within the last twelve (12) months from previous jobs conducted under similar conditions, control methods, work practices and environmental conditions to be used in this contract. Other objective data may be used to demonstrate that work activities in this contract will not result in occupational exposures to airborne lead that exceeds the PEL. The assessment shall include comparable lead concentrations in coating materials, work practices, engineering controls and rates of work.
 - G. Until the exposure assessment is performed, the Contractor must provide to his workers the following: Respiratory protection with a minimum protection factor of 10, personal protective clothing, lead-free change areas, hand washing/shower facilities, biological monitoring and training per 29 CFR 1926.62.

This Specification shall be used as a Guideline for the use of Contractors who complete the demolition/renovation activities pertaining to the **Onteora CSD: Classroom Renovations - Phase 2** as detailed within Section #1.2 of this specification. The intent of this Specification is to remain in conformance with 29 CFR 1926.62 and to maintain an airborne concentration of lead-dust below the action level. This Specification is written in order to outline the worst-case scenario in regard to lead safe work practices. However, the work procedures section is written in a manner, which outlines the requirements that should be necessary, at a minimum, to maintain an airborne concentration of lead dust below the action level.

- H. The Contractor shall ensure that any HVAC equipment intakes within and around the work areas are protected by shutting down the units and/or installing HEPA filters over the intake. The Contractor shall coordinate rebalancing of the HVAC equipment prior to installing the HEPA filters. The Contractor shall alter the size and extent of the isolation barriers as necessary due to weather conditions, functional space use and density of building occupants in the vicinity, as required.

1.2 REGULATIONS & REFERENCE STANDARDS

A. General Requirements

All work of this section shall be conducted in strict accordance with all applicable Federal, State and Local regulations.

Matters of interpretations of the standards and regulations shall be submitted to the appropriate agency for resolution before starting work. Where these requirements vary the most stringent shall apply.

B. Specific Requirements

1. American National Standards Institute (ANSI)
 - a. ANSI Z9.2-79 – Fundamentals Governing the Design and Operation of Local Exhaust Systems.
 - b. Z88.2-80 – Practice for Respiratory Protection.
 2. Title X - U.S. Department of Housing and Urban Development “Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.”
 3. Code of Federal Regulations (CFR)
 - a. 29 CFR Part 1910.120 – Hazardous Waste Operations and Emergency Response.
 - b. 29 CFR Part 1910.134 – Respiratory Protection.
 - c. 29 CFR Part 1910.146 – Confined Space Entry Program.
 - d. 29 CFR Part 1910.1025 – Lead.
 - e. 29 CFR Part 1910.1200 – Hazard Communication.
 - f. 29 CFR Part 1926.55 – Gases, Vapors, Fumes, Dusts and Mists.
 - g. 29 CFR Part 1926.57 – Ventilation.
 - h. 29 CFR Part 1926.62 – Lead (Construction Industry Standard).
 - i. 40 CFR Part 260 – Hazardous Waste Management Systems: General.
 - j. 40 CFR Part 261 – Identification and Listing of Hazardous Waste.
 - k. 40 CFR Part 262 – Generators of Hazardous Wastes.
 - l. 40 CFR Part 263 – Transporters of Hazardous Waste.
 - m. 40 CFR Part 264 – Owners and Operators of Hazardous Waste Treatment, Storage & Disposal Facilities.
 - n. 40 CFR Part 265 – Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage & Disposal Facilities.
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- o. 40 CFR Part 268 – Land Disposal Restrictions.
- p. 40 CFR Part 745 – Lead; Requirements for Lead-Based Paint Activities in Child Occupied Facilities
- q. 40 CFR Part 745.90 – EPA’s Renovation, Repair & Painting Rule.
- r. 49 CFR Parts 170-178 – Department of Transportation Regulations.
- 4. New York Codes of Rules and Regulations (NYCRR)
 - a. 6 NYCRR Part 360 – Solid Waste Regulations.
 - b. 6 NYCRR Part 364 – Waste Transporter Permits.
 - c. 6 NYCRR Part 370-373 – Hazardous Waste Regulations.
 - d. 8 NYCRR Part 155 – Uniform Safety Standards for School Construction & Maintenance Projects.
- 5. Steel Structures Painting Council (SSPC)
 - a. SSPC-Guide 6 – Guide for Containing Debris Generated During Paint Removal Operations.

SSPC-Guide 7 – Guide for the Disposal of Lead-Contaminated Surface Preparation Debris.

Preparation Debris.
- 6. Underwriters Laboratories. Inc. (UL)
 - a. UL 586 – High Efficiency, Particulate Air Filter Units.

1.3 DEFINITIONS

- A. **Abatement**
For the purposes of this Specification, the term abatement shall refer to any procedure that impacts lead-based paint on any surface. Procedures can include: paint removal; whole removal of the surface (i.e. window replacement); demolition of painted surfaces; and clean-up of paint debris.
- B. **Action Level**
Employee exposure without regard to use of respirators, to an airborne concentration of lead of thirty (30) micrograms per cubic meter of air averaged over an 8-hour period. As used in this section, micrograms per cubic meter of air” refers to the action level. (Note: For longer exposure period lower action level is triggered).
- C. **Area Monitoring**
Sampling of lead concentrations within the lead control area (work area) and inside the physical boundaries which is representative of the airborne lead concentrations that may reach the breathing zone of personnel potentially exposed to lead.

- D. **Physical Boundary**
Area physically roped or partitioned off around a work area to limit unauthorized entry of personnel. As used in this section, "inside boundary" shall mean the same as "outside lead control area."
- E. **Change Rooms and Shower Facilities**
Rooms within the designated physical boundary around the work area equipped with separate storage facilities for clean protective work clothing and equipment and for street clothes which prevent cross-contamination.
- F. **Decontamination Room**
Room for removal of contaminated personal protective equipment (PPE).
- G. **Eight-Hour Time Weighted Average (TWA)**
Airborne concentration of lead averaged over an 8-hour workday to which an employee is exposed.
- H. **High Efficiency Particulate Air (HEPA) Filter Equipment**
HEPA filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining lead-contaminated paint dust. A high efficiency particulate filter means 99.97 percent efficient against 0.3 micron size particles.
- I. **Lead Control Area**
A work area within which engineering controls are implemented to prevent the spread of lead dust, paint chips or debris from lead-containing paint removal operations. The lead control area is isolated by physical boundaries to prevent entry of unauthorized personnel.
- J. **Lead Permissible Exposure Limit (PEL)**
Fifty (50) micrograms per cubic meter of air as an 8-hour time weighted average as determined by 29 CFR Part 1926.62. If an employee is exposed for more than 8 hours in a work day, the PEL shall be determined by the following formula:
$$\text{PEL (micrograms/cubic meter of air)} = 400/\text{No. hrs worked per day}$$
- K. **Personal Monitoring**
Sampling of lead concentrations within the breathing zone of an employee to determine the 8-hour time weighted average concentration in accordance with 29 CFR Part 1926.62. Samples shall be representative of the employees work tasks. Breathing zone shall be considered an area within a hemisphere, forward of the shoulders with a radius of 6 to 9 inches and the center at the nose or mouth.
- L. **Wipe Sampling**
Clearance testing procedures, which determine the amount of existing lead-based paint surface dust by atomic absorption spectroscopy analysis, or inductively coupled plasma emission spectrometry expressed in micrograms of lead.

1.4 QUALITY ASSURANCE

- A. **Qualifications**
 - 1. **Contractor:** Certification that the Contractor has prior experience on LBP activity projects similar in nature and extent to ensure the capability to perform the required work procedures in a satisfactory manner.

2. **Competent Person:** Certification that the Contractor's full-time onsite Competent Person meets the competent person requirements of 29 CFR Part 1926.62 and is experienced in administration and supervision of LBP activity projects, including work practices, protective measures for building and personnel, disposal procedures, etc. This person shall have completed a Contractor Supervisor LBP abatement course by an EPA Training Center or an equivalent certification course, and have had a minimum of 2 years on-the-job experience.
 3. **Testing Laboratory:** The name, address, and telephone number of the independent testing laboratory selected to perform sampling and analysis for personal and area air samples and wipe samples, and TCLP analysis of LBP wastes and debris. Documentation that the laboratory performing the analysis is an EPA National Lead Laboratory Accreditation Program (NLLAP) accredited laboratory and that it is listed proficient in the NIOSH/EPA Environmental Lead Proficiency Analytical Testing Program (ELPAT), and a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory. Certification shall include accreditation for heavy metal analysis, list of experience relevant to analysis of lead in air, and a Quality Assurance and Quality Control Program. Currently, the American Association for Laboratory Accreditation (ASLA) and the American Industrial Hygiene Association (AIHA) are the EPA recognized laboratory accreditors. Documentation shall include the date of accreditation or reaccreditation.
 4. **Blood Lead Testing Laboratory:** The name, address and telephone number of the blood lead testing laboratory; the laboratory's listing by OSHA and the U.S. Public Health Service Center for Disease Control (CDC); and documentation that the laboratory certified in the state where the work site is located.
- B. Respiratory Protection Devices**
Manufacturer's certification of NIOSH for respiratory protection devices utilized on the site.
- C. Cartridges, Filters, and Vacuum Systems**
Manufacturer's certification of NIOSH approval of respirator cartridges (organic vapor, acid gas, mist, dust, high efficiency particulate); High Efficiency Particulate Air (HEPA) filtration capabilities for all cartridges, filters, and HEPA vacuum systems.
- D. Medical Examination and Records**
Certification that employees who are involved in LBP abatement work have received medical examinations and will receive continued medical surveillance, including biological monitoring, as required by 29 CFR Part 1926.62, 29 CFR Part 910.1200, 29 CFR Part 1910.120 and by the state and local regulations pertaining to such work. Records shall be retained, at Contractor expense, in accordance with 29 CFR Part 1910.20.
1. Provide medical surveillance to workers until exposure monitoring reveals that workers are not exposed on any day of the job to airborne lead at or above the Action Level of 30 ug/dL of blood. This consists of a blood test measuring the level of lead and zinc protoporphyrin by a licensed physician. Further testing and medical exams may be necessary depending on the results of initial blood tests and/or the initial exposure assessment.

E. Training

Training certification shall be provided prior to the start of work involving LBP abatement, for all of the Contractors' workers, supervisors and Competent Person. Training shall meet the requirements of 29 CFR Part 1926.62, 29 CFR Part 1926.59, 29 CFR Part 1910.1200, 29 CFR Part 1910.120 and 49 CFR 172, and that required by EPA or the state LBP course for the work to be performed. Training shall be provided prior to the time of job assignment and, at least, annually. The project specific training shall, at a minimum, include the following.

1. Specific nature of the operation, which could result in exposure to lead.
2. Purpose, proper selection, fitting, use and limitations of respirators.
3. Purpose and description of the medical surveillance program and the medical removal protection program, including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females and hazards to the fetus and additional precautions for employees who are pregnant.)
4. Relevant engineering controls and good work practices.
5. The contents of any compliance plan in effect.
6. Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician.
7. The employee's right of access to records under 29 CFR part 1910.20.

F. Respiratory Protection Program

1. Furnish each employee required to wear a negative pressure respirator or other appropriate type with a respirator fit test at the time of initial fitting and at least every 12 months thereafter as required by 29 CFR Part 1910.134 and 29 CFR Part 1926.62.
2. Establish and implement a respiratory protection program as required by ANSI Z88.2, 29 CFR Part 1910.134 and 29 CFR Part 1926.62.
3. All workers are required to don an appropriate level of protection commensurate with the airborne concentrations of lead in which they are working. The level of protection will be determined by the Contractor, based on objective air monitoring data.

G. Licenses and Permits

Copies of licenses and permits as required by applicable Federal, state and local regulations shall be obtained before the start of the LBP project.

1.5 SUBMITTALS

- A. The submittals shall be submitted in accordance with Specification Section 01300, Submittals.
- B. Certifications
Prior to the start of work, submit required certifications, plans, programs, permits and licenses identified in Paragraph 1.5 of this specification section.

- C. Equipment List
Prior to the start of work submit list of equipment items to be used in the work, including brand names, model, capacity, performance characteristics, quantities and other pertinent information.
- D. Lead-Based Paint (LBP) Management Plan
The contractor shall prepare a detailed LBP Management Plan that identifies the work procedures, health and safety measures to be used in LBP work procedures; and that addresses spill prevention, containment and emergency response procedures. The plan shall address the methods to be undertaken to abate the lead to include the following key elements:
1. LBP containment methods to control employee exposure to lead at or below the permissible exposure limit and to ensure that airborne lead concentrations of 30 micrograms per cubic meter of air are not exceeded outside of the lead control area.
 2. Training requirements as required by Federal, state and local regulations.
 3. Unique problems associated with the LBP project.
 4. Sketch of location, size and details of LBP control areas, decontamination rooms/areas, change rooms and shower facilities.
 5. Eating, drinking, smoking, and rest room procedures.
 6. Sequencing of LBP related work.
 7. Personnel protective equipment and respiratory protection program, including controls.
 8. Engineering controls, containment structures and safety measures.
 9. Worker exposure assessment procedures.
 10. Work Practice controls.
 11. Housekeeping.
 12. Hygiene facilities and practice.
 13. Medical surveillance, including medical removal procedures.
 14. Sampling, testing and analytical methods to include personnel air sampling requirements of 29 CFR Part 1926.62, wipe sampling of the surface where the LBP was removed and, when required, toxicity characteristic leaching procedure (TCLP) testing of the waste material in accordance with 40 CFR 261 and 6 NYCRR Part 371, and area air sampling required by the specifications. Procedures must include frequency, locations, sampling and analytical methods to be used.
- E. Compliance Program
Contractor's Compliance Program prepared in accordance with 29 CFR Part 1926.62 (e) (2).
- F. Waste Transporter and Disposal Facility Permits, and Disposal Documents.
1. Name, address and telephone number of 6 NYCRR Part 364 transporter who will be transporting the LBP wastes and debris and a copy of the transporter's 6 NYCRR Part 364 permit.

2. Name, address and telephone number of disposal facility accepting the LBP wastes and debris and a copy of the permit from the disposal facility documenting the facility is permitted to accept the wastes being delivered.
 3. Copy of completed waste characterization (waste profile) forms for obtaining approval to dispose of the LBP wastes and liquid wastes at the disposal facility.
 4. Copy of the approved waste characterization (waste profile) forms from the disposal facility indicating they are permitted to accept the wastes and will accept the wastes being delivered.
 5. Example of completed transportation and disposal documents (i.e., bill of lading or hazardous waste manifest and land disposal restriction notification forms, as applicable) prior to shipment of wastes.
 6. Copy of the completed and signed transportation and disposal documents at time of shipment for the disposal of LBP wastes and debris, liquid wastes and any other wastes generated, and copy signed by the disposal facility.
 7. Copy of certificate of destruction for incinerated wastes, certificate of treatment and/or certificate of disposal, as applicable and associated tracking documents from the final disposal facility for disposal of the LBP wastes and debris.
- G. Health and Safety Plan And Confined Space Entry Program
Contractor's written site specific Health and Safety Plan prepared in accordance with 29 CFR Part 1910.120 and Contractor's confined space entry program prepared in accordance with 29 CFR Part 1910.146. These documents are requested for information only and as documentation that they exist.
- H. Sampling and Laboratory Analysis Reports
Submit field sampling logs for all personal and area air samples, wipe samples and waste samples taken, and submit copy of laboratory analysis reports and chain of custody records for all sample analysis.
- I. Competent person certification per Section 3.5.B.

1.6 POSTED WARNINGS & NOTICES

The following regulations, warnings and notices shall be posted at the work site in accordance with 29 CFR Part 1926.62.

- A. Regulations
A copy of applicable Federal, state, and local regulations shall be maintained at the work site.
- B. Warning Signs
Warning signs shall be provided at approaches to LBP control areas. Signs shall be located at a distance from the LBP control areas that will allow personnel to read the sign and take the necessary protective actions required before entering the LBP control area. The signs shall comply with the requirements of 29 CFR Part 1926.62.
- C. Worker Information
Right-to-know notices shall be placed in clearly visible areas of the work site in compliance with Federal, State and Local regulations.

- D. Air Monitoring Results
Daily air monitoring results shall be prepared in order to be easily understood by the workers and shall be placed in a clearly visible area of the work site.
- E. Emergency Telephone Numbers
A list of telephone numbers shall be posted at the site. The list shall include numbers of the local hospital, emergency squad, police and fire departments, Government and Contractor representatives who can be reached 24 hours per day and professional consultants directly involved in the project.

1.7 EQUIPMENT & MATERIALS

Sufficient quantities of health and safety materials required by 29 CFR Part 1926.62, and other materials and equipment needed to complete the project, shall be available and kept on the site.

- A. Respirators
Air-purifying respirators shall be approved by NIOSH for use with dust, fumes and mists having permissible exposure limits less than 0.05 milligrams per cubic meter (i.e., have high-efficiency particulate air (HEPA) filters) and for other hazardous airborne contaminants that may be encountered, as determined by the Competent Person. The Contractor shall furnish, at no cost to personnel/employee, respirators to provide protection from airborne concentrations of lead. Respirators shall comply with the requirements of 29 CFR Part 1926.62 and shall be used in accordance with 29 CFR Part 1926.62, 29 CFR Part 1926.103 and 29 CFR Part 1910.134.
- B. Respirator Cartridges
A sufficient supply of respirator cartridges shall be maintained at the work site to provide new cartridges to employees and authorized visitors, throughout the duration of the project. Cartridges shall be replaced according to the manufacturer's recommendations, when breathing becomes difficult, or if the cartridge becomes wet.
- C. Protective Clothing
 - 1. The Contractor shall furnish, at no cost to personnel/employee, equipment/ clothing for protection from airborne and waterborne LBP debris. An adequate supply of these items shall be available for worker and authorized visitor use. Workers and visitors shall not take protective clothing and equipment off the work site at any time. Protective clothing includes:
 - a. Coveralls (Whole Body Protective Coverings): Full-body coveralls and head covers shall be worn by workers in the work area as necessary. Sleeves shall be secured at the wrist and pants legs at the ankle with tape. Permeable clothing shall be provided in heat-stress conditions. Where non-disposable coveralls are provided, these coveralls shall be cleaned after each wearing. Cleaning of coveralls and other non-disposable clothing shall be in accordance with the provisions for cleaning in 29 CFR Part 1926.62.
 - b. Boots: Work boots with nonskid soles or impermeable work boot covers shall be worn by workers. Where required by OSHA, safety boots (steel toe or steel toe and shank) shall be worn. Paint the uppers of boots red with waterproof enamel. Do not allow boots to be removed from the work area for any reason after being contaminated with LBP debris. Dispose of boots as LBP contaminated waste at the end of the work.

- c. Gloves: Inner gloves, appropriate for items and hazards encountered and disposable outer work gloves shall be provided to each worker and shall be worn while the worker is in the work area. Glove material shall be appropriate for the specific chemical exposure. Gloves shall not be removed from the work area and shall be disposed of as LBP contaminated waste at the end of the work.
 - d. Hard Hats: Head protection (hard hats) shall be provided as required by OSHA for workers and authorized visitors. Protective plastic-strap suspension hats shall be used. Hard hats shall be worn at all times that work is in progress. Hats shall remain in the work area until the project is completed. Hats shall be thoroughly cleaned, decontaminated and bagged before being removed from the work area at the end of the project.
 - e. Eye Protection: Fog-proof goggles for personnel engaged in LBP operations shall be worn when the use of a full-face piece respirator is not required.
- D. Negative Air Pressure System
- When a LBP control area requires the use of an airtight containment barrier, a negative air pressure system shall be used and pressure differential recordings taken. LBP shall not be removed from the LBP control area until the proper engineer controls and HEPA filtration systems are in place.
- 1. HEPA Filter Requirements
- The negative air pressure system shall be equipped with approved HEPA filters per UL 586. Negative air pressure equipment shall be equipped with new HEPA filters, and shall be sufficient to maintain a minimum pressure differential of minus 5 Pa (0.02 inch) of water column relative to adjacent, unsealed areas. Negative air pressure system minimum requirements are listed below.
- a. The unit shall be capable of delivering its rated volume of air with a clean first stage filter, an intermediate filter and a primary HEPA filter in place.
 - b. The HEPA filter shall be certified as being capable of removing particles as small as 0.3 micrometers at a minimum efficiency of 99.97 percent.
 - c. The unit shall be capable of continuing to deliver no less than 70 percent of rated capacity when the HEPA filter is 70 percent full or measures 620 Pa (2.5 inches of water) static pressure differential on a magnehelic gauge.
 - d. The unit shall be equipped with a manometer-type negative pressure differential monitor with minor scale division of 0.02 inch of water and accuracy within plus or minus 1.0 percent. The manometer shall be calibrated daily as recommended by the manufacturer. Record manually manometer readings of the pressure differential between the LBP control area and adjacent unsealed areas at the beginning of each workday and every 2 working hours thereafter.
 - e. The unit shall be equipped with a means for the operator to easily interpret the readings in terms of the volumetric flow rate of air per minute moving through the machine at any given moment.
 - f. The unit shall be equipped with an electronic mechanism that automatically shuts the machine off in the event of a filter breach or absence of a filter.
 - g. The unit shall be equipped with an audible horn that sounds an alarm when the machine has shut itself off.
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- h. The unit shall be equipped with an automatic safety mechanism that prevents a worker from improperly inserting the main HEPA filter.
- i. The unit shall be ducted through the containment barrier wall to the outside of the work area. The unit shall not be exhausted into any work area.

2. Number of Units Required

The air within the containment barrier shall be changed at least once every 15 minutes by a continuously operating negative air pressure system, until the LBP control area barrier is removed. Filters shall be replaced as necessary to maintain the efficiency of the system. A back-up unit shall be maintained onsite.

3. Auxiliary Generator

An auxiliary generator shall be provided with a capacity adequate to power a minimum of 50 percent of the negative air machines at any time during the work. When power fails, the generator controls shall automatically start the generator and switch the negative air machine to generator power. The generator shall not present a carbon monoxide hazard to workers.

4. Discontinuing Negative Air Pressure System

The negative air pressure system shall not be shut down during LBP work unless authorized by the Owner's Consultant. At the completion of the LBP work procedures and disposal project, units shall be run until full cleanup has been completed and wipe clearance samples have been collected, analyzed and have passed final clearance testing requirements. Dismantling of the negative air pressure systems shall conform to the written decontamination procedures. Prefilters shall be removed and properly disposed. The intake to the machines shall be sealed with polyethylene to prevent environmental contamination.

E. Expendable Supplies

1. Polyethylene Sheet and Bags - General

Polyethylene sheet and bags shall be minimum 6-mil thick. Bags shall have pre-printed labels, and 5-inch (minimum) long plastic ties, pointed and looped to secure the filled bags. Polyethylene sheets shall be in roll sizes to minimize seams.

2. Polyethylene Sheet - Flame Resistant

Where a potential for fire exists, flame-resistant polyethylene sheets shall be provided. Polyethylene film shall conform to the requirements of NFPA 701.

3. Polyethylene Sheet - Reinforced

Reinforced polyethylene sheet shall be provided where high skin strength is required such as where it constitutes the only barrier between the LBP control area and the outdoor environment. The sheet stock shall consist of translucent, nylon-reinforced or woven-polyethylene thread laminated between two layers of polyethylene film. Film shall meet flame resistant standards of NFPA 701.

4. Tape and Adhesive Spray

Tape and adhesive shall be capable of sealing joints between polyethylene sheets and for attachment of polyethylene sheets to adjacent surfaces. After dry application, tape or adhesive shall retain adhesion when exposed to wet conditions, including amended water. Tape shall be minimum 2 inches wide, industrial strength.

- 5. Containers
DOT approved impermeable containers shall be used to receive and retain LBP waste and debris, and lead contaminated material until disposal. Containers shall be labeled in accordance with EPA, DOT and OSHA standards.
- 6. Chemicals
Chemicals, including caustics and paint strippers, shall be properly labeled and stored in leak-tight containers.
- F. Vacuum Systems
HEPA filtered vacuum systems shall be used during LBP operations which generate dust. The systems shall be suitably sized for the project, and filters shall be capable of removing particles as small as 0.3 micrometers at a minimum efficiency of 99.97 percent.
- G. Heat Blower Guns
Heat blower guns shall be flameless, electrical, paint-softener type with controls to limit temperature to 590 degrees C (1,100 degrees F). Heat blower shall be DI (non-grounded) 120 Vac, and shall be equipped with cone, fan, glass protector and spoon reflector nozzles.
- H. Chemical Paint Strippers
Chemical paint strippers shall contain no methylene chloride.
- I. Chemical Paint Stripper Neutralizer
Neutralizers for paint strippers shall be compatible with the substrate and suitable for use with the chemical stripper that has been applied to the surface.

1.8 STORAGE OF MATERIALS

Materials shall be stored in a place and manner, which protects them from damage and contamination. During periods of cold weather, plastic materials shall be protected from the cold. Regularly inspect materials to identify damaged or deteriorating items. Damaged or deteriorated items shall not be used and shall be removed from the site as soon as they are discovered. Stored materials shall not present a hazard or an inconvenience to workers, visitors and/or other employees.

PART 2 – PRODUCTS

(NOT APPLICABLE)

PART 3 – EXECUTION

3.1 WORK PROCEDURES

LBP work procedures and related work shall be performed in accordance with the U.S. Department of Housing and Urban Development “Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing” and the accepted Contractor’s LBP Management Plan. Procedures and equipment required to limit occupational and environmental exposures to lead during LBP removal shall be in accordance with 29 CFR Part 1926.62 and as specified herein. LBP waste and debris, lead contaminated debris and personal protective clothing and equipment shall be disposed of in compliance with Federal, state, and local regulations.

A. Personnel Protection Procedures

Personnel shall wear and use protective clothing and equipment as specified and required by 29 CFR Part 1926.62 and 29 CFR Part 1910.120. Eating, smoking, drinking, chewing tobacco and chewing gum, and applying makeup shall not be permitted in the LBP control area. Personnel of trades not engaged in the LBP work procedures and disposal of LBP shall not be exposed at any time to airborne concentrations of lead equal to or in excess of 30 micrograms per cubic meter of air. Electrical service shall be disconnected when wet removal is performed, and temporary electrical service protected by a ground fault circuit interrupter shall be provided.

B. Safety and Health Procedures

The Competent Person shall be present on the work site throughout the LBP project to supervise, monitor and document the project's health and safety provisions. A daily log shall be maintained showing the results of sampling tests throughout the project area. LBP work being conducted within a LBP Control area where an airtight barrier is required shall be stopped if measured airborne lead concentrations, collected during LBP work procedures, exceed the pre- LBP work procedures airborne concentration levels.

C. Safety and Health Responsibilities

The Competent Person shall:

1. Verify that training meets applicable requirements.
2. Review and approve LBP Management Plan for conformance to the applicable referenced standards.
3. Inspect LBP removal work for conformance with the accepted LBP Management Plan.
4. Ensure that worker exposure air monitoring activities are in accordance with 29 CFR Part 1926.62.
5. Ensure work is performed in strict accordance with specifications.
6. Ensure hazardous exposure to personnel and to the environment are adequately controlled.
7. The Contractor's Competent Person shall be responsible for directing personal air monitoring.
8. The Owner's Consultant shall be responsible for directing area and final air/wipe testing.

D. Medical Surveillance Procedures

Medical surveillance shall be implemented in accordance with the accepted Contractor's LBP Management Plan, and shall comply with the requirements of 29 CFR Part 1926.62, including the provisions for biological monitoring, medical removal, protection and a physician's written opinion, signed by the physician performing the employee examination. The Contractor shall provide a copy of the written opinion for Contractor's employees prior to each employee's commencement of work.

E. Engineering Controls and Containment Structures

Engineering and work practice controls are the primary means of maintaining exposures to lead below the PEL. Paint removal and surface preparation activities must keep dust levels at a minimum. Torch cutting of surfaces with LBP will require appropriate personal protective equipment and exposure controls. Power tools must be equipped with vacuum shrouds including a high efficiency particulate air filtered vacuum system attached.

1. LBP Control Area

The LBP control area is where LBP work procedures occur and as such shall be considered contaminated. The LBP control area shall be isolated to prevent LBP containing dust or debris from passing into adjacent open areas. The control area shall be decontaminated at the completion of the LBP work procedure and disposal work.

2. Boundary Requirements.

Physical boundaries shall be provided around exterior LBP control areas by roping off the area indicated in the LBP Management Plan.

3. Control Barriers

The LBP control area shall be designated and separated from other outside areas with control barriers. The polyethylene sheeting shall have all openings masked and sealed. The LBP control area shall be erected according to the Contractors LBP Management Plan. Polyethylene sheeting shall be mechanically supported, independent of duct tape or spray adhesive.

4. Masking and Sealing

a. Exterior LBP control area requirements: Where the construction of a contained LBP control area is impractical or not required based on the method of lead work procedures, a roped-off perimeter shall be installed 20 feet from and around the area where the LBP handling procedures are performed and other requirements for LBP control areas shall be maintained. Personal monitoring of airborne concentrations shall be conducted in adjacent areas during the work shift, in accordance with 29 CFR Part 1926.62. Area air monitoring inside and outside of the roped-off perimeter shall be conducted as specified. Airborne concentrations shall not exceed specified levels.

5. Personnel Decontamination Unit

Personnel decontamination units shall be provided when required for the LBP procedures. Materials fabricated or delivered to the site before the shop drawings have been returned to the Contractor will be subject to rejection by the Owner's Consultant. Specifications and drawings of portable prefab units, such as a trailer unit, if utilized, must be submitted for review and approval before start of construction. Submittal shall include, but not be limited to, a floor plan layout showing dimensions, materials, sizes, thickness, plumbing, and electrical outlets. Access between contaminated and uncontaminated areas shall be through an airlock. Access between any two rooms or room and trailer within the decontamination unit shall be through a plastic sheeting curtained doorway. A separate equipment decontamination unit shall be provided. Each work area shall have an emergency exit. The personnel decontamination unit's clean room shall be the only means of entrance and exit, except for emergencies, from the LBP control area. Materials shall exit the LBP control area through the equipment decontamination area.

6. Clean Room

The clean room shall have only one exit to non-contaminated areas of the site. An airtight seal shall be constructed of polyethylene between the clean room and uncontaminated areas. Surfaces of the clean room shall be protected with sheet polyethylene. A temporary unit with a separate equipment decontamination locker room and a clean locker room shall be provided for personnel who are required to wear whole body protective clothing. One locker shall be provided in each locker room for each LBP worker, and each Contractor's representative. Lead-free personal clothing and shoes shall be kept in the clean locker. Hand wash station/showers shall be located between the equipment decontamination locker room and the clean locker room, and employees shall wash or shower before changing into personal clothes. An adequate supply of clean disposable towels shall be provided. LBP contaminated work clothing shall be cleaned. Clean rooms shall be physically attached to the LBP control area for areas inside the building but may be directly adjacent to the LBP control area outside of the building. Joint use of this space for other functions, such as offices, equipment storage, etc., is prohibited.

7. Hand Wash Station/Shower Room

An operational shower and hand washing station shall be provided between the work area and the clean changing room. Workers shall wash and/or shower before entering the clean changing room. Shower room shall be separated from other rooms by air-tight walls fabricated from polyethylene sheeting. Water shall be hot and cold or warm. Shower heads/ controls, soap dish, continuing supply of soap, and clean towels shall be provided. The shower shall be maintained in a sanitary condition. Waste water shall be pumped to drain and through waste water filters that meet state and/or local requirements. These filters shall be located inside the shower unit and filters shall be changed regularly. Spent filters shall be discarded as LBP contaminated waste.

8. Equipment Decontamination

The Equipment Decontamination Unit shall be used for removal of equipment and materials from the LBP control area, and shall include a wash room, holding room, and an enclosed walkway. The unit shall be constructed from wood framing material and polyethylene sheeting. Workers shall not enter or exit the LBP control area through the Equipment Decontamination Unit. A washdown station, consisting of an enclosed shower unit, shall be located in the work area outside the Wash Room. The washdown station shall be used to clean equipment, bags and containers. Bagged or containerized LBP wastes shall be passed from the work area and cleaned in the Wash Room. The Wash Room shall be separated from the work area by a polyethylene sheet flap. Wastewater shall be filtered and filters shall be changed as required for the shower unit and the Wash Room. Filters shall be disposed of as LBP contaminated wastes. The Holding Room shall be used as a drop location for bagged LBP passed from the Wash Room. This room shall be constructed so that bagged materials cannot be passed from the Wash Room through the Holding Room to the enclosed walkway. The walkway shall provide access to the Holding Room from outside the work area. The enclosed walkway shall be separated from the exterior by a single flap of polyethylene sheeting. The Contractor's equipment used for LBP work procedures shall be decontaminated prior to its removal outside of the lead control area. The decontamination water shall be containerized, the containers labeled, the liquid sampled and analyzed in the laboratory for lead, and properly disposed of off-site according to applicable Federal, State and Local regulations. See Paragraph 3.5.C.2.

9. Maintenance of Decontamination Units
Barriers and polyethylene sheeting shall be effectively sealed and taped. Containment barriers shall be visually inspected at the beginning of each work period. Damaged barriers and defects shall be immediately repaired upon discovery. Smoke testing methods shall be used to test effectiveness of barriers when directed by the Owner's Consultant.
 10. LBP Control Area Exiting Procedures
Personnel exiting a LBP control area shall perform the following procedures and shall not leave the work place wearing any clothing or equipment worn during the work day:
 - a. HEPA vacuum all protective clothing before removing.
 - b. Remove protective clothing in the decontamination room and place this clothing in an approved impermeable disposal bag.
 - c. Wash or shower.
 - d. Change to clean clothes prior to leaving the physical boundary designated around the lead-contaminated work site.
- F. Temporary Utilities
1. Temporary equipment as necessary to provide adequate power, light, heat, and water shall be installed, as needed, to accomplish the LBP operations properly and safely. The Contractor shall maintain the security and maintenance of the utility system in the LBP control areas. In the event of a failure of any utility system, the Owner will not be responsible for any loss of time or other expense incurred by the Contractor. In addition to any site-specific temporary utility requirements, the Contractor shall provide:
 - a. Back-flow protection on all water connections is required. Fittings installed by the Contractor shall be removed after completion of work with no damage or alteration to existing water piping and equipment.
 - b. When applicable, heavy-duty abrasion-resistant hoses to provide water to each work area and decontamination area.
 - c. A hot water heater, if necessary, to provide warm water to the decontamination showers.
 - d. Electrical service to work areas. Electrical service shall comply with National Electric Code, State and Local requirements and UL standards. Warning signs shall be posted at power outlets, which are other than 110-120 volt power. Only grounded extension cords shall be used. Incandescent lamps and light fixtures shall be of adequate wattage to provide good illumination in LBP control areas.
 - e. Temporary heating units, when needed, that have been tested and labeled by UL, FM, or another recognized trade association related to the fuel being consumed. Forced air or fan type units shall not be utilized inside a work area. Units shall have tip-over protection.
 - f. Sufficient quantity of single-occupant, self-contained chemical toilets, properly vented and fully enclosed.

3.2 LEAD-BASED PAINT WORK PRACTICES (Use methods as applicable)

A. Component Removal:

Components shall be removed intact to the extent practicable. A 6-mil polyethylene drop cloth shall be placed on either side of the component, prior to its removal, to catch any paint chips that may become dislodged. The component shall be wrapped in a layer of 6-mil polyethylene for movement to the disposal container. Follow proper disposal requirements. The area around the component removal shall be wet wiped and HEPA vacuumed, including the tent enclosure. The polyethylene sheeting shall be carefully folded in on itself and placed in a 6-mil disposal bag. Containment debris shall be properly disposed of as lead-based waste.

Clearance will be performed as follows:

1. Visual Clearance - Determine that all required work has been completed. Look for settled dust, paint chips or debris in work area. If located, cleanings will commence until visual inspection locates no evidence of dust.
2. The Owner's Consultant shall perform Dust and/or Soil Sampling as outlined in the U.S. Department of Housing and Urban Development "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing".

B. Chemical Stripping: Assumed Exposure (50 ug/m³ - 500 ug/m³)

Chemical stripping, using an agent approved by the Owner's Consultant, followed by wet scraping is the preferred method of abatement for areas where torch cutting, welding and/or other hot-work will affect building components coated with lead-based paint or lead containing coatings. The specific stripping agent(s) proposed must be approved by the Owner. No chemical strippers containing methylene chloride shall be used by the Contractor on this project.

1. Horizontal surfaces directly below and at least 10' in a radial direction from the area where chemical stripping is to be performed shall be protected with 6-mil poly.
 2. All LBP on specified surfaces shall be removed to the bare substrate. The job is not considered complete until the substrate is dry and free of paint, debris, and LBP residue.
 3. LBP stripping agents shall be brushed or troweled on the designated surfaces, or otherwise applied in accordance with manufacturer's specifications. The minimum thickness of chemical stripping agent applied shall be 0.125 (1/8) inches or the manufacturer's recommendations.
 4. Stripping agents shall not be applied to, nor be allowed to inadvertently penetrate, wood and/or other porous substrates.
 5. The required dwell time for stripping will depend upon the ambient temperature, humidity, and thickness of LBP. If LBP is not completely removed following the initial application of stripper, a second application and wet scraping may be required.
 6. Removed LBP shall not be deposited on the polyethylene containment surfaces but shall be transferred directly into 6-mil polyethylene bags from the scraper. LBP shall be removed by wet scraping to the maximum extent feasible.
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7. Any residue not removable by wet scraping shall be washed down to the bare metal substrate with a high-phosphate solution. LBP-contaminated wastewater shall be kept to a minimum using wet scrub brushes or sponges. These residues and disposable cleaning media shall also be directly transferred to the 6-mil polyethylene bags containing other LBP wastes. Free standing water shall be eliminated by use of a drying agent.
8. Clearance will be performed as follows:
 - a. Visual Clearance - Determine that all required work has been completed. Look for settled dust, paint chips or debris in work area. If located, cleanings will commence until visual inspection locates no evidence of dust.
 - b. The Owner's Consultant shall perform Dust and/or Soil Sampling as outlined in the U.S. Department of Housing and Urban Development "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing".

C. Manual Demolition/Scraping/Cleaning: Assumed Exposure (50 ug/m³ - 500 ug/m³)

Manual demolition, scraping, manual sanding and power tool cleaning with dust collection systems shall be performed in conjunction with engineering and work practice controls meeting the requirements of 29 CFR 1926.62(e)(1).

Seal openings of HVAC ductwork and other penetrations (doors, windows, etc.) within the Control Area with two layers of 6-mil polyethylene sheeting. For work on vertical surfaces, place a layer of 6-mil polyethylene sheeting below the area prior to manual demolition/scraping/ cleaning. The sheeting shall extend 5 ft. on either side of the work area, to catch any paint chips that may become dislodged.

Wet methods shall be used during manual scraping, manual sanding and power tool cleaning with dust collection systems. Local HEPA ventilation shall be utilized in conjunction with manual scraping, manual sanding and power tool cleaning with dust collection systems. In the case that local HEPA ventilation is not sufficient to control dust hazards, the Contractor shall be required to install engineering controls to meet requirements of Specification Section 1.8(D) "Negative Air Pressure System".

Removed LBP shall not be allowed to accumulate on surfaces within the Control Area, but shall be HEPA vacuumed or placed directly into 6-mil polyethylene bags. The Contractor shall maintain all surfaces as free as practicable of accumulated lead dust to prevent the dispersal of lead into the work place. LBP shall be removed by manual methods to the maximum extent feasible.

Debris shall be bagged in 6-mil polyethylene bags and secured in leak proof drums until TCLP testing is completed. Follow proper disposal requirements. The area around the surfaces subject to work shall be wet wiped and HEPA vacuumed, including the polyethylene sheeting. Upon clearance by the Owner's Consultant, the polyethylene sheeting shall be carefully folded in on itself and placed in a 6mil disposal bag. Containment debris shall be properly disposed of as lead-based waste.

Clearance will be performed as follows and as needed:

- a. Visual Clearance – determine that all required work has been completed. Look for settled dust, paint chips or debris in work area. If located, cleanings will commence until visual inspection locates no evidence of dust.

- b. The Owner's Consultant shall perform Dust and/or Soil Sampling as outlined in the U.S. Department of Housing and Urban Development "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing".

D. Alternative Lead Work Procedures

1. Any Work Procedure other than the outline procedures above, shall be submitted to the Owner's Consultant for approval prior to the start of the project. As there are many different components in differing areas of the building(s), it is impractical to address every potential lead work procedure. The intent of alternative lead work procedures shall be to maintain compliance with 29 CFR 1926.62 and maintain airborne concentrations of lead dust below the Action Level of 30 ug/dL of air.

3.3 MONITORING & CLEARANCE SAMPLING

During the entire LBP removal and disposal operations, the Owner's Consultant shall be on-site directing the monitoring/sampling and inspecting the work to ensure that the health and safety requirements of this contract are satisfied.

A. Personnel Air Monitoring (Provided by the Contractor, as necessary)

1. Personnel air monitoring samples for airborne concentrations of lead shall be collected and analyzed in accordance with 29 CFR Part 1926.62. Results shall be reported in micrograms per cubic meter of air. The Competent Person shall use personal air monitoring results to determine the effectiveness of engineering controls, the adequacy of PPE and to determine if proper work practices are being employed. The Owner's Consultant shall be notified if any personal air monitoring result equals or exceeds 30 micrograms per cubic meter of air. The Contractor shall take steps to reduce the concentration of lead in the air.

B. Area Air Monitoring (Provided by the Owner's Consultant, as requested)

Airborne concentrations of lead shall be collected and analyzed in the laboratory. Results shall be reported in micrograms per cubic meter of air.

1. Pre-LBP work

Pre- LBP work samples shall be collected in the following locations: 1) inside the lead control area, one upwind of the LBP work and two downwind of the LBP work procedure activities; and 2) outside the physical boundary (roped off) area, one upwind of the LBP work and two downwind of the LBP work activities. A total of six (6) samples. If work is performed inside the building, similar numbers of samples are to be positioned inside and outside the LBP containment area.

2. LBP Work

The Competent Person shall collect area air samples on a daily basis during the duration of the LBP work. The samples shall be collected in the same location as the pre-work samples.

3. The area air samples shall be collected at 4 to 6 feet above grade, and using high volume air samplers.

4. The air samples shall be analyzed by NIOSH Method 7082 or method approved by Engineer.

5. Results
The Contractor shall have the results of the area air monitoring within 24 hours after completion of the sampling. Results shall be reported in micrograms per cubic meter of air.
 6. Excessive Levels
Outdoor LBP work shall cease and the Owner's Consultant notified if measured airborne lead concentrations, collected during LBP activities, exceed the pre-work airborne concentration levels. The Contractor may be required to clean and re-sample the affected area, at no additional cost to the Owner, if directed by the Owner's Consultant. The Contractor shall correct the work practices and/or engineering controls and shall resume LBP work procedures at the direction of the Owner's Consultant.
- C. Waste Sampling and Testing (Provided by the Contractor)
- Sampling and testing of all waste, shall be in accordance with 40 CFR Part 261, 6 NYCRR Part 371 and SW-846, Chapter 9, Sampling Plan. See Paragraph 3.5.C of this specification section for waste sampling and analyses requirements.
- D. Soil Sampling (Provided by the Owner, as requested)
1. If the Owner's Consultant or Owner's representative observes paint chips or LBP debris on the surface of the soil surrounding the work area during the LBP work procedures or at completion or if the Owner's Consultant or IH/ Owner's Representative suspects potential contamination to the soil based on observed procedures and conditions during the work, the contractor shall pay for composite soil samples of the surface soil where designated by the Owner's Consultant and at a frequency specified by the Owner's Consultant. Two Background surface soil samples will be collected where directed by the Owner's Consultant. The samples shall be analyzed by an independent laboratory for lead on a total basis (by EPA Method 6010) and TCLP basis (Extraction Method 1311, analysis by EPA Method 6010).
 2. Standard Soils Clearance samples shall be collected by the Owner's Consultant and paid for by the Owner. The samples shall be analyzed by an independent laboratory for lead on a total basis (by EPA Method 6010) and TCLP basis (Extraction Method 1311, analysis by EPA Method 6010).
 3. If the analyses exceed the TCLP limit, the soil shall be treated as LBP contaminated waste, excavated and disposed of as a hazardous waste by the Contractor.
- Clearance Level:
- Soil: 400 microgram per gram
- E. Dust/Wipe Sampling (Provided by the Owner, as necessary)
1. Dust/wipe samples shall be taken no sooner than 24 hours after abatement activities, including clean-up activities, have been completed.
 2. Sampling for clearance criteria shall be performed as detailed in the HUD Guidance document. Appendices 13 and I4.
 3. Failure to clear the work area and recleaning shall be the responsibility of the Contractor. The work area shall remain in place until satisfactory clearance has been achieved.
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4. Analysis of Dust/Wipe samples for areas, which failed previous Dust/Wipe sampling, shall be reimbursed by the Contractor.

Clearance Levels:

Floors:	10 micrograms per square foot
Window Sills:	100 micrograms per square foot
Window Wells:	400 micrograms per square foot

3.4 ADJACENT AREAS

Damage to adjacent areas shall be repaired to the approval of the Owner.

3.5 CLEAN-UP & DISPOSAL

A. Cleanup

1. Daily
Surfaces in the LBP control area shall be maintained free of accumulations of paint chips, LBP debris, blasting debris and dust. Spread of dust and debris shall be restricted; waste shall not be distributed over the work area. Dry sweep or compressed air shall not be used for cleanup. At the end of each shift, the area shall be cleaned of visible lead paint contamination by vacuuming with a HEPA filtered vacuum cleaner and wet wiping the area. LBP work procedures work shall cease during the cleanup.
2. At Completion of LBP work Procedure and a satisfactory visual inspection by the Engineer, a clean-up shall be performed by the Contractor. This clean-up includes removal of any contaminated material, equipment or debris including polyethylene sheeting from the work area. The polyethylene sheeting shall be sprayed or misted with water for dust control, construction debris removed and then the sheeting removed by folding it in upon itself.
 - a. Lead-contaminated debris shall be containerized in accordance with paragraph 3.5.C.1, LBP Wastes and Lead-Contaminated Wastes. Waste bags shall not be overloaded, shall be securely sealed and stored in the designated area until disposal.
 - b. Removal of surface polyethylene sheeting shall begin from top to bottom. Removal of floor polyethylene sheeting shall begin at the corners and folded in the middle to contain the dust. Polyethylene shall be disposed of as specified in Paragraph 3.5.C.1
 - c. Cleaning Equipment. The Contractor shall decontaminate the lead abatement equipment and equipment used in the work area. The wastewater from cleaning shall be contained, sampled and disposed of as specified in Paragraph 3.5.C.2.

B. Certification

The Contractor shall certify in writing that the inside and outside the lead control area air monitoring samples are less than 30 micrograms per cubic meter of air, the respiratory protection for the employees was adequate, the work procedures were performed in accordance with 29 CFR Part 1926.62 and that there was no visible accumulations of lead-based paint and dust on the worksite. Do not remove warning signs at the lead control area or roped-off boundary signs prior to the Owner's Consultant's receipt of the Contractor's certification. Re-clean areas showing dust, residual paint chips. LBP debris and blasting debris.

Waste Storage, Sampling/Analysis and Disposal (Provided by the Contractor)

1. LBP Wastes and Lead-Contaminated Water

LBP waste, and lead-contaminated waste and debris shall be stored sampled and analyzed and disposed of as follows.

- a. The LBP waste and debris, lead contaminated personal protective equipment (PPE), clothing and waste polyethylene and lead-contaminated waste and debris shall be containerized in DOT approved containers (i.e.. 55 gallon drums, roll-off, etc.). If the waste is placed in roll-off(s), the roll off shall be lined with a minimum of 2 layers of 6-ill polyethylene prior to placing any waste in it and covered with a liquid tight cover. Each container shall be labeled to identify the type of waste as defined in 49 CFR Part 172, 6 NYCRR Part 371 and 6 NYCRR Part 360 and with the date lead contaminated wastes were first put into the container.
- b. A representative sample of the container(s) of LBP wastes and lead-contaminated wastes and debris generated by the LBP activities shall be taken in accordance with SW-. 846, Chapter 9, Sampling Plan and analyzed in the laboratory for TCLP lead by EPA Methods 1311 (extraction) and 6010 (analysis). If the wastes are placed in roll-off(s), four (4) composite samples per roll-off shall be taken for analysis. If the wastes are placed in 55 gallon drums, one composite sample for every ten (10) drums of wastes shall be taken for analysis. The laboratory analyses results shall dictate the proper method of disposal of the waste. A copy of the results shall be attached to the waste characterization (waste profile) form.
- c. A waste characterization (waste profile) form shall be completed for the LBP waste and lead-contaminated waste and debris, and lead contaminated personal protective equipment and clothing (if containerized separately) and the forms submitted to Owner's Consultant for approval The Owner shall sign the forms. The Contractor shall process the forms and forward to the disposal facility for approval. The approved waste profile forms from the disposal facility shall be submitted to the Owner and Engineer prior to shipment of the wastes off-site.
- d. The applicable waste transportation and disposal documents (i.e., hazardous waste manifest, bill of lading, non-hazardous waste manifest, land disposal restriction notification, etc.) shall be obtained and completed. An example of the completed waste transportation and disposal documents shall be submitted to Owner's Consultant for approval prior to shipment of the waste off-site.
- e. Pick-up of hazardous wastes shall be made as needed to ensure that containers do not remain on the work site longer than 90 calendar days from the date affixed to each container. The Owner will assign an area for interim storage of waste-containing containers.
- f. Lead contaminated personal protective equipment/ clothing, lead contaminated polyethylene, filters and debris, which cannot be sampled, shall be handled, stored, transported, and disposed of in the same manner as the LBP wastes and lead-contaminated wastes and debris, based on the sampling, laboratory analyses results and SW-846, Chapter 9, Sampling Plan calculations performed on the LBP wastes and lead-contaminated wastes and debris.

- g. The LBP and lead contaminated wastes/ debris shall be handled, stored, transported and disposed of in accordance with 40 CFR Parts 260 to 265, 6 NYCRR Par 370 to 373, 6 NYCRR Part 364 and 6 NYCRR Part 360, as applicable. Additionally, the disposal shall be based on the sampling, laboratory analysis results and SW-846, Chapter 9, Sampling Plan calculations. Land disposal restriction notification shall be as required by 40 CFR Part 268 and 6 NYCRR Part 376.

2. Wastewater and Decontamination Water

- a. Lead contaminated wastewater and decontamination water generated from the LBP work procedures shall be stored in DOT approved 55 gallon drums. Each drum shall be labeled to identify the type of waste as defined by 49 CFR Part 172, 6 NYCRR Part 371 and 6 NYCRR Part 360 and with the date lead contaminated liquid was first put into the drum.
- b. A representative sample from the drum(s) of liquid wastes shall be taken in accordance with SW-846, Chapter 9, Sampling Plan and analyzed in the laboratory for total lead and total cadmium by EPA Method 200.7/6010. One composite sample for every ten (10) drums of liquid wastes shall be taken for analysis. The laboratory analyses results shall dictate the proper method of disposal of the waste. A copy of the results shall be attached to the waste characterization (waste profile) form.
- c. A waste characterization (waste profile) form shall be completed for the liquid wastes and other wastes being generated and submitted to Owner's Consultant for approval. The Owner shall sign the form(s). The Contractor shall process the form(s) and forward the forms to the disposal facility for approval. The approved waste profile form(s) from the disposal facility shall be submitted to the Owner and Engineer prior to shipment of the wastes off-site.
- d. The applicable waste transportation and disposal documents (i.e., hazardous waste manifest, bill of lading, non-hazardous waste manifest, land disposal restriction notification, etc.) shall be obtained and completed. An example of the completed waste transportation and disposal documents shall be submitted to Owner's Consultant for approval prior to shipment of the waste off-site.
- e. The lead contaminated wastewater and decontamination water shall be handled, stored, transported and disposed of in accordance with 40 CFR Parts 260 to 265, 6 NYCRR Part 370 to 373, 6 NYCRR Part 364 and 6 NYCRR Part 360 as applicable.

3. Waste Pick-Up and Disposal

- a. Waste pick-up cannot be performed until all required submittals have been reviewed and approved by the Owner's Consultant. The Owner must be present at waste pick-up to sign the waste transportation documents and approve pick-up. No waste shall leave the site without approval and authorization by Owner.
- b. Coordinate scheduling of waste pick-up and transportation with Owner's Consultant. Notify Engineer at least 48 hours ahead of when the waste pick-up will take place.

- c. All wastes shall be properly disposed of off-site at an approved disposal facility. The wastes shall be transported by a transporter permitted to transport wastes per 6 NYCRR Part 364. The wastes shall be disposed of at a facility permitted to accept the waste being disposed of.
- d. Submit copy of completed and signed transportation and disposal documents to Owner and Engineer at time of shipment and submit copy of document signed by the disposal facility.
- e. Return or cause to be returned all waste manifests and bills of lading signed by the disposal facility within fifteen (15) days of removal from the project site.
- f. Submit certification of destruction for all incinerated wastes and certificates of final treatment and/or final disposal, as applicable, for all wastes disposed of off-site.
- g. All waste transportation and disposal must be conducted in accordance with all applicable State, Local and Federal regulations, all generator State regulations, all the State regulations where the wastes are transported through, and the disposal State regulations.

C. Payment for Disposal of Wastes

Payment for disposal of wastes will not be made until the following are received by the Owner:

- 1. A signed copy of the manifests
- 2. Bills of lading
- 3. Weight tickets, etc.
- 4. Certificate of final disposal, from the final treatment or disposal facility certifying the amount of lead containing wastes and debris delivered.

PART 4 – INSPECTION

4.1 SUMMARY OF INSPECTION

Limited lead-based paint inspections were completed throughout specific Renovation Areas as detailed on CPL architectural drawings to identify suspect lead-based paints and/or lead-containing hazards potentially affected by scheduled demolition/renovation activities included within the **Onteora CSD: Building & Site Improvements** as detailed within Section #1.2 of this specification.

Inspection was completed by Niton-certified XRF Technician & EPA licensed Inspector Mr. Nicholas Salerno of **QuES&T**.

Paint testing was completed on-site utilizing a Niton XLp-300A XRF Spectrum Analyzer Serial # 102273 in accordance with the EPA issued Performance Characteristics Sheet (PCS). A summary of results above the EPA action level of 1.0 mg/sq. cm., has been included to aid prospective bidders.

Survey was completed in accordance with EPA, OSHA and/or HUD Guidelines for inspection of lead-based paint(s) and/or lead-containing material(s). Per these protocols, all suspect coated surfaces impacted by demolition/renovation activities were located and categorized by homogeneous painting histories and component types.

4.2 SUMMARY OF RESULTS ABOVE THE EPA ACTION LEVEL OF 1.0 mg/cm²

The following is a detailed listing of identified Lead-based Paint(s) and/or Lead-containing Materials, above the EPA action level of 1.0 mg/sq. cm. The following listing should be utilized as a guide to specific work-related tasks and is not necessarily an Abatement Scope. Specified lead-safe work practices shall be performed in accordance with the stipulations defined within this specification as required by specific work-related tasks and in advance of disturbance(s) of the following Lead-based Paint(s) and/or Lead-containing Material(s), above the EPA action level of 1.0 mg/sq. cm:

<u>TABLE II: IDENTIFIED LEAD-BASED PAINT</u>				
ONTEORA CSD				
PHOENICIA ELEMENTARY SCHOOL & WOODSTOCK ELEMENTARY SCHOOL				
(CONSTRUCTION AREAS)				
Location	LBP Component	Substrate	Color	LBP Condition
<i>PHOENICIA ELEMENTARY SCHOOL</i>				
Stage, Exterior	Door Casing	Metal	White	Poor
Corridor Outside Boiler Room, Exterior	Door Casing	Metal	Beige	Good
Building Exterior, Window Wall	Window Wall Panel	Wood	White	Good
<i>WOODSTOCK ELEMENTARY SCHOOL</i>				
Gymnasium, Doors	Door & Window Panels	Metal	Grey	Good
<p>It should be noted that several components tested did in fact contain minimal lead-levels below the EPA threshold level of 1.0 mg/sq. cm for classification as Lead-Based Paint (LBP) and are considered lead-containing coatings by the OSHA Regulation, "Lead Exposure in Construction" (29 CFR 1926.62). OSHA does not recognize a minimum limit for lead concentrations in paint for the purposes of disturbance. Monitoring of workers performing demolition/cleaning/disturbance of painted surfaces shall be completed to document personnel occupational exposure. Items containing any amount of lead concentration are considered lead-containing coatings per 29 CFR 1926.62, OSHA Lead Exposure in Construction.</p>				

END OF SECTION 028300

**SECTION 032000
CONCRETE REINFORCEMENT**

PART 1 - GENERAL

1.01 SUMMARY

- A. Work covered by this Section includes the furnishing and installation of concrete and masonry reinforcement as specified in the Contract Documents.

1.02 SUBMITTALS

- A. Manufacturer's certification that reinforcement meets Specification requirements, and/or certified mill test reports
- B. Shop Drawings shall show dimensions, spacing, bar and mesh schedule, bending details, stirrup and support details, and other pertinent data and in accordance with ACI 315.
- C. Provide copy of all approved shop drawings to Special Inspector.

1.03 QUALITY ASSURANCE

- A. Provide at least one person who will be present during execution of this portion of the work and who shall be thoroughly familiar with the type of materials being installed, the referenced standards and the requirements of this work, and who shall direct all work performed under this section.
- B. Work shall comply with requirements and recommendations of the following:
 - 1. American Concrete Institute, ACI 315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures."
 - 2. American Concrete Institute, ACI 318, "Building Code Requirements for Reinforced Concrete Structures."
 - 3. American Concrete Institute, ACI-ASCE 530 and 530.1, "Building Code Requirements for Masonry Structures."
 - 4. Concrete Reinforcing Steel Institute (CRSI), "Manual of Standard Practice."
 - 5. American Concrete Institute, ACI SP-66 "Detailing Manual."

1.04 DELIVERY, STORAGE, AND HANDLING

- A. All deliveries shall be accompanied by detailed bills of material which shall include information pertaining to bar size, bar mark, length of bends, total length of bar, weight of individual sets of bars and total weight delivered for each structure. Bundles shall be color coded.
- B. Store reinforcement off the ground, under suitable cover or in a suitable enclosure. Maintain easy access for inspection and identification of materials.
- C. Maintain reinforcement free from dirt, grease, scale, loose rust, oil, paint, other foreign matter, and all deleterious materials. Clean all reinforcement as required to meet these conditions, and maintain such clean condition until such time as concrete is placed.

1.05 JOB CONDITIONS

- A. All reinforcing steel within the limits of a day's pour shall be in place and firmly wired prior to commencement of concrete placing operations.
 - B. Placing or wiring of steel less than six hours before concreting starts shall not be permitted except by special written authorization of the Owner's Representative. At least six hours of review time for each pour location shall be provided to the Special Inspector by the Contractor after the last reinforcement is placed and prior to placement of concrete.
 - C. The reinforcing steel, in place, shall be subject to review and approval by the Special Inspector prior to placing of any concrete.
 - D. The Contractor shall notify the Owner's Representative and Special Inspector a minimum of at least 24 hours prior to readiness for each reinforcing review.
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PART 2 - PRODUCTS AND MATERIALS

2.01 MATERIALS

- A. Reinforcing Bars: Deformed bars conforming to ASTM A615, Grade 60, including Supplementary Requirement S1.
- B. Wire Fabric Plain Type: ASTM A185. Flat sheets only.
- C. Wire Fabric Deformed Type: ASTM A497.
- D. Tie Wire: 16 gauge annealed type.
- E. Supporting Devices: Size and shape appropriate to conditions. Where concrete is exposed to view, chairs shall have plastic coated feet.
- F. Supporting devices for slabs on grade shall have sand plates.
- G. Dowels: plain round bars conforming to ASTM A675 Grade 80.
- H. Adhesive anchors shall be equal to HILTI HVA adhesive system as manufactured by HILTI Corp. of Tulsa Ok. (1-800-879-8000).
- I. Pipe Sleeves: Standard weight pipe conforming to ASTM A120.

2.02 FABRICATION

- A. Fabricate reinforcement in accordance with CRSI Manual of Standard Practice, ACI SP-66 and ACI 318.
- B. Accurately fabricate to the details and dimensions shown on the Drawings.
- C. All bars shall be bent cold and shall not be bent or straightened in a manner which will injure the material (i.e. torched).
- D. Bend all reinforcement in accordance with ACI 318.
- E. No bars partially embedded in concrete shall be field bent except as shown on the Drawings or as permitted by Architect/Engineer.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Accurately position reinforcement and firmly support in place. The system of holding reinforcement in place shall insure that steel will not be able to move during concrete placement. If necessary, top reinforcing shall be adequately held in position to support the weight of the workmen without displacement. All reinforcement shall be rigidly wired in place with adequate spacers and tie chairs. Bar supports shall be 3'-0" on center maximum, and in accordance with ACI 315.
 - B. For concrete slabs on ground or fill, support reinforcement on approved chairs. "Hooking-up" or "Walking-in" of any reinforcement including mesh, will not be permitted.
 - C. Protective concrete cover shown on the Contract Documents, or required by ACI Code, shall be rigidly adhered to. Coordinate conduit and insert placement so as to avoid decreasing or increasing protective cover on reinforcement.
 - D. In the event conduits, piping, inserts, sleeves, or any other items interfere with the placing of reinforcement, as indicated on the Contract Documents, consult Owner's Representative for required changes.
 - E. Protect installed reinforcing from damage and displacement before, during, and after placement of concrete. Exposed reinforcing intended for bonding with future extensions shall be protected from corrosion.
 - F. At the time concrete is placed, all reinforcement shall be free from dirt, mud, ice, rust, scale, loose mill scale, oil, paint, and other coatings which may destroy or reduce bond between steel and concrete.
 - G. The Contractor shall repair or replace damaged, distorted or displaced reinforcement.
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3.02 SPLICES IN REINFORCEMENT

- A. Lap splices (wired together) and embedment lengths shall conform to:
 - 1. Concrete - ACI 318 - Chapter 12.
 - 2. Masonry - ACI 530 - Chapter 8.
- B. No splices of reinforcement shall be made except as shown on the plans or as specified/authorized by the Owner's Representative.
- C. Welding of reinforcing is not permitted unless specified or authorized by the Owner's Representative.

END OF SECTION

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**SECTION 033000
CAST-IN-PLACE CONCRETE**

PART 1 - GENERAL

1.01 SUMMARY

- A. Formwork for cast-in-place concrete, including all openings shown or not shown on structural drawings.
- B. Cast-in-place concrete, including concrete for the following, and other items as indicated on the Drawings.
 - 1. Foundation walls, piers, footings.
 - 2. Exterior slabs and walks.
 - 3. Equipment pads and bases.
 - 4. Other items as indicated.
- C. Concrete curing and finishing.
- D. Control joints, expansion, and contraction joints.
- E. Concrete testing.

1.02 SUBMITTALS

- A. Provide copy of all approved shop drawings to Special Inspector.
 - B. Submit manufacturer's catalog cuts, technical data, and recommendations on quantities, installation, and application for the following:
 - 1. Formwork accessories.
 - 2. Concrete admixtures.
 - 3. Waterstops.
 - 4. Grout and patching materials.
 - 5. Bonding agents.
 - 6. Anchor bolts and inserts.
 - 7. Joint fillers.
 - 8. Vapor barrier.
 - 9. Curing and sealing compounds.
 - a. Control Joint Layout.
 - b. Frames.
 - c. Sleeves.
 - d. Insert Plates.
 - C. Submit proposed mix designs and test data. Identify for each mix submitted the method by which proportions have been selected.
 - 1. For mix designs based on field experience, include individual strength test results, standard deviation, and required average compressive strength $f'(cr)$ calculations.
 - 2. For mix designs based on trial mixtures, include trial mix proportions, test results, and graphical analysis and show required average compressive strength $f'(cr)$.
 - 3. Indicate quantity of each ingredient per cubic yard of concrete.
 - 4. Indicate type and quantity of admixtures proposed or required.
 - 5. Submit current test reports for aggregates showing compliance with specified quality and gradation.
 - 6. Submit current test reports for cement.
 - D. Submit affidavits from an independent testing agency certifying that materials furnished under this section conform to Specifications.
 - E. Provide documentation from manufacturers assuring compatibility of admixtures with other ingredients. Provide documentation from manufacturers assuring compatibility of all surface applied products (mastic, tile, VCT, carpet, etc).
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- F. Submit concrete placement schedule prior to start of any concrete placement operations. Include location of all joints as indicated on the Drawings or in the specification, plus anticipated construction joints.
 - G. Submit copies of delivery tickets complying with ASTM C 94 for each load of concrete delivered to site. Include on the tickets the additional information specified in the ASTM document.
 - H. Submit description of planned protective measures for cold weather or hot weather concreting.

1.03 QUALITY ASSURANCE

- A. The American Concrete Institute (ACI), ACI 318 "Building Code Requirements for Reinforced Concrete" and ACI 301 "Specifications for Structural Concrete for Buildings" shall be part of these Specifications as though written and attached hereto.
 - B. Work shall comply with recommendations and requirements of the following, except as specifically superseded by these Specifications:
 - 1. ACI 211 "Selecting Proportions for Concrete";
 - 2. ACI 308 "Curing Concrete";
 - 3. ACI 304 "Measuring, Mixing, Transporting and Placing Concrete";
 - 4. ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures";
 - 5. ACI 302 "Floor and Slab Construction";
 - 6. ACI 305 "Hot Weather Concreting";
 - 7. ACI 306 "Cold Weather Concreting";
 - 8. ACI 347 "Formwork for Concrete"; and
 - 9. ACI 330
 - C. Provide at least one person who shall be present during the execution of this portion of the Work and who shall be thoroughly trained and experienced in placing the types of concrete specified and who shall direct work performed under this Section.
 - D. Contractor shall assemble representatives of the concrete supplier, suppliers of admixtures or products used, the finisher, and the Owner's Representative to be present during the placement and finishing operation.
 - E. Contractor shall arrange a pre job meeting including the concrete supplier, manufacturer's representatives, concrete finisher, Special Inspector and Architect to review mix design and placement and curing techniques.
 - F. Concrete Quality Control
 - 1. Procure concrete from a single Engineer-approved source. Source shall be a central commercial batching plant conforming to "Concrete Plant Standards" of the Concrete Manufacturer's Association - automatic proportioning type.
 - 2. Conform to ASTM C94, paragraphs 1 through 15 and paragraph 18.
 - 3. Obtain materials of each type from same source for the entire project.
 - 4. The Owner shall engage testing agency to conduct tests and perform other services specified for quality control during construction. See Section 01450 – Special Inspector.
 - G. Project Conditions
 - 1. Notify Owner's Representative at least 48 hours in advance of intent to place concrete.
 - 2. Do not place concrete when the ambient temperature is below 400F nor when the concrete temperature or ambient temperature exceeds 850F. The Architect may approve the placement of concrete under the above conditions, provided the recommendations of ACI 305 or ACI 306 are strictly adhered to.
 - 3. Do not place concrete when environmental conditions may adversely affect the placing, finishing, or curing of concrete, or its strength.
 - H. The Contractor is responsible for correction of concrete work which does not conform to the specified requirements, including strength, tolerances, and finishes. The Contractor shall correct deficient concrete as directed by the Owner's Representative.
 - I. The Contractor is responsible for the design of any formwork and shoring required.
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PART 2 - PRODUCTS AND MATERIALS

2.01 FORMWORK

- A. Form Materials:
 - 1. Concrete not exposed to view: Any standard form materials that shall produce structurally sound concrete.
 - 2. Exposed finish concrete: Materials selected to offer optimum smooth, stain-free final appearance and minimum number of joints. Material shall resist hydrostatic head without bowing or deflection.
 - 3. Plywood: PS-1, B-B high density concrete form overlay, Class I.
 - a. Provide 1/2" chamfers at all exposed corners.
 - b. Provided a tooled edge at brick ledges that are above grade.
- B. Formwork Accessories:
 - 1. Form coating: Form release agent that will not adversely affect concrete surfaces or prevent subsequent application of concrete coatings.
 - 2. Form ties: Commercially manufactured types; cone snap ties, taper removable bolt, or other type which will leave no metal closer than 1-1/2 inches from surface of concrete when forms are removed, leaving not more than a 1-inch-diameter hole in concrete surface.

2.02 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type II for normal weight concrete.
 - B. Fly Ash: ASTM C618, Type F, Tables 1, 2, 3, and 4.
 - C. Water: Fresh, clean, and potable.
 - D. Aggregates:
 - 1. Normal weight concrete: ASTM C 33.
 - 2. Aggregate for normal weight concrete for interior slabs on grade shall conform to New York State DOT specification 703-0202 for Crushed Gravel.
 - 3. Fine aggregate: percentage passing No. 200 sieve shall be less than 3%.
 - 4. Coarse aggregate: Percentage passing No. 200 sieve shall be less than 0.7%.
 - a. Nominal size 1 1/2": ASTM Size No. 467
 - b. Nominal size 1": ASTM Size No. 57
 - c. Nominal size 1/2": ASTM Size No. 7
 - 5. Aggregates shall have been tested within the past six months from the date of the contract for the following:
 - a. Gradation: ASTM C136
 - b. Material finer than 200 sieve: ASTM C117
 - c. Organic impurities: ASTM C40
 - d. Soundness: ASTM C88
 - e. Clay lumps: ASTM C142
 - f. Abrasive of coarse materials: ASTM C131
 - g. Soft particles: ASTM C235
 - h. Resistance to freeze-thaw: ASTM C66, ASTM C682.
 - E. Admixtures
 - 1. Admixtures which result in more than 0.1 percent of soluble chloride ions by weight of cement are prohibited.
 - 2. Admixtures shall be certified by manufacturer for compatibility with other mix components.
 - F. Air-Entraining Admixture: ASTM C 260. The following products or approved equivalents will be among those considered acceptable:
 - 1. "Air Mix"; The Euclid Chemical Company.
 - 2. "Micro-Air"; Master Builders, Inc.
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- 3. "Daravair"; W. R. Grace & Co.
- G. Water-Reducing Admixture: ASTM C 494, Type A. The following products or approved equivalents will be among those considered acceptable:
 - 1. WRDA with HYCOL; W.R. Grace & Co.
- H. High-Range Water-Reducing Admixture (Superplasticizer): ASTM C 494, Type F or G. The following products or approved equivalents will be among those considered acceptable:
 - 1. "WRDA 19"; W.R. Grace & Co.
 - 2. "Daracem-100"; W. R. Grace & Co.
- I. Accelerator: Non-corrosive, non-chloride ASTM C494 Type C or E. The following products or approved equivalents will be among those considered acceptable:
- J. "Accelgard 80", Euclid Chemical Company.
- K. Waterproofing and Corrosion Protection Concrete Admixture: Provide inorganic complex alkaline earth silicate liquid admixture (IPANEX as manufactured by Cement Chemistry Systems, LP, or approved equivalent) in all concrete at the Salt Storage Shed. Install per manufacturer's written instructions.

2.03 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Nonshrink Grout: CRD-C 621, Grade B. (ASTM C-1107). Provide nonmetallic type only. The following products or approved equivalents will be among those considered acceptable:
 - 1. "Masterflow 713 or 928"; Master Builders, Inc.
 - 2. "Euco N-S Grout"; The Euclid Chemical Company.
 - 3. "Embeco 636"; Master Builders for equipment bases.
 - B. Burlap: AASHTO M 182, Class 2 jute or kenaf cloth.
 - C. Moisture-Retaining Cover: ASTM C 171, and as follows:
 - 1. Fibre reinforced waterproof paper.
 - 2. Polyethylene film.
 - 3. White burlap-polyethylene sheeting.
 - D. Bonding Systems: ASTM C881; Type, grade, and class as required for project conditions. The following products or approved equivalents will be among those considered acceptable:
 - 1. "Concresive LPL", Master Builders, Inc.
 - 2. "Sikadur 32 Hi-Mod", Sika Corporation.
 - 3. "Euco #452 Epoxy System"; Euclid Chemical Company.
 - E. Adhesive anchor system:
 - 1. Reinforcing bars:
 - a. "HIT RE 500 System", HILTI.
 - b. "KeligROUT"; KELKEN GOLD, INC., Princeton, NJ (phone 800-342-5154)
 - 2. Anchor bolts:
 - F. "HVA System", HILTI.
 - G. Expansion Joint Filler for pavements and sidewalks: Nonextruding bituminous type conforming to ASTM D1751.
 - H. Isolation joint filler for slabs on grade: Preformed cork, 1/2" thick, conforming to ASTM D1752, Type II.
 - I. Preformed Control Joint: "Screed Cap" for joints to receive sealant; "Zip Cap-Control Joint" for sawcut type joints; as manufactured by Greenstreak, Inc.
 - J. Waterstop: Polyvinyl chloride (PVC), ribbed type with center bulb. Size appropriate to application. Supply prefabricated corner shapes.
 - K. Waterstop: Bentonite type, "Volclay Waterstop-Rx", as manufactured by American Colloid Company.
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- L. Expansion anchors as equivalent to HILTI Corp. of Tulsa, Oklahoma (800-879-8000) and size as noted on Drawings. (Wedge and sleeve anchors not interchangeable).
 - a. Wedge anchors: Used in concrete or grout filled concrete block.
 - b. Sleeve anchors: Used in hollow concrete block.
- M. Wedge anchors: Hohman & Barnard, size as noted on Drawings.
- N. Underslab Vapor Retarder: ASTM E96 and as follows:
 - 1. Available Manufacturers: Subject to compliance requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. Stego Industries LLC
 - 3. Thickness: 10 mils
 - 4. Permeance Rating: Maximum 0.03 perms
 - 5. Applications: Under all interior concrete slabs on grade
- O. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

2.04 SURFACE APPLIED CURING AND SEALING COMPOUNDS

- A. Products of the following manufacturers, provided they comply with requirements of the contract documents, will be among those considered acceptable:
 - 1. Master Builders, Inc.
 - 2. Anti Hydro Company, Inc.
 - 3. The Euclid Chemical Company.
 - 4. W. R. Meadows, Inc.
 - 5. Sonneborn Building Products Division/ChemRex, Inc.
 - 6. L & M Construction Chemicals, Inc.
- B. Curing and Sealing Compounds: For interior or exterior applications.
 - 1. Products shall comply with ASTM C 309, Type 1, clear styrene acrylate type, 30% minimum solids content.
 - 2. Maximum allowable moisture loss of 0.03 grams per square centimeter.
 - 3. Do not apply to surfaces scheduled to receive other finishes, coatings or coverings unless specifically approved by the Architect/Engineer.
 - 4. "SuperRez-Seal"; The Euclid Chemical Company or approved equivalent.
- C. Sealing and Hardening Compounds: Use at exterior slabs and walks subject to deicing products.
 - 1. Concrete shall receive initial water cure as described elsewhere in this section.
 - 2. Product shall be siloxane based, 40% minimum solids content.
 - 3. "Euco-Guard VOX"; The Euclid Chemical Company or approved equivalent.
 - 4. Concrete Curing Compounds: Generally for interior curing applications.
 - 5. Product shall comply with ASTM C309, Type 1, Class B, wax free, resin based.
 - 6. Maximum allowable moisture loss of 0.03 grams per square centimeter.
 - 7. "KUREZ", The Euclid Chemical Company or approved equivalent. Do not apply to surfaces scheduled to receive other finishes, coatings, or coverings unless specifically approved by the Architect/Engineer.
 - 8. For surfaces that are scheduled to receive other finishes, coatings, or coverings, use dissipating resin-type compound, "KUREZ-DR", The Euclid Chemical Company or approved equivalent.
- D. Evaporation retarder: "Confilm"; Master Builders Company.

2.05 CONCRETE MIX DESIGN

- A. Do not begin concrete operations until proposed mixes have been reviewed and approved by the Engineer.
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- B. Comply with recommendations of ACI 211.1 for normal weight concrete and ACI 211.2 for structural lightweight concrete.
 - C. For each type and strength of concrete, establish the required average strength $f'(cr)$ of the design mix on the basis of either field experience or trial mixtures as specified in ACI 301, and proportion mixes accordingly. If trial mixtures method is used, employ an independent testing agency acceptable to the Engineer for preparing and reporting proposed mix designs.
 - D. Verify air-dry unit weight of lightweight concrete in accordance with ASTM C 567, and correlate with fresh unit weight for use in acceptance of fresh concrete during construction.
 - E. Admixtures:
 - 1. Air-entraining admixture: Add at rate to achieve specified air content.
 - 2. High-range water-reducing admixture (superplasticizer): Add as required for placement and workability.
 - 3. Do not use admixtures not specified or approved.
 - F. Design mixes to meet or exceed each requirement specified. Where more than one criterion is specified, the most stringent shall apply. For example, a minimum cement content or maximum water-cement ratio might result in strengths greater than the minimum specified; likewise, a greater cement content or lower water-cement ratio may be required in order to achieve the required strength.
 - G. Normal Weight Concrete - Type A
 - 1. Minimum compressive strength f'_c : 3,000 psi @ 28 days.
 - 2. Maximum water-cementitious ratio by weight: 0.50.
 - 3. Minimum cement content: 475 lbs. per cubic yard.
 - 4. Coarse aggregate size: 1".
 - 5. Maximum slump: 3-1/2 inches + 1 inch.
 - 6. Air Content: 4-6%.
 - 7. Schedule: Footings and non-retaining walls.
 - H. Normal Weight Concrete - Type B
 - 1. Provide sufficient time for excess water to evaporate prior to placing floor coverings. See floor covering manufacturer.
 - 2. Minimum compressive strength f'_c : 3,500 psi @ 28 days.
 - 3. Maximum water-cementitious ratio by weight: 0.45.
 - 4. Minimum cement content: 540 lbs. per cubic yard.
 - 5. Coarse aggregate size: 3/4"-1".
 - 6. Maximum slump: 3-1/2 inches + 1 inch.
 - 7. Schedule: interior slabs on grade.
 - I. Normal Weight Concrete - Type C
 - 1. Minimum compressive strength f'_c : 5,000 psi @ 28 days.
 - 2. Maximum water-cementitious ratio by weight: 0.45.
 - 3. Minimum cement content: 590 lbs. per cubic yard.
 - 4. Coarse aggregate size: 1/2" – 1 1/2".
 - 5. Maximum slump: 3-1/2 inches + 1 inch.
 - 6. Air Content: 6%.
 - 7. Schedule: exterior walks or paving: retaining walls.
 - J. Provided that no additional expense to owner is involved, contractor may submit for Architect/Engineer approval requests for adjustment to approved concrete mixes when circumstances such as changed project conditions, weather, or unfavorable test results occur. Include laboratory test data substantiating specified properties with mix adjustment requests.
 - K. Controlled Low Strength Material (CLSM) - Permanent: Material shall meet the requirements of ACI 229R with a compressive strength of 400 PSI.
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- L. Controlled Low Strength Material (CLSM) - Removable: Material shall meet the requirements of ACI 229R with a compressive strength of 50- 100 PSI.
- M. A tolerance of up to 1 inch above specified slump will be permitted for 1 batch in 5 consecutive batches tested. Concrete of lower slump than that specified may be used, provided proper placing and consolidation is obtained.
- N. If slump upon arrival at the site is lower than 1 inch below the value specified, one addition of water in accordance with ASTM C 94 will be permitted to bring slump within tolerance, provided that:
 - 1. A positive means is available to measure the amount of water added at the site.
 - 2. The specified (or approved) maximum water-cementitious ratio is not exceeded.
 - 3. Not more than 45 minutes have elapsed since batching.
- O. Total Air Content: A tolerance of plus or minus 1-1/2 percent of that specified will be allowed for field measurements.
- P. Do not use batches that exceed tolerances. The Owner's Special Inspector has the authority to reject concrete.

2.06 CONCRETE MIXING

- A. Mix concrete materials in transit mixers, complying with requirements of ASTM C94, paragraphs 1 to 15 and 18 only.
- B. Elapsed time between initial contact of the cement with water and the completed discharge of the batch at the project site shall not exceed 90 minutes or 300 revolutions of the drum, whichever comes first. These limits shall be reduced at the direction of the Owner's Representative.
- C. Concrete batch plant shall conform to requirements of the "Concrete Plant Standards" of the "Concrete Manufacturer's Association".

PART 3 - EXECUTION

3.01 HOT AND COLD WEATHER CONCRETING

- A. Do not proceed with work of this section for hot or cold weather placement without approval of the Engineer.
- B. Comply with recommendations of ACI 306 when air temperatures are expected to drop below 40 degrees F either during concrete placement operations or before concrete has cured.
 - 1. Do not use frozen or ice-laden materials.
 - 2. Do not place concrete on frozen substrates.
 - 3. Do not add salt, calcium chloride, anti-freeze compounds.
- C. Comply with recommendations of ACI 305 when ambient temperature before, during, or after concrete placement is expected to exceed 85 degrees F.
 - 1. Do not use retarding admixtures.
 - 2. Make special provisions for curing and finishing.

3.02 CONCRETE FORM PREPARATION

- A. Comply with requirements of ACI 301 and ACI 347 for formwork, and as herein specified. The contractor is responsible for design, engineering, and construction of formwork, and for its timely removal.
 - B. Earth forms are not permitted.
 - C. Design and fabricate forms for easy removal, without impact, shock, or damage to concrete surfaces or other portions of the work.
 - D. Design to support all applied loads until concrete is adequately cured, within allowable tolerances and deflection limits.
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1. Formwork shall not restrain elastic shortening, deflection, or camber resulting from prestressing forces.
- E. Construct and brace formwork to accurately achieve end results required by contract documents, with all elements properly located and free of distortion. Provide for necessary openings, inserts, anchorages, and other features shown or otherwise required.
 1. Minimize form joints and make watertight to prevent leakage of concrete.
 2. Provide chamfered edges and corners at exposed locations, unless specifically indicated otherwise on the drawings.
 3. Provide openings to accommodate work of other trades, sized and located accurately. Securely support items built into forms; provide additional bracing at openings and discontinuities in formwork.
 4. Provide temporary openings for cleaning and inspection in most inconspicuous locations at base of forms, closed with tightfitting panels designed to minimize appearance of joints in finished concrete work.
 5. Build into concrete work all required ties, anchors, anchor bolts, sleeves, and other inserts. Accurately set items, by using templates, in their final position at the time concrete is placed.
- F. Comply with minimum tolerances established in ACI 117, unless more stringent requirements are indicated on the drawings.
- G. Provide either form materials with factory-applied nonabsorptive liner or field-applied form coating. If field-applied coating is employed, thoroughly clean and recondition formwork and reapply coating before each use. Rust on form surfaces is unacceptable.

3.03 JOINT CONSTRUCTION

- A. Construction Joints (Cold Joints): Locate and install construction joints as indicated on Drawings. If construction joints are not indicated, or if contractor opts to add additional joints, locate in manner which will least impair strength and stability of the structure.
 1. Contractor shall submit location diagrams to Architect/Engineer for approval if locations are not shown on the Contract Documents.
 2. Provide keyways not less than 1-1/2 inches deep.
 3. Continue reinforcement across and perpendicular to construction joints, unless details specifically indicate otherwise.
 4. Where a joint is to be made, the surface of the concrete shall be thoroughly cleaned. Joints shall be wetted and slushed with a coat of neat cement grout immediately before placement of new concrete. The grout shall be a neat cement and sand grout (1:3 mix) placed to a 1/2" minimum thickness. An approved bonding compound may be used in lieu of the cement grout with approval of the Architect/Engineer.
 5. Provide waterstops as indicated, and on all construction joints below grade adjacent to usable spaces. Install to form continuous, water tight dam, with field joints fabricated in strict accordance with manufacturer's instructions.
 - B. Movement Joints: Construct isolation joints in slabs poured on grade at points of contact with vertical components, such as foundation walls and column pedestals.
 1. Install joint filler to full concrete depth. Recess top edge of filler 1/8 inch where joints are unsealed.
 2. Slabs on grade shall be tied to foundation walls with #3 reinforcing bars at 4 feet on center unless specifically shown otherwise on the drawings.
 3. Smooth dowels, greased or treated one end to prevent bond shall be installed at columns and as shown on the Drawings. Refer to "Installing Dowels", this section.
 - C. Expansion Joints: Construct expansion joints where indicated. Install expansion joint filler to full depth of concrete. Recess edge of filler to depth indicated to receive joint sealant (and backer rod where necessary) specified in Division 7.
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- D. Control Joints - Slabs on grade: Spacing of joints in slabs shall not exceed three times the thickness of the slab in feet nor 15 feet on center. Joints shall typically isolate columns and shall run between columns.
 - 1. If locations of joints are not specifically shown on the Drawings, the Contractor shall submit location diagram to the Owner's Representative for approval.
 - 2. Form control joints by means of saw cuts one-fourth the depth of the slab (1-1/4" minimum), performed as soon as possible after slab finishing without possibility of dislodging aggregate.
 - 3. Use "soft-cut" type saw to perform work.
 - 4. Control joint in cast stairs need to be deep hand tooled
- E. Control Joints - Walls: Construct control joints in walls at 4 feet from corners/intersections and then at 25 feet on center thereafter.
 - 1. Contractor shall submit location diagram to Architect/Engineer for approval if locations are not shown on the Drawings.
 - 2. Construct weakened plane vertical control joints as shown on the drawings. Provide adequate shear reinforcement as directed by the Architect/Engineer.
 - 3. Joints above grade shall be constructed to provide for the installation of watertight joint and sealant. Joints shall be filled with appropriate backer rod and sealant.
 - 4. Provide waterstops where indicated on the Drawings and on all joints below grade adjacent to usable spaces. Install to form continuous watertight dam, with field joints fabricated in strict accordance with manufacturer's instructions.

3.04 INSTALLATION OF SMOOTH DOWELS

- A. Install dowels as noted on the Drawings.
- B. One end of dowel on one side of joint shall be non-bonded, allowed to slip.
- C. Methods:
 - 1. Coat the non-bonded end with grease and wrap snugly with polyethylene tape. Work shall be neat and snug without excess material.
 - 2. Use premolded dowel caps over non-bonded end.

3.05 INSTALLATION OF BUILT-IN ITEMS

- A. Set anchorage devices and other items required for other work connected to or supported by cast-in-place concrete, using templates, setting drawings, and instructions from suppliers of items to be embedded.
- B. Set edge forms and intermediate screeds as necessary to achieve final elevations indicated for finished slab surfaces.
- C. Set anchor bolts furnished under Division 5, using templates and in coordination with steel shop drawings.
- D. Comply with requirements of Paragraph 6.3 of ACI 318.

3.06 CONCRETE PLACEMENT

- A. Provide materials necessary to ensure adequate protection of concrete during inclement weather before beginning installation of concrete.
 - B. Before beginning concrete placement, inspect formwork, reinforcing steel, and items to be embedded, verifying that all such work has been completed.
 - C. Moisten wood forms immediately before placing concrete in locations where form coatings are not used.
 - D. Provide runways for wheeled equipment to convey concrete. Do not support runways on reinforcing or wheel equipment directly over reinforcing.
 - E. Schedule continuous placement of concrete to prevent the formation of cold joints.
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- F. Provide construction joints if concrete for a particular element or component cannot be placed in a continuous operation.
- G. Deposit concrete as close as possible to its final location, to avoid segregation.
- H. Limit horizontal layers to depths which can be properly consolidated, but in no event greater than 24 inches.
- I. Consolidate concrete by means of mechanical vibrators, inserted vertically in freshly placed concrete in a systematic pattern at close intervals. Penetrate previously placed concrete to ensure that separate concrete layers are knitted together.
- J. Vibrate concrete sufficiently to achieve consistent consolidation without segregation of coarse aggregates.
- K. Do not use vibrators to move concrete laterally.
- L. Strike off and level concrete slab surfaces, using highway straightedges, darbies, or bull floats before bleed water can collect on surface. Do not work concrete further until finishing operations are commenced.

3.07 FINISHING FORMED SURFACES

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Remove honeycombed areas and other defective concrete down to sound concrete, cutting perpendicular to surface or slightly undercutting. Dampen patch location and area immediately surrounding it prior to applying bonding compound or patching mortar.
- C. Before bonding compound has dried, apply patching mixture matching original concrete in materials and mix except for omission of coarse aggregate, and using a blend of white and normal portland cement as necessary to achieve color match. Consolidate thoroughly and strike off slightly higher than surrounding surface.
- D. Unexposed Form Finish: Repair tie holes and patch defective areas. Rub down or chip off fins or other raised areas exceeding 1/4 inch height.
- E. Exposed Form Finish:
 - 1. Repair and patch defective areas with fins or other projection completely removed and smoothed.
 - 2. Smooth Rubbed Finish: Apply to surfaces indicated no later than 24 hours after form removal. Wet concrete surfaces to be finished and rubbed with Carborundum brick or other abrasive until uniform color and texture are achieved. Do not apply separate grout mixture.

3.08 FINISHING SLABS

- A. Finishing Operations:
 - 1. Do not directly apply water to slab surface or dust with cement.
 - 2. Screeding: Strikeoff to required grade and within surface tolerances indicated. Verify conformance to surface tolerances. Correct deficiencies while concrete is still plastic.
 - 3. Bull Floating: Immediately following screeding, bull float or darby before bleed water appears to eliminate ridges, fill in voids, and embed coarse aggregate. Recheck and correct surface tolerances.
 - 4. Do not perform subsequent finishing until excess moisture or bleed water has disappeared and concrete will support either foot pressure with less than 1/4-inch indentation or weight of power floats without damaging flatness.
 - 5. Final floating: Float to embed coarse aggregate, to eliminate ridges, to compact concrete, to consolidate mortar at surface, and to achieve uniform, sandy texture. Recheck and correct surface tolerances.
 - 6. Troweling: Trowel immediately following final floating. Apply first troweling with power trowel except in confined areas, and apply subsequent trowelings with hand trowels. Wait between trowelings to allow concrete to harden. Do not overtrowel. Begin final troweling
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when surface produces a ringing sound as trowel is moved over it. Consolidate concrete surface by final troweling operation. Completed surface shall be free of trowel marks, uniform in texture and appearance, and within surface tolerance specified.

7. Grind smooth surface defects which would telegraph through final floor covering system.
- B. Finishes: Coordinate appearance and texture of required final finishes with the Engineer before application.
 1. Broomed Float Finish: After floating and when water sheen has practically disappeared, apply uniform transverse corrugations approximately 1/16 inch deep, without tearing surface.
 2. Trowel Finish: As specified above.
- C. Slab Surface Tolerances:
 1. Achieve flat, level planes except where grades are indicated. Slope uniformly to drains.
 2. Floated finishes: Depressions between high spots shall not exceed 5/16 inch under a 10-foot straightedge.
 3. Troweled finishes: Achieve level surface plane so that depressions between high spots shall not exceed 1/8 inch under a 10-foot straightedge.
- D. Slab Finish Schedule: Apply finishes in the following typical locations and as otherwise shown on the drawings:
 1. Broomed float finish:
 - a. Sidewalks, exterior ramps and slabs.
 2. Trowel finish:
 - a. Exposed interior floors not otherwise scheduled.
 - b. Surfaces to receive resilient tile.
 - c. Surfaces to receive carpet.
- E. Slabs shall be screeded to bring the surface to the levels indicated on the drawings and sloped to drainage points where required. The concrete shall be further consolidated and leveled with a bull float.
- F. It is better under finish, limiting the operation to screeding, bull float, trowel and cure within one hour of placement.
- G. The use of a light fog mist to keep the air above the concrete surface at a high humidity is required during placing and finishing operations, until wet fabric is placed over the concrete.
- H. Cure by water cure method for a minimum of seven days.

3.09 CONCRETE CURING AND PROTECTION

- A. Prevent premature drying of freshly placed concrete, and protect from excessively cold or hot temperatures until concrete has cured.
 - B. Provide curing of concrete by one of the methods listed and as appropriate to service conditions and type of applied finish in each case. Curing period shall be not less than 7 days for standard cements and mixes.
 - C. Evaporation retarder shall not take the place of curing compounds or water cure. It is used during finishing operations and during installation of wet covering.
 - D. Cure formed concrete surfaces by moist curing with forms in place for full curing period or until forms are removed.
 1. Keep wet wooden or metal forms exposed to heat of the sun.
 2. If forms are removed prior to completion of curing process, continue curing by one of the applicable methods specified.
 - E. Water Cure: The surface of finished concrete shall be kept continuously wet for a minimum of seven days.
 1. Concrete surfaces shall be kept continuously wet by sprinkling or fogging with water and by a covering material thoroughly saturated with water and kept wet by intermittent hosing.
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- Concrete shall be protected against freezing during the curing.
2. Covering material shall be kept continuously moist so that a film of water remains on the concrete surface throughout the curing period. Alternate cycles of wetting and drying shall not be permitted during the curing period.
 3. The use of a moisture retaining cover over burlap or a manufactured type of moisture retaining cover shall be permitted. Lap not less than 3 inches at edges and ends, and seal with waterproof tape or adhesive. Repair holes or tears during curing period with same tape or adhesive. Maintain covering in intimate contact with concrete surface. Secure to avoid displacement.
 4. Do not use plastic sheeting directly on surfaces which will be exposed to view when in service.
- F. Compound Cure: Curing compounds shall be applied immediately following last finishing operations.
1. Apply curing compound at rate stated by manufacturer to conform with moisture-retention requirements specified, using second, immediate application at right angles to first. Reapply if damaged by rain.
 2. Apply additional coat near substantial completion to act as sealer.
 3. Use curing compounds only in locations permitted or required. Do not apply to surfaces to receive other finishes, coatings, or coverings.
- G. Hardening Compound: Apply to concrete after initial water cure and seasoning of the concrete as recommended by manufacturer. Apply two or more applications as recommended by manufacturer to achieve maximum hardness.
- H. Avoid rapid drying at end of curing period.
- I. During and following curing period, protect concrete from temperature changes of adjacent air in excess of 5 degrees F per hour and 50 degrees F per 24 hours. Progressively adjust protective measures to provide uniform temperature changes over entire concrete surface.

3.10 JOINT FILLER

- A. Concrete surfaces shall be fully cured (minimum 120 days).
- B. Remove debris and clean per manufacturer.
- C. Fill full depth of crack for proper load transfer.
- D. Install in strict accordance with manufacturer's instructions.

E. REMOVAL OF FORMS AND SUPPORTS

- F. Non-Load-Bearing Formwork: Provided that concrete has hardened sufficiently that it will not be damaged, forms not actually supporting weight of concrete or weight of soffit forms may be removed after concrete has cured at not less than 50 degrees F for 24 hours. Maintain curing and protection operations after form removal.

3.11 MISCELLANEOUS CONCRETE ITEMS

- A. Fill in holes and openings left in concrete structures for passage of work by other trades after such work is in place. Place such fill-in concrete to blend with existing construction, using same mix and curing methods.
 - B. Provide machine and equipment bases and foundations, as indicated on drawings. Set anchor bolts at correct elevations, complying with diagrams or templates of equipment manufacturer. Misplaced or damaged anchor bolts will be subject to re-engineering fees.
 - C. Provide concrete grout for reinforced masonry where indicated on drawings and as scheduled.
 - D. Provide concrete fill for steel pair stairs and landings. Install welded wire fabric, 2x2 - 12x12 at 1/2" below finish surface.
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3.12 CONCRETE REPAIRS

- A. Patch tie holes, honeycomb, and other surface imperfections in accordance with ACI 301 and as directed by the Engineer.
- B. Defective concrete is defined as concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete or surface imperfections shall be as determined by the Engineer.
- D. Do not patch, fill, touch-up, repair, or replace any concrete except upon specific approval of methods and materials by the Engineer for each individual area.

3.13 REMOVAL OF EXISTING CONCRETE

- A. Saw cut surfaces or drill holes at regular intervals sufficient to establish a fracture plane for removal by power tools.
 - B. Salvage all existing reinforcing; do not cut away until specifically directed by the Architect/Engineer, or as shown on the Drawings.
 - C. New work bonded to existing work:
 - 1. Clean and roughen existing surface by sandblasting, waterblasting, scabber, or other approved method.
 - 2. Embed dowels and reinforcing as detailed on the Drawings.
 - 3. Coat surface with bonding agent applied in strict accordance with manufacturer's instructions.
 - D. Existing work cut away for new work.
 - 1. Saw cutting and removal shall continue to within 1/4" of the finished surface. The final 1/4" removal shall be completed by grinding to the final surface.
 - 2. Cut existing reinforcing bars 1/2" below the surface. Coat with anti-corrosion protective coating. Grout holes.
 - 3. Provide bond breaker where new concrete work is adjacent to existing work but structurally separate.
 - E. QUALITY CONTROL TESTING DURING CONSTRUCTION
 - 1. (Performed by Owner's Special Inspector)
 - F. Composite Sampling, and Making and Curing of Specimens: ASTM C 172 and ASTM C 31.
 - 1. Take samples at point of discharge.
 - 2. For pumped concrete, perform sampling and testing at the frequencies specified herein at point of delivery to pump, and perform additional sampling and testing at the same frequency at discharge from line. Results obtained at discharge from line shall be used for acceptance of concrete.
 - G. Slump: ASTM C 143. One test per batch. Modify sampling to comply with ASTM C 94.
 - H. Air Content of Normal Weight Concrete: ASTM C 173 or ASTM C 231. One test per strength test performed on air-entrained concrete.
 - I. Concrete Temperature: One test per strength test.
 - J. Compressive Strength Tests: ASTM C 39.
 - 1. Mold and cure one set of 4 standard cylinders for each compressive strength test required.
 - 2. Obtain samples on a statistically sound, random basis, minimum frequency as follows:
 - a. One set per 100 cubic yards or fraction thereof for each day's pour of each concrete class.
 - b. One set per 2000 square feet of slab or wall area or fraction thereof for each day's pour of each concrete class.
 - c. When the above testing frequency would provide fewer than 5 strength tests for a given class of concrete during the project, conduct testing from not less than 5
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- randomly selected batches, or from each batch if fewer than 5.
3. Test Schedule:
 - a. Test one specimen per set at 7 days for information unless an earlier age is required.
 - b. Test two specimens per set for acceptance of strength potential; test at 28 days unless other age is specified. The test result shall be the average of the two specimens. If one specimen shows evidence of improper sampling, molding, or testing, the test result shall be the result of the remaining specimen.
 - c. Retain one specimen from each set for later testing, if required.
 4. Strength potential of as-delivered concrete will be considered acceptable if all of the following criteria are met:
 - a. No individual test result falls below specified compressive strength by more than 500 psi.
 - b. Not more than 10 percent of individual test results fall below specified compressive strength $f'(c)$.
 - c. Average of any 3 consecutive strength test results equals or exceeds specified compressive strength $f'(c)$.
 5. Testing for evaluation of field curing:
 - a. Frequency: One field set of specimens per strength acceptance test.
 - b. Mold specimens from same sample used for strength acceptance tests. Field-cure, and test at same age as for strength acceptance tests.
 - c. Evaluate construction and curing procedures and implement corrective action when strength results for field-cured specimens are less than 85 percent of test values for companion laboratory-cured specimens.
- K. Test Results: Testing agency shall report test results in writing to Owner's Representative and contractor within 24 hours of test.
1. Test reports shall contain the following data:
- L. Project name, number, and other identification.
- a. Name of concrete testing agency.
 - b. Date and time of sampling.
 - c. Concrete type and class.
 - d. Location of concrete batch in the completed work.
 - e. All information required by respective ASTM test methods.
2. Nondestructive testing devices such as impact hammer or sonoscope may be used at Owner's Representative option for assistance in determining probable concrete strength at various locations or for selecting areas to be cored, but such tests shall not be the sole basis for acceptance or rejection.
 3. The testing agency shall make additional tests of in-place concrete as directed by the Owner's Representative when test results indicate that specified strength and other concrete characteristics have not been attained.
 - a. Testing agency may conduct tests of cored cylinders complying with ASTM C 42, or tests as directed.
 - b. Cost of additional testing shall be borne by the Contractor when unacceptable concrete has been verified.

END OF SECTION

**SECTION 055213
PIPE AND TUBE RAILINGS**

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Steel pipe and tube railings.

1.02 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design railings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
 - 1. Steel: 72 percent of minimum yield strength.
- C. Structural Performance: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ ft. applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Infill of Guards:
 - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.
 - b. Infill load and other loads need not be assumed to act concurrently.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- E. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.03 SUBMITTALS

- A. Product Data: For the following:
 - 1. Manufacturer's product lines of mechanically connected railings.
 - 2. Railing brackets.
 - 3. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- D. Qualification Data: For qualified professional engineer.
- E. Welding certificates.
- F. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

1.04 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 AWS D1.1, "Structural Welding Code - Steel."

1.05 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.
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1.06 COORDINATION AND SCHEDULING

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of 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.
- C. 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.

PART 2 PRODUCTS

2.01 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.

2.02 STEEL AND IRON

- A. Tubing: ASTM A 500 (cold formed) or ASTM A 513.
- B. Pipe: ASTM A 53, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
 - 1. Provide galvanized finish for exterior installations and where indicated.

2.03 PLATES, SHAPES, AND BARS: ASTM A 36.

- A. Cast Iron: Either gray iron, ASTM A 48, or malleable iron, ASTM A 47, unless otherwise indicated.

2.04 FASTENERS

- A. General: Provide the following:
 - 1. Ungalvanized-Steel Railings: Plated steel fasteners complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 for zinc coating.
 - 2. Hot-Dip Galvanized Railings: Type 316 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153 or ASTM F 2329 for zinc coating.
- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- C. Fasteners for Interconnecting Railing Components:
 - 1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
- D. Post-Installed Anchors: 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 E 488, conducted by a qualified independent testing agency.
 - 1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.
 - 2. Material for Exterior Locations and Where Stainless Steel is Indicated: Alloy Group 2 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.05 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
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- B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- D. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
- E. Shop Primer for Galvanized Steel: Cementitious galvanized metal primer complying with MPI#26.
- F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.
- G. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.06 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. Assemble railings in the shop 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 will be exposed to weather in a manner to exclude 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 by inserting prefabricated elbow fittings of radius indicated.
 - J. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
 - K. Close exposed ends of railing members with prefabricated end fittings.
 - L. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
 - M. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
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1. 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 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. For removable railing posts, fabricate slip-fit sockets from steel tube or pipe whose ID is sized for a close fit with posts; limit movement of post without lateral load, measured at top, to not more than one-fortieth of post height. Provide socket covers designed and fabricated to resist being dislodged.
 1. Provide chain with eye, snap hook, and staple across gaps formed by removable railing sections at locations indicated. Fabricate from same metal as railings.
- Q. 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.

2.07 FINISHES, GENERAL

- 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.

2.08 STEEL AND IRON FINISHES

- A. Galvanized Railings:
 1. Hot-dip galvanize exterior steel and iron railings, including hardware, after fabrication.
 2. Hot-dip galvanize indicated steel and iron railings, including hardware, after fabrication.
 3. Comply with ASTM A 123 for hot-dip galvanized railings.
 4. Comply with ASTM A 153 for hot-dip galvanized hardware.
 5. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
 6. Fill vent and drain holes that will be exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.
- B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.
- C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.
- D. For nongalvanized steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors to be embedded in exterior concrete or masonry.
- E. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."
- F. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements have been clearly marked for Installer. Locate
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reinforcements and mark locations if not already done.

3.02 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 have been 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. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.03 RAILING CONNECTIONS

- A. Welded Connections: Use fully welded joints for permanently connecting railing components. 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.

3.04 ANCHORING POSTS

- A. Use metal sleeves preset and anchored into concrete for installing posts. After posts have been 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.
- B. Form or core-drill holes not less than 5 inches deep and 3/4 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.
- C. Leave anchorage joint exposed.
 - 1. Exterior Posts: Provide with 1/8-inch buildup, sloped away from post.
 - 2. Interior Posts: Trowel anchoring material flush with adjacent surface.
- D. Install removable railing sections, where indicated, in slip-fit metal sockets cast in concrete.

3.05 ATTACHING RAILINGS

- A. Attach railings to wall with wall brackets. Provide brackets with 1-1/2-inch clearance from inside face of handrail and finished wall surface. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
 - 1. Use type of bracket with flange tapped for concealed anchorage to threaded hanger bolt.
 - 2. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
 - B. Secure wall brackets and railing end flanges to building construction as follows:
 - 1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
 - 2. For hollow masonry anchorage, use toggle bolts.
 - 3. For wood stud partitions, use hanger or lag bolts set into studs or wood backing between studs. Coordinate with carpentry work to locate backing members.
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4. For steel-framed partitions, use self-tapping screws fastened to steel framing or to concealed steel reinforcements.

3.06 ADJUSTING AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

3.07 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION

**SECTION 061053
MISCELLANEOUS ROUGH CARPENTRY****PART 1 GENERAL****1.01 SUMMARY**

- A. Section Includes:
1. Rooftop equipment bases and support curbs.
 2. Wood blocking, and nailers.
 3. Plywood backing panels.
 4. Fire retardant blocking for wall accessories, equipment and miscellaneous hardware.

1.02 DEFINITIONS

- A. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
1. NeLMA: Northeastern Lumber Manufacturers' Association.
 2. NHLA: National Hardwood Lumber Association.
 3. NLGA: National Lumber Grades Authority.
 4. SPIB: The Southern Pine Inspection Bureau.
 5. WCLIB: West Coast Lumber Inspection Bureau.
 6. WWPA: Western Wood Products Association.

1.03 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. 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. 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.
 3. 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 D 5664.
 4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.04 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For the following, from ICC-ES:
1. Preservative-treated wood.
 2. Fire-retardant-treated wood.
 3. Power-driven fasteners.
 4. Powder-actuated fasteners.
 5. Expansion anchors.

1.05 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.
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1.06 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 PRODUCTS**2.01 WOOD PRODUCTS, GENERAL**

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded 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. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 - 3. Provide dressed lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 15 percent for 2-inch nominal thickness or less, 19 percent for more than 2-inch nominal thickness unless otherwise indicated.

2.02 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWWA U1; Use Category UC2.
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
 - 2. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 15 percent. Do not use material that is warped or 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. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

2.03 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
 - B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
 - 1. Use treatment that does not promote corrosion of metal fasteners.
 - 2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
 - 3. Design Value Adjustment Factors: Treated lumber shall be tested according ASTM D 5664, and design value adjustment factors shall be calculated according to ASTM D 6841.
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- C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.
 - D. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.
 - E. Application: Treat items indicated on Drawings, and the following:
 - 1. Concealed blocking.
 - 2. Plywood backing panels.

2.04 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: DOC PS 1, Exterior, AC, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

2.05 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - 1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or Type 304 stainless steel.
- B. Screws for Fastening to Metal Framing: ASTM C 1002 or ASTM C 954 as required for application, length as recommended by screw manufacturer for material being fastened.
- C. Lag Bolts: ASME B18.2.1.
- D. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- E. 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.
 - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
 - 2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

2.06 MISCELLANEOUS MATERIALS

- A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

- A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
 - B. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
 - C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.
 - D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
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- E. Sort and select lumber so that natural characteristics will 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.
- F. Comply with AWWA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.
- G. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

3.02 WOOD BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for 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.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

END OF SECTION

SECTION 064023
INTERIOR ARCHITECTURAL WOODWORK**PART 1 GENERAL****1.01 SUMMARY**

- A. This Section includes the following:
 - 1. Plastic-laminate cabinets.
 - 2. Plastic-laminate countertops.
 - 3. Window sills.
 - 4. Interior standing and running trim.

1.02 DEFINITIONS

- A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

1.03 SUBMITTALS

- A. Product Data: For high-pressure decorative laminate, adhesive for bonding plastic laminate, cabinet hardware and accessories, handrail brackets, and finishing materials and processes.
 - 1. Include data for fire-retardant materials and treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.
- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
 - 2. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers and other items installed in architectural woodwork.
- C. Samples for Verification:
 - 1. Lumber with transparent finish, not less than 1-1/2 inches wide by 4 inches long, for each species and cut, finished on 1 side and 1 edge.
 - 2. Plastic laminates, 2 by 3 inches, for each type, color, pattern, and surface finish.
- D. Product Certificates: For each type of product, signed by product manufacturer.
- E. Qualification Data: For fabricator.

1.04 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
 - B. Installer Qualifications: Fabricator of products.
 - C. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of interior architectural woodwork with sequence-matched wood veneers.
 - D. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
 - E. Fire-Test-Response Characteristics: Where fire-retardant materials or products are indicated, provide materials and products with specified fire-test-response characteristics as determined by testing identical products per test method indicated by UL, ITS, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be
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concealed from view after installation.

- F. Forest Certification: Provide interior architectural woodwork produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.06 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install woodwork 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.
- B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.
 2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.07 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.
- B. Wood Products: Comply with the following:
1. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
 2. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1, made with adhesive containing no urea formaldehyde.
 3. Marine Grade Panel Products (Marine Plywood):
- C. Thermoset Decorative Panels: Particleboard finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
1. Provide PVC or polyester edge banding complying with LMA EDG-1 on components with exposed or semi-exposed edges.
- D. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.
1. Manufacturer: Subject to compliance with requirements, provide high-pressure decorative laminates by one of the following:
 - a. Formica Corporation.
 - b. Lamin-Art, Inc.
 - c. Nevamar Company, LLC; Decorative Products Div.
 - d. Panolam Industries International Incorporated.
 - e. Westinghouse Electric Corp.; Specialty Products Div.

- f. Wilsonart International; Div. of Premark International, Inc.
- E. Colors and Patterns: As selected by Architect from manufacturer's full range of standard colors.

2.02 FIRE-RETARDANT-TREATED MATERIALS

- A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
 - 1. Use treated materials that comply with requirements of referenced woodworking standard. Do not use materials that are warped, discolored, or otherwise defective.
 - 2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
 - 3. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.
- B. Fire-Retardant Particleboard: Panels complying with the following requirements, made from softwood particles and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 25 or less per ASTM E 84.
 - 1. For panels 3/4 inch thick and less, comply with ANSI A208.1 for Grade M-2 except for the following minimum properties: modulus of rupture, 1600 psi; modulus of elasticity, 300,000 psi; internal bond, 80 psi; and screw-holding capacity on face and edge, 250 and 225 lbf, respectively.
 - 2. For panels 13/16 to 1-1/4 inches thick, comply with ANSI A208.1 for Grade M-1 except for the following minimum properties: modulus of rupture, 1300 psi; modulus of elasticity, 250,000 psi; linear expansion, 0.50 percent; and screw-holding capacity on face and edge, 250 and 175 lbf, respectively.
 - 3. Products: Subject to compliance with requirements, provide one of the following:
 - a. Flakeboard Company Limited; Duraflake FR.
 - b. SierraPine; Encore FR.

2.03 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural plastic-laminate cabinets indicated for construction, finishes, installation, and other requirements.
 - 1. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.
- B. Grade: Premium.
- C. Type of Construction: Frameless.
- D. Cabinet, Door, and Drawer Front Interface Style: Flush overlay.
- E. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by woodwork quality standard.
- F. Laminate Cladding for Exposed Surfaces:
 - 1. Horizontal Surfaces: Grade HGS.
 - 2. Vertical Surfaces: Grade HGS.
 - 3. Edges: PVC edge banding, 3mm thick, matching laminate in color, pattern, and finish.
- G. Materials for Semi-exposed Surfaces:
 - 1. Surfaces Other Than Drawer Bodies: Thermoset decorative panels.

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- a. Edges of Plastic-Laminate Shelves: PVC edge banding, 3mm thick, matching laminate in color, pattern, and finish.
 - H. Drawer Construction: Fabricate with exposed fronts fastened to sub-front with mounting screws from interior of body.
 - 1. Join sub-fronts, backs, and sides with dovetail joints supplemented by mechanical fasteners or glued and doweled joints.

2.04 INTERIOR STANDING AND RUNNING TRIM FOR TRANSPARENT FINISH

- A. Grade: Premium.
- B. Wood Species and Cut:
 - 1. Species: White Maple.
 - 2. Cut: Plain sliced/plain sawn.
 - 3. Provide split species on trim that faces areas with different wood species, matching each face of woodwork to species and cut of finish wood surfaces in areas finished.
- C. For base wider than available lumber, glue for width. Do not use veneered construction.

2.05 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets.
 - B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 100 degrees of opening, self-closing.
 - C. Steel Angle Brackets: For counter support.
 - 1. Manufacturer: Doug Mockett
 - 2. Model: Size: 18", 24" and 30" as indicated on the drawings.
 - 3. Finish: Satin Stainless
 - D. Spring Loaded Folding Bracket:
 - 1. Manufacturer: Sugatsune
 - 2. Models:
 - a. 38830-25
 - b. 38845-25
 - c. 38860-25
 - 3. Finish: Anodized Aluminum
 - E. Back-Mounted Pulls: BHMA A156.9, B02011.
 - F. Wire Pulls: Back mounted, solid metal, 4 inches long, 5/16 inch in diameter.
 - G. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081 and BHMA A156.9, B04102; with shelf brackets, B04112.
 - 1. Manufacturer: Knape and Vogt
 - 2. Install recessed into the millwork.
 - H. Drawer Slides: BHMA A156.9, B05091.
 - 1. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-extension type; zinc-plated steel ball-bearing slides.
 - 2. Box Drawer Slides: Grade 1HD-100; for drawers not more than 6 inches high and 24 inches wide.
 - 3. File Drawer Slides: Grade 1HD-200; for drawers more than 6 inches high or 24 inches wide.
 - 4. Pencil Drawer Slides: Grade 1; for drawers not more than 3 inches high and 24 inches wide.
 - 5. Keyboard Slides: Grade 1HD-100; for computer keyboard shelves.
 - 6. Trash Bin Slides: Grade 1HD-200; for trash bins not more than 20 inches high and 16 inches wide.
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- I. Door Locks: BHMA A156.11, E07121.
 - J. Drawer Locks: BHMA A156.11, E07041.
 - K. Grommets for Cable Passage through Countertops: 2-inch OD, black, molded-plastic grommets and matching plastic caps with slot for wire passage.
 - L. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
 - 1. Satin Stainless Steel: BHMA 630.
 - M. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

2.06 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.
- C. Handrail Brackets: Cast from aluminum with wall flange drilled and tapped for concealed hanger bolt and with support arm for screwing to underside of rail. Sized to provide 1-1/2-inch clearance between handrail and wall.
- D. Handrail/Bumper Rail Brackets: Pairs of extruded-aluminum channels; one for fastening to back of rail and one for fastening to face of wall. They are then assembled in overlapping fashion and fastened together top and bottom with self-tapping screws. Sized to provide 1-1/2-inch clearance between handrail and wall.
- E. Adhesives, General: Do not use adhesives that contain urea formaldehyde.
- F. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Wood Glues: 30 g/L.
 - 2. Contact Adhesive: 250 g/L.
- G. Adhesive for Bonding Plastic Laminate: Contact cement.
 - 1. Use un-pigmented contact cement with through-color laminate.

2.07 FABRICATION, GENERAL

- A. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
 - B. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
 - C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 - 1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch.
 - D. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
 - E. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts
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to remove splinters and burrs.

1. Seal edges of openings in countertops with a coat of varnish.

2.08 SHOP FINISHING

- A. General: Shop finish transparent-finished interior architectural woodwork at fabrication shop as specified in this Section. Refer to Division 09 painting Sections for finishing opaque-finished architectural woodwork.
- B. Shop Priming: Shop apply the prime coat including backpriming for items specified to be field finished. Refer to Division 09 painting Sections for material and application requirements.
- C. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.
 1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling and to end-grain surfaces. Concealed surfaces of plastic-laminate-clad woodwork do not require backpriming when surfaced with plastic laminate, backing paper, or thermoset decorative panels.
- D. Transparent Finish:
 1. Grade: Premium.
 2. AWI Finish System: Conversion varnish.
 3. Staining: Match approved sample for color.
 4. Open Finish for Open-Grain Woods: Do not apply filler to open-grain woods.
 5. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D 523.

PART 3 EXECUTION

3.01 PREPARATION

- A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.02 INSTALLATION

- A. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.
- B. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.
- C. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- D. Fire-Retardant-Treated Wood: Handle, store, and install fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions, including those for adhesives used to install woodwork.
- E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- F. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible.
 1. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base if finished.
 2. Install wall railings on indicated metal brackets securely fastened to wall framing.

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3. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.
- G. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 2. Maintain veneer sequence matching of cabinets with transparent finish.
 3. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c.
 - a. Use No. 10 wafer-head screws sized for 1-inch penetration into wood framing, blocking, or hanging strips.
 - b. Use No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.
- H. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
 2. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 3. Secure backsplashes to tops with concealed metal brackets at 16 inches o.c. and to walls with adhesive.
 4. Calk space between backsplash and wall with sealant specified in Division 07 Section "Joint Sealants."
- I. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.
- J. Refer to Division 09 Sections for final finishing of installed architectural woodwork not indicated to be shop finished.

3.03 STANDING AND RUNNING TRIM INSTALLATION

- A. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches long, except where necessary. Stagger joints in adjacent and related standing and running trim. Cope at returns, miter at outside corners, and cope at inside corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints. Plane backs of casings to provide uniform thickness across joints where necessary for alignment.
1. Match color and grain pattern of trim for transparent finish (stain or clear finish) across joints.
 2. Install trim after gypsum-board joint finishing operations are completed.
 3. Install without splitting; drill pilot holes before fastening where necessary to prevent splitting. Fasten to prevent movement or warping. Countersink fastener heads on exposed carpentry work and fill holes.

3.04 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean woodwork and casework on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION

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**SECTION 078413
PENETRATION FIRESTOPPING**

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Penetrations in fire-resistance-rated walls.
 - 2. Penetrations in horizontal assemblies.
- B. Related Sections:
 - 1. Section 078446 "Fire-Resistive Joint Systems" for joints in or between fire-resistance-rated construction, at exterior curtain-wall/floor intersections, and in smoke barriers.

1.02 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Schedule: For each penetration firestopping system. Include location and design designation of qualified testing and inspecting agency.
 - 1. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.03 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Installer Certificates: From Installer indicating penetration firestopping has been installed in compliance with requirements and manufacturer's written recommendations.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for penetration firestopping.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."
 - 1. Be a member in good standing of the Fire Stop Contractors International Association
 - 2. Licensed by a state or local authority, where applicable
 - 3. Approved by the Universities Fire Marshal for each specific Job
 - 4. Shown to have successfully completed not less than 5 comparable size projects.
 - B. Fire-Test-Response Characteristics: Penetration firestopping shall comply with the following requirements:
 - 1. Penetration firestopping tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.
 - 2. Penetration firestopping is identical to those tested per testing standard referenced in "Penetration Firestopping" Article. Provide rated systems complying with the following requirements:
 - a. Penetration firestopping products bear classification marking of qualified testing and inspecting agency.
 - b. Classification markings on penetration firestopping correspond to designations listed by the following:
 - 1) UL in its "Fire Resistance Directory."
 - C. Preinstallation Conference: Conduct conference at Project site.
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1.05 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install penetration firestopping when ambient or substrate temperatures are outside limits permitted by penetration firestopping manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.
- B. Install and cure penetration firestopping per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.06 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping is installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping.
- C. Notify Owner's testing agency at least seven days in advance of penetration firestopping installations; confirm dates and times on day preceding each series of installations.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Hilti, Inc.

2.02 PENETRATION FIRESTOPPING

- A. Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
 - B. Penetrations in Fire-Resistance-Rated Walls: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
 - 1. Fire-resistance-rated walls include fire-barrier walls.
 - 2. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
 - C. Penetrations in Horizontal Assemblies: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
 - 1. Horizontal assemblies include floors.
 - 2. F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
 - 3. T-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
 - D. Penetrations in Smoke Barriers: Provide penetration firestopping with ratings determined per UL 1479.
 - 1. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening at 0.30-inch wg at both ambient and elevated temperatures.
 - E. W-Rating: Provide penetration firestopping showing no evidence of water leakage when tested according to UL 1479.
 - F. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
 - G. VOC Content: Penetration firestopping sealants and sealant primers shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Sealants: 250 g/L.
 - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
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3. Sealant Primers for Porous Substrates: 775 g/L.
- H. Low-Emitting Materials: Penetration firestopping sealants and sealant primers shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- I. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.
 1. Permanent forming/damming/backing materials, including the following:
 - a. Slag-wool-fiber or rock-wool-fiber insulation.
 - b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
 - c. Fire-rated form board.
 - d. Fillers for sealants.
 2. Temporary forming materials.
 3. Substrate primers.
 4. Collars.
 5. Steel sleeves.

2.03 FILL MATERIALS

- A. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer metallic sleeve lined with an intumescent strip, a radial extended 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 elastomeric sheet bonded to galvanized-steel sheet.
- E. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.
- F. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- 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. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.
- I. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and nonsag formulation for openings in vertical and sloped surfaces, unless indicated firestopping limits use of nonsag grade for both opening conditions.

2.04 MIXING

- A. For those products requiring mixing before application, comply with penetration firestopping 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.
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PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Cleaning: Clean out openings immediately before installing penetration firestopping 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.
 - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form-release agents from concrete.
- B. Priming: 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.
- C. Masking Tape: Use masking tape to prevent penetration firestopping from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing firestopping's seal with substrates.

3.03 INSTALLATION

- A. General: Install penetration firestopping 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 fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
 - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestopping.
- C. Install fill materials for firestopping by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.04 IDENTIFICATION

- A. Identify penetration firestopping with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of firestopping edge so labels will be visible to anyone seeking to remove penetrating items or firestopping. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
 - 1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.
 - 3. Designation of applicable testing and inspecting agency.
 - 4. Date of installation.
 - 5. Manufacturer's name.
 - 6. Installer's name.
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3.05 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections.
- B. Where deficiencies are found or penetration firestopping is damaged or removed because of testing, repair or replace penetration firestopping to comply with requirements.
- C. Proceed with enclosing penetration firestopping with other construction only after inspection reports are issued and installations comply with requirements.

3.06 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 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 is 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 and install new materials to produce systems complying with specified requirements.

3.07 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE

- A. Firestop Systems with No Penetrating Items: Comply with the following:
 - 1. Available UL-Classified Systems:
 - a. C-AJ-0001-0999.
 - b. W-L-0001-0999.
 - 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant.
 - b. Silicone sealant.
 - c. Intumescent putty.
 - d. Mortar.
 - B. Firestop Systems for Metallic Pipes, Conduit, or Tubing: Comply with the following:
 - 1. Available UL-Classified Systems:
 - a. C-AJ-1001-1999.
 - b. W-L-1001-1999.
 - 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant.
 - b. Silicone sealant.
 - c. Intumescent putty.
 - d. Mortar.
 - C. Firestop Systems for Nonmetallic Pipe, Conduit, or Tubing: Comply with the following:
 - 1. Available UL-Classified Systems:
 - a. C-AJ-2001-2999.
 - b. W-L-2001-2999.
 - 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant.
 - b. Silicone sealant.
 - c. Intumescent putty.
 - d. Intumescent wrap strips.
 - e. Firestop device.
 - D. Firestop Systems for Electrical Cables: Comply with the following:
 - 1. Available UL-Classified Systems:
 - a. C-AJ-3001-3999.
 - b. W-L-3001-3999.
 - 2. Type of Fill Materials: One or more of the following:
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- a. Latex sealant.
 - b. Silicone sealant.
 - c. Intumescent putty.
 - d. Silicone foam.
- E. Firestop Systems for Cable Trays: Comply with the following:
- 1. Available UL-Classified Systems:
 - a. C-AJ-4001-4999.
 - b. W-L-4001-4999.
 - 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant.
 - b. Intumescent putty.
 - c. Silicone foam.
- F. Firestop Systems for Insulated Pipes: Comply with the following:
- 1. Available UL-Classified Systems:
 - a. C-AJ-5001-5999.
 - b. W-L-5001-5999.
 - 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant.
 - b. Intumescent putty.
 - c. Silicone foam.
 - d. Intumescent wrap strips.
- G. Firestop Systems for Miscellaneous Electrical Penetrants: Comply with the following:
- 1. Available UL-Classified Systems:
 - a. C-AJ-6001-6999.
 - b. W-L-6001-6999.
 - 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant.
 - b. Intumescent putty.
 - c. Mortar.
- H. Firestop Systems for Miscellaneous Mechanical Penetrations: Comply with the following:
- 1. Available UL-Classified Systems:
 - a. C-AJ-7001-7999.
 - b. W-L-7001-7999.
 - 2. Type of Fill Materials: One or both of the following:
 - a. Latex sealant.
 - b. Mortar.
- I. Firestop Systems for Groupings of Penetrations: Comply with the following:
- 1. Available UL-Classified Systems:
 - a. C-AJ-8001-8999.
 - b. W-L-8001-8999.
 - 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant.
 - b. Mortar.
 - c. Intumescent wrap strips.
 - d. Firestop device.
 - e. Intumescent composite sheet.
- J. Smoke-stop Systems
- 1. For all non-rated partitions required to control smoke only provide the following:
 - a. Mineral wool
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- b. Fire and smoke stopping sealant

END OF SECTION

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SECTION 078446
FIRE-RESISTIVE JOINT SYSTEMS**PART 1 GENERAL****1.01 SUMMARY**

- A. Section Includes:
 - 1. Joints at exterior curtain-wall/floor intersections.
- B. Related Sections:
 - 1. Section 07 8413 "Penetration Firestopping" for penetrations in fire-resistance-rated walls, horizontal assemblies, and smoke barriers.

1.02 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Schedule: For each fire-resistive joint system. Include location and design designation of qualified testing agency.
 - 1. Where Project conditions require modification to a qualified testing agency's illustration for a particular fire-resistive joint system condition, submit illustration, with modifications marked, approved by fire-resistive joint system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.03 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Installer Certificates: From Installer indicating fire-resistive joint systems have been installed in compliance with requirements and manufacturer's written recommendations.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for fire-resistive joint systems.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."
 - B. Installer Qualifications: A firm experienced in installing fire-resistive joint systems similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements. Manufacturer's willingness to sell its fire-resistive joint system products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.
 - C. Fire-Test-Response Characteristics: Fire-resistive joint systems shall comply with the following requirements:
 - 1. Fire-resistive joint system tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.
 - 2. Fire-resistive joint systems are identical to those tested per testing standard referenced in "Fire-Resistive Joint Systems" Article. Provide rated systems complying with the following requirements:
 - a. Fire-resistive joint system products bear classification marking of qualified testing agency.
 - b. Fire-resistive joint systems correspond to those indicated by reference to designations listed by the following:
 - 1) UL in its "Fire Resistance Directory."
 - D. Preinstallation Conference: Conduct conference at Project site.
-

1.05 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install fire-resistive joint systems when ambient or substrate temperatures are outside limits permitted by fire-resistive joint system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Install and cure fire-resistive joint systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.06 COORDINATION

- A. Coordinate construction of joints to ensure that fire-resistive joint systems are installed according to specified requirements.
- B. Coordinate sizing of joints to accommodate fire-resistive joint systems.
- C. Notify Owner's testing agency at least seven days in advance of fire-resistive joint system installations; confirm dates and times on day preceding each series of installations.

PART 2 PRODUCTS**2.01 FIRE-RESISTIVE JOINT SYSTEMS**

- A. Where required, provide fire-resistive joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which fire-resistive joint systems are installed. Fire-resistive joint systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
- B. Joints at Exterior Curtain-Wall/Floor Intersections: Provide fire-resistive joint systems with rating determined by ASTM E 119 based on testing at a positive pressure differential of 0.01-inch wg or ASTM E 2307.
 - 1. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the floor assembly.
 - 2. Basis of Design Manufacturer: Hilti
 - a. Product:
- C. Exposed Fire-Resistive Joint Systems: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- D. VOC Content: Fire-resistive joint system sealants shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Architectural Sealants: 250 g/L.
 - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
 - 3. Sealant Primers for Porous Substrates: 775 g/L.
- E. Low-Emitting Materials: Fire-resistive joint system sealants 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."
- F. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials that are needed to install fill materials and to maintain ratings required. Use only components specified by fire-resistive joint system manufacturer and approved by the qualified testing agency for systems indicated.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Cleaning: Clean joints immediately before installing fire-resistive joint systems 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 fill materials.
 - 2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with fill materials. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form-release agents from concrete.
- B. Priming: Prime substrates where recommended in writing by fire-resistive joint 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. Masking Tape: Use masking tape to prevent fill materials of fire-resistive joint system from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing fire-resistive joint system's seal with substrates.

3.03 INSTALLATION

- A. General: Install fire-resistive joint 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 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 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 fill materials for fire-resistive joint systems by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
 - 2. Apply fill materials so they contact and adhere to substrates formed by joints.
 - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.04 IDENTIFICATION

- A. Identify fire-resistive joint systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of joint edge so labels will be visible to anyone seeking to remove or penetrate joint 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 - Fire-Resistive Joint System - 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.

3.05 FIELD QUALITY CONTROL

- A. Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections.
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- B. Where deficiencies are found or fire-resistive joint systems are damaged or removed due to testing, repair or replace fire-resistive joint systems so they comply with requirements.
 - C. Proceed with enclosing fire-resistive joint systems with other construction only after inspection reports are issued and installations comply with requirements.

3.06 CLEANING AND PROTECTING

- A. Clean off excess fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by fire-resistive joint 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 fire-resistive joint 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 fire-resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

3.07 FIRE-RESISTIVE JOINT SYSTEM SCHEDULE

- A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory":
- B. Under product Category XHBN:
 - 1. Floor-to-Floor (Concrete to Concrete Floor), Fire-Resistive Joint System:
 - a. FF-D -0005.
 - 1) Assembly Rating: 2 hours.
 - 2) Nominal Joint Width: 1-inch
 - 3) Movement Capabilities: Class II - 12.5 percent compression or extension.
 - 2. Head-of-Wall (Steel Stud/Gypsum Board Wall to Concrete Floor Slab with or without Metal Deck), Fire-Resistive Joint System:
 - a. HW-D -0043.
 - 1) Assembly Rating: 2 hours.
 - 2) Nominal Joint Width: 1-inch
 - 3) Movement Capabilities: Class II - 18.75 percent compression and extension.
- C. Under product Category XHDG:
 - 1. Perimeter Fire-Resistive Joint Systems
 - a. Where UL-classified perimeter fire-containment systems are indicated, they refer to alphanumeric designations listed in UL's "Fire Resistance Directory" under product Category XHDG.
 - 1) Perimeter Fire-Containment System (Steel Stud/Gypsum Board Wall to Concrete Floor Slab with or without Metal Deck), Fire-Resistive Joint System:
 - (a) Basis-of-Design UL-Classified Product: CW-S-1002.
 - (b) Integrity Rating: 2 hours.
 - (c) Insulation Rating: ¼-hour.
 - (d) Linear Opening Width: 2-1/2 inches, maximum.

END OF SECTION

**SECTION 079200
JOINT SEALANTS**

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Silicone joint sealants.
 - 2. Nonstaining silicone joint sealants.
 - 3. Latex joint sealants.

1.02 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.03 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each kind of joint sealant, for tests performed by a qualified testing agency.
- B. Sample Warranties: For special warranties.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.05 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.

1.06 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
 - B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
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1. Warranty Period: 10 years from date of Substantial Completion.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
 1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 2. Disintegration of joint substrates from causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.
 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 PRODUCTS

2.01 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 of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system 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 substrates shall have a VOC content of 250 g/L or less.
 3. Sealants and sealant primers for nonporous substrates shall have a VOC content of 775 g/L or less.
- C. Low-Emitting Interior Sealants: Sealants and sealant primers shall comply with the testing and product requirements of the California Department of Health's (formerly, the California Department of Health Services) "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- D. Colors of Exposed Joint Sealants: Match Architect's samples.

2.02 SILICONE JOINT SEALANTS

- A. Silicone, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.
 1. Basis of design Manufacturer: Dow Corning
 - a. Product: 756 SMS Building Sealant

2.03 MILDEW-RESISTANT JOINT SEALANTS

- A. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
 1. Basis of design Manufacturer: Dow Corning
 - a. Product: 786 Silicone Sealant

2.04 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
 1. Manufacturer: Pecora Corporation
 - a. AC-20 + Silicone.

2.05 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.
 1. Manufacturer: BASF
 - B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum
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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.

2.06 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

3.01 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - 3. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Glazed surfaces of ceramic tile.
 - B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
 - C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.
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3.03 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install 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 C 1193 unless otherwise indicated.
- G. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.04 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.

3.05 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.06 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Locations:
 - a. Construction joints in cast-in-place concrete.
 - b. Control and expansion joints in unit masonry.
 - c. Joints between different materials listed above.
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- d. Perimeter joints between materials listed above and frames of doors, windows and louvers.
 2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of standard colors.
- B. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.
1. Joint Locations:
 - a. Control joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.
 - c. Other joints as indicated on Drawings.
 2. Joint Sealant: Acrylic latex.
 3. Joint-Sealant Color: Match Architects Sample.
- C. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Tile control and expansion joints where indicated.
 - c. Other joints as indicated on Drawings.
 2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
 3. Joint-Sealant Color: Match Architects Sample.

END OF SECTION

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**SECTION 081113
HOLLOW METAL DOORS AND FRAMES****PART 1 GENERAL****1.01 SUMMARY**

- A. Section includes hollow-metal work.

1.02 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.03 COORDINATION

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, temperature-rise ratings, and finishes.
- B. Shop Drawings: Include the following:
 - 1. Elevations of each door type.
 - 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
 - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 - 4. Locations of reinforcement and preparations for hardware.
 - 5. Details of each different wall opening condition.
 - 6. Details of anchorages, joints, field splices, and connections.
 - 7. Details of accessories.
 - 8. Details of moldings, removable stops, and glazing.
 - 9. Details of conduit and preparations for power, signal, and control systems.
- C. Samples for Initial Selection: For units with factory-applied color finishes.
- D. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

1.05 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.
- B. Oversize Construction Certification: For assemblies required to be fire rated and exceeding limitations of labeled assemblies.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
 - 1. Provide additional protection to prevent damage to factory-finished units.
 - B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
 - C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch- (102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.
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PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Ceco Door; ASSA ABLOY.
 - 2. Curries Company; ASSA ABLOY.
 - 3. Steelcraft; an Allegion brand.
- B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.02 REGULATORY REQUIREMENTS

- A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
 - 1. Smoke- and Draft-Control Assemblies: Provide an assembly with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.
- B. Fire-Rated, Borrowed-Lite Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

2.03 INTERIOR DOORS AND FRAMES

- A. Construct interior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
 - B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2.
 - 1. Physical Performance: Level B according to SDI A250.4.
 - 2. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches (44.5 mm).
 - c. Face: Metallic-coated, cold-rolled steel sheet, minimum thickness of 0.042 inch (1.0 mm).
 - d. Edge Construction: Model 1, Full Flush.
 - e. Core: Vertical steel stiffener with fiberglass between stiffeners
 - 3. Frames:
 - a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
 - b. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.
 - c. Construction: Full profile welded.
 - 4. Exposed Finish: Prime painted.
 - C. Extra-Heavy-Duty Doors and Frames: SDI A250.8, Level 3. At locations indicated in the Door and Frame Schedule and at cross-corridor doors.
 - 1. Physical Performance: Level A according to SDI A250.4.
 - 2. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches (44.5 mm).
 - c. Face: Metallic-coated, cold-rolled steel sheet, minimum thickness of 0.053 inch (1.3 mm). Face sheets to have a stainable wood-grain textured finish
 - d. Edge Construction: Model 1, Full Flush.
 - e. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core at manufacturer's
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discretion.

- f. Core: Polystyrene or Mineral board.
- 3. Frames:
 - a. Materials: Metallic-coated, steel sheet, minimum thickness of 0.053 inch (1.3 mm).
 - b. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.
 - c. Construction: Full profile welded.
- 4. Exposed Finish: Prime painted.

2.04 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

- A. Construct exterior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Extra-Heavy-Duty Doors and Frames: SDI A250.8, Level 3.
 - 1. Physical Performance: Level A according to SDI A250.4.
 - 2. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches (44.5 mm.)
 - c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum A60 (ZF180) coating.
 - d. Edge Construction: Model 1, Full Flush.
 - e. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core at manufacturer's discretion.
 - f. Core: Vertical steel stiffeners with foamed in place polyurethane.
 - 1) Thermal-Rated Doors: Provide doors fabricated with thermal-resistance value (R-value) of not less than 2.1 deg F x h x sq. ft./Btu (0.370 K x sq. m/W) when tested according to ASTM C 1363.
 - 3. Frames:
 - a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), except 0.067 inch (1.7mm) for openings exceeding 4 feet (1219 mm) wide; with minimum A60 (ZF180) coating.
 - b. Construction: Full profile welded.
 - 4. Exposed Finish: Prime painted.

2.05 BORROWED LITES

- A. Hollow-metal frames of metallic-coated steel sheet, minimum thickness of 0.042 inch (1.0 mm).
- B. Construction: Full profile welded.

2.06 HOLLOW-METAL PANELS

- A. Provide hollow-metal panels of same materials, construction, and finish as adjacent door assemblies.

2.07 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch (1.0 mm) thick, with corrugated or perforated straps not less than 2 inches (51 mm) wide by 10 inches (254 mm) long; or wire anchors not less than 0.177 inch (4.5 mm) thick.
 - 2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch (1.0 mm) thick.
 - 3. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.

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4. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch- (9.5-mm-) diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.
 - B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch (1.0 mm), and as follows:
 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
 2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch (51-mm) height adjustment. Terminate bottom of frames at finish floor surface.

2.08 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.
- D. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.
 1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- F. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- G. Grout: ASTM C 476, except with a maximum slump of 4 inches (102 mm), as measured according to ASTM C 143/C 143M.
- H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
- I. Glazing: Comply with requirements in Section 088000 "Glazing."
- J. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.09 FABRICATION

- A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
 - B. Hollow-Metal Doors:
 1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch (0.66 mm), steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches (152 mm) apart. Spot weld to face sheets no more than 5 inches (127 mm) o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
 2. Fire Door Cores: As required to provide fire-protection and temperature-rise ratings indicated.
 3. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches (3.2 mm in 51 mm).
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4. Top Edge Closures: Close top edges of doors with inverted closures, except provide flush closures at exterior doors of same material as face sheets.
 5. Bottom Edge Closures: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets.
 6. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
 7. 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 (19 mm) beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.
- C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
1. 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 butt welding.
 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
 4. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
 5. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Masonry Type: Locate anchors not more than 16 inches (406 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c., to match coursing, and as follows:
 - 1) Two anchors per jamb up to 60 inches (1524 mm) high.
 - 2) Three anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.
 - 3) Four anchors per jamb from 90 to 120 inches (2286 to 3048 mm) high.
 - 4) Four anchors per jamb plus one additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 120 inches (3048 mm) high.
 - b. Stud-Wall Type: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches (1524 mm) high.
 - 2) Four anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.
 - 3) Five anchors per jamb from 90 to 96 inches (2286 to 2438 mm) high.
 - 4) Five anchors per jamb plus one additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 96 inches (2438 mm) high.
 - c. Compression Type: Not less than two anchors in each frame.
 - d. Postinstalled Expansion Type: Locate anchors not more than 6 inches (152 mm) from top and bottom of frame. Space anchors not more than 26 inches (660 mm) o.c.
 6. Head Anchors: Two anchors per head for frames more than 42 inches (1067 mm) wide and mounted in metal-stud partitions.
 7. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.
- E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to
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SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
 2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.
- F. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with mitered hairline joints.
1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow-metal work.
 2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
 3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
 4. Provide loose stops and moldings on inside of hollow-metal work.
 5. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
 6. Provide grained steel glazing trim where required to match texture of door face sheet.

2.10 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.
- B. Factory Finish: Provide stain and clear top-coat finish at wood-grained steel doors

2.11 ACCESSORIES

- A. Louvers: Provide louvers for interior doors, where indicated, which comply with SDI 111C, with blades or baffles formed of 0.020-inch- (0.5-mm-) thick, cold-rolled steel sheet set into 0.032-inch- (0.8-mm-) thick steel frame.
1. Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.
 2. Lightproof Louver: Stationary louvers constructed with baffles to prevent light from passing from one side to the other.
 3. Fire-Rated Automatic Louvers: Louvers constructed with movable blades closed by actuating fusible link, and listed and labeled for use in fire-rated door assemblies of type and fire-resistance rating indicated by same qualified testing and inspecting agency that established fire-resistance rating of door assembly.
- B. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.
- C. Grout Guards: Formed from same material as frames, not less than 0.016 inch (0.4 mm) thick.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed
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faces.

- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.03 INSTALLATION

- A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.
- B. Hollow-Metal Frames: Install hollow-metal frames for doors, transoms, sidelites, borrowed lites, and other openings, of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. At fire-rated openings, install frames according to NFPA 80.
 - b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - c. Install frames with removable stops located on secure side of opening.
 - d. Install door silencers in frames before grouting.
 - e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - g. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.
 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
 5. Concrete Walls: Solidly fill space between frames and concrete with mineral-fiber insulation.
 6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 7. In-Place Metal or Wood-Stud Partitions: Secure slip-on drywall frames in place according to manufacturer's written instructions.
 8. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.
- C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
1. Non-Fire-Rated Steel Doors:

- a. Between Door and Frame Jambs and Head: 1/8 inch (3.2 mm) plus or minus 1/32 inch (0.8 mm).
 - b. Between Edges of Pairs of Doors: 1/8 inch (3.2 mm) to 1/4 inch (6.3 mm) plus or minus 1/32 inch (0.8 mm).
 - c. At Bottom of Door: 3/4 inch (19.1 mm) plus or minus 1/32 inch (0.8 mm).
 - d. Between Door Face and Stop: 1/16 inch (1.6 mm) to 1/8 inch (3.2 mm) plus or minus 1/32 inch (0.8 mm).
2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
 3. Smoke-Control Doors: Install doors and gaskets according to NFPA 105.
- D. Glazing: Comply with installation requirements in Section 08 8000 "Glazing" and with hollow-metal manufacturer's written instructions.
1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches (230 mm) o.c. and not more than 2 inches (51 mm) o.c. from each corner.

3.04 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.
1. Remove grout and other bonding material from hollow-metal work immediately after installation.
- B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- C. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.
- D. Factory-Finish Touchup: Clean abraded areas and repair with same material used for factory finish according to manufacturer's written instructions.
- E. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION

**SECTION 081743
FRP/ ALUMINUM HYBRID DOORS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. FRP/ Aluminum Hybrid Door installed in Thermally Broken Aluminum Framing.

1.02 REFERENCES

- A. AAMA 1304 – Voluntary Specification for Forced Entry Resistance of Side-Hinged Door Systems.
- B. AAMA 1503-98 – Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
- C. ANSI A250.4 – Test Procedure and Acceptance Criteria for Physical Endurance of Steel Doors and Hardware Reinforcing.
- D. ASTM-B117 – Standard Practices for Operating Salt Spray (Fog) Apparatus.
- E. ASTM-B209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- F. ASTM-B221 – Standard Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- G. ASTM-C518 – Standard test Method for Steady-State Thermal Transmission Properties by Means of Heat Flow Meter Apparatus.
- H. ASTM-D256 – Standard Test Methods for Determining the Pendulum Impact Resistance of Plastics.
- I. ASTM-D570 – Standard Test Method for Water Absorption of Plastics.
- J. ASTM-D638 – Standard Test Method for Tensile Properties of Plastics.
- K. ASTM-D790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- L. ASTM-D1621 – Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
- M. ASTM-D1622 – Standard Test Method for Apparent Density of Rigid Cellular Plastics.
- N. ASTM-D1623 – Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.
- O. ASTM-D2126 – Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
- P. ASTM-D2583 – Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
- Q. ASTM-D3029 – Test Methods for Impact Resistance of Flat Rigid Plastic Specimens by Means of a Tup (Falling Weight) (Withdrawn 1995) (Replaced by ASTM-D5420).
- R. ASTM-D5116 – Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/ Products.
- S. ASTM-D5420 – Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).
- T. ASTM-D6670 – Standard Practice for Full-Scale Chamber Determination of Volatile Organic Emissions from Indoor Materials/ Products.
- U. ASTM-E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
- V. ASTM-E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
- W. ASTM-E283 – Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the

Specimen.

- X. ASTM-E330 – Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- Y. ASTM-E1886 – Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
- Z. ASTM-E1996 – Standard Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors and Storm Shutters Impacted by Wind Borne Debris in Hurricanes.
- AA. ASTM-F476 – Standard Test Methods for Security of Swinging Door Assemblies.
- BB. ASTM-F1642-04 – Standard Test Method for Glazing Systems Subject to Air Blast Loading.
- CC. NWWDA T.M. 7-90 – Cycle Slam Test Method.
- DD. NFRC 100 – Procedure for Determining Fenestration Products U-Factors.
- EE. NFRC 400 – Procedure for Determining Fenestration Products Air Leakage.
- FF. TAS 201 – Impact Test Procedures.
- GG. TAS 202 – Criteria for Testing Impact & Nonimpact Resistant Building Envelope Components Using Uniform Static Air Pressure.
- HH. TAS 203 – Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.

1.03 SUBMITTALS

- A. Action Submittals/ Informational Submittals.
 - 1. Product Data.
 - a. Submit manufacturer's product data sheets, catalog pages illustrating the products, description of materials, components, fabrication, finishes, installation instructions, and applicable test reports.
 - 2. Shop Drawings.
 - a. Submit manufacturer's shop drawings, including elevations, sections, and details indicating dimensions, tolerances, materials, fabrication, doors, panels, framing, hardware schedule, and finish.
 - 3. Samples.
 - a. Submit manufacturer's door sample composed of door face sheet, core, framing and finish.
 - b. Submit manufacturer's sample of standard colors for door face and frame.
 - 4. Testing and Evaluation Reports.
 - a. Submit testing reports and evaluations provided by manufacturer conducted by and accredited independent testing agency certifying doors and frames comply with specified performance requirements listed in Section 2.04.
 - 5. Manufacturer Reports.
 - a. Manufacturer's Project References.
 - 1) Submit list of successfully completed projects including project name, location, name of architect, type, and quantity of doors manufactured.
- B. Closeout Submittals.
 - 1. Operation and Maintenance Manual.
 - a. Submit manufacturer's maintenance and cleaning instructions for doors and frames, including maintenance and operating instructions for hardware.
 - 2. Warranty Documentation.
 - a. Submit manufacturer's standard warranty.

1.04 QUALITY ASSURANCE

- A. Manufacturer's Qualifications.
 - 1. Continuously engaged in manufacturing of doors of similar type to that specified, with a minimum of 25 years concurrent successful experience.
 - 2. Door and frame components must be fabricated by same manufacturer.
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3. Evidence of a documented complaint resolution quality management system.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Delivery.
 1. Deliver materials to site in manufacturer's original, unopened, containers and packaging.
 2. Labels clearly identifying opening, door mark, and manufacturer.
- B. Storage.
 1. Store materials in a clean, dry area, indoors in accordance with manufacturer's instructions.
- C. Handling.
 1. Protect materials and finish from damage during handling and installation.

1.06 WARRANTY

- A. Warrant doors, frames, and factory installed hardware against failure in materials and workmanship, including excessive deflection, faulty operation, defects in hardware installation, and deterioration of finish or construction in excess of normal weathering.
- B. Standard Period.
 1. Ten years starting on date of Substantial Completion.
- C. Limited lifetime
 1. Covers failure of corner joinery, core deterioration, and delamination or bubbling of door skin and corrosion of all-fiberglass products.
- D. Finish
 1. 10 years.

PART 2 PRODUCTS

2.01 FRP/ALUMINUM HYBRID DOORS

- A. Manufacturer (Basis of Design):
 1. Special-Lite, Inc.
 - a. PO Box 6, Decatur, Michigan 49045.
 - b. Toll Free (800) 821-6531, Phone (269) 423-7068, Fax (800) 423-7610.
 - c. Web Site www.special-lite.com.
 - d. E-Mail info@special-lite.com.

2.02 DESCRIPTION

- A. Model.
 1. SL-17 Pebble Grain FRP/ Aluminum Hybrid Door.
- B. Door Opening Size.
 1. As indicated.
- C. Construction.
 1. Door Thickness: 1-3/4".
 2. Stiles & Rails.
 - a. Aluminum extrusions made from 6063 aluminum alloys with a minimum temper of T5.
 - b. Minimum 2-5/16" deep one-piece extrusion with have integral reglets to accept face sheet on both interior and exterior side of door which secure face sheet into place and permit flush appearance.
 - c. Screw or snap in place applied caps are not acceptable.
 - d. Top rails must have integral legs for interlocking continuous extruded aluminum flush cap.
 - e. Bottom rails must have integral legs for interlocking continuous weather bar with single nylon brush weather stripping or manually adjustable SL-301 door bottom with two nylon brush weather stripping.
 - f. Meeting stiles to include integral pocket to accept pile brush weather seal.

3. Corners.
 - a. Mitered.
 - b. Secured with 3/8" diameter full-width steel tie rod through extruded splines top and bottom which are integral to standard tubular shaped rails.
 - c. 1-1/4" x 1-1/4" x 3/16" 6061 aluminum angle reinforcement at corner to give strong, flat surface for locking hex nut to bear on.
 - d. Weld, glue, or other methods of corner joinery are not acceptable.
4. Core.
 - a. Poured-in-place polyurethane foam.
 - b. Laid in foam cores are not acceptable.
 - c. Foam Plastic Insulated Doors: IBC 2603.4.
 - 1) Foam plastic shall be separated from the interior of a building by an approved thermal barrier.
 - 2) Approved thermal barrier must meet the acceptance criteria of the Temperature Transmission Fire Test and Integrity Fire Test as stated in NFPA 275.
 - 3) IBC 2603.4.1.7 foam plastic insulation, having a flame spread index less than 75 and a smoke developed index of not more than 450 shall be permitted as a door core when the face is metal minimum 0.032" aluminum or 0.016" steel.
 - 4) Standard door assembly can be tested to show it meets these requirements without the use of thermal barrier. If no independent testing conducted all doors with foam plastic core must have a thermal barrier.
5. Face Sheet.
 - a. Exterior
 - 1) 0.120" thick, pebble texture, through color with integral surfaseal film FRP sheet.
 - 2) Color as selected by Architect from manufacturer's full range of standard colors.
 - b. Interior
 - 1) 0.120" thick, pebble texture, through color with integral surfaseal film FRP sheet.
 - 2) Class A.
 - c. Attachment of face sheet.
 - 1) Extruded stiles and rails to have integral reglets to accept face sheet on both interior and exterior side of door which secure face sheet into place and permit flush appearance.
 - 2) Use of glue to bond face sheet to core or extrusions is not acceptable.
6. Cutouts.
 - a. Manufacture doors with cutouts for required vision lites, louvers, and panels.
7. Hardware.
 - a. Pre-machine doors in accordance with templates from specified hardware manufacturers.
 - b. Surface mounted closures will be reinforced for but not prepped or installed at factory.
 - c. Factory install door hardware.
8. Reinforcements.
 - a. Aluminum extrusions made from 6061 or 6063 aluminum alloys.
 - b. Sheet and plate to conform to ASTM-B209.
 - c. Alloy and temper to be selected by manufacturer for strength, corrosion resistance, and application of required finish, and control of color.
 - d. Bars and tubes to meet ASTM-B221.

2.03 FRAMING

- A. Framing
 1. Thermally Broken Aluminum Framing.
 - a. Model: SL-600TB
 - b. Materials.
 - 1) See 2.05.A.
-

- c. Perimeter Frame Members.
 - 1) Storefront frame with thermally broken pocket filler.
 - 2) Factory fabricated.
 - 3) Open-back framing is not acceptable.
 - d. Thermal Strut.
 - 1) Fiber reinforced plastic, no other materials will be accepted.
 - e. Applied Door Stops.
 - 1) 5/8" x 1-1/4" or 5/8" x 1-3/4", 0.125" wall thickness, with screws and weather-stripping.
 - 2) Provide solid 1/2" aluminum bar behind door stop for closer shoe attachment.
 - 3) Pressure gasketing for weathering seal.
 - 4) Counterpunch fastener holes in door stop to preserve full-metal thickness under fastener head.
 - 5) Minimum 1/2" aluminum bar reinforcement under doorstop for required hardware attachments, aluminum to meet ASTM-B221.
 - f. Caulking.
 - 1) Caulk joints before assembling frame members.
 - g. Frame Member to Member Connections.
 - 1) Secure joints with fasteners.
 - 2) Provide hairline butt joint appearance.
 - 3) Shear block construction only, no screw spline allowed.
 - h. Hardware
 - 1) Pre-machine and reinforce frame members for hardware in accordance with manufacturer's standards and door hardware schedule.
 - 2) Surface mounted closures will be reinforced for but not prepped or installed at factory.
 - 3) Factory install door hardware.
 - i. Anchors:
 - 1) Anchors appropriate for wall conditions to anchor framing to wall materials.
 - 2) Door Jamb and Header Mounting Holes: Maximum of 24-inch centers.
 - 3) Secure head and sill members of transom, side lites, and similar conditions.
2. Capping.
- a. Model: SL-70.
 - b. Materials.
 - 1) See 2.05.A.
 - 2) Size as indicated on drawings.

2.04 PERFORMANCE

A. Face Sheet.

- 1. Standard Interior and Exterior Class C 0.120" thick, pebble texture, through color with integral surfaseal film FRP sheet.
 - a. Flexural Strength, ASTM-D790: 21×10^3 psi.
 - b. Flexural Modulus, ASTM-D790: 0.7×10^6 psi.
 - c. Tensile Strength, ASTM-D638: 13×10^3 psi.
 - d. Tensile Modulus, ASTM-D638: 1.2×10^6 psi.
 - e. Barcol Hardness, ASTM-D2583: 55.
 - f. Izod Impact, ASTM-D256: 14.0 ft-lb/in.
 - g. Gardner Impact Strength, ASTM-D5420: 120 in-lb.
 - h. Water Absorption, ASTM-D570: 0.20%/24hrs at 77°F.
 - i. Surface Burning, ASTM-E84: Flame Spread ≤ 200 , Smoke Developed ≤ 450 .
 - j. Taber Abrasion Resistance, Taber Test: 0.007% Max Wt. Loss, cs-17 wheels, 1000g. Wt., 25 cycles.
 - k. Chemical Resistance.
-

- 1) Excellent Rating.
 - (a) Acetic Acid, Concentrated.
 - (b) Acetic Acid, 5%.
 - (c) Bleach Solution.
 - (d) Detergent Solution.
 - (e) Distilled Water.
 - (f) Ethyl Acetate.
 - (g) Formaldehyde.
 - (h) Heptane.
 - (i) Hydrochloric Acid, 10%.
 - (j) Hydrogen Peroxide, 3%.
 - (k) Isooctane.
 - (l) Lactic Acid, 10%.
 - I. USDA/FSIS Requirements.
 - 1) FRP face sheet with surfaseal is a finished outer surface material that is rigid; durable; non-toxic; non-corrosive; moisture resistant; a light, solid color such as white; easily inspected; smooth or an easily cleaned texture.
 - 2) FRP face sheet with surfaseal does not contain any known carcinogen, mutagen, or teratogen classified as hazardous substances; heavy metals or toxic substances; antimicrobials; pesticides or substances with pesticidal characteristics.
 2. Interior Face Only Class A 0.120" thick, pebble texture, through color with integral surfaseal film FRP sheet.
 - a. Flexural Strength, ASTM-D790: 13×10^3 psi.
 - b. Flexural Modulus, ASTM-D790: 0.57×10^6 psi.
 - c. Tensile Strength, ASTM-D638: 6.8×10^3 psi.
 - d. Tensile Modulus, ASTM-D638: 0.90×10^6 psi.
 - e. Barcol Hardness, ASTM-D2583: 40.
 - f. Izod Impact, ASTM-D256: 12.0 ft-lb/in notched.
 - g. Gardner Impact Strength, ASTM-D3029: 45 in-lb.
 - h. Water Absorption, ASTM-D570: 0.32%/24hrs at 77°F.
 - i. Surface Burning, ASTM-E84: Flame Spread ≤ 25 , Smoke Developed ≤ 450 .
 - j. Taber Abrasion Resistance, Taber Test: 0.02% Max Wt. Loss, cs-17 wheels, 1000g. Wt., 25 cycles.
 - B. Door Core.
 1. Density, ASTM-D1622: ≤ 5.0 pcf.
 2. Compressive Properties, ASTM-D1621: Compressive Strength ≥ 60 psi, Compressive Modulus ≥ 1948 psi.
 3. Tensile and Tensile Adhesion Properties, ASTM-D1623: Tensile Adhesion, 3" x 3" FRP Facers ≥ 53 psi, Tensile Adhesion, 1" x 1" Foam ≥ 104 psi.
 4. Thermal and Humid Aging, ASTM-D2126: Volume Change at 158 °F, 100% humidity, 14 days $\leq 13\%$.
 5. Thermal Conductivity, ASTM-C518, Thermal Resistance ≥ 0.10 m²K/W.
 - C. Door Panel.
 1. Thermal Transmittance, AAMA 1503-98: U-Factor = 0.29 Btu/hr·ft²·°F, CRFp = 55.
 2. Indoor Air Quality, ASTM-D5116, ASTM-D6607: GreenGuard, GreenGuard Gold.
 - D. Door and Thermally Broken Aluminum Frame Assembly.
 1. Thermal Transmittance, NFRC 100.
 - a. Opaque Swinging Door (< than 50% glass)
 - 1) U-Factor = 0.31 Btu/hr·ft²·°F.
 - b. Commercially Glazed Swinging Entrance Door (> than 50% glass)
 - 1) U-Factor = 0.64 Btu/hr·ft²·°F.
-

2. Air Leakage, NFRC 400, ASTM-E283.
 - a. Opaque Swinging Door (< than 50% glass)
 - 1) 0.01 cfm/sqft @ 1.57 psf.
 - 2) 0.01 cfm/sqft @ 6.24 psf.
 - b. Commercially Glazed Swinging Entrance Door (> than 50% glass)
 - 1) 0.38 cfm/sqft @ 1.57 psf.
 - 2) 0.73 cfm/sqft @ 6.24 psf.
3. Sound Transmission, ASTM-E90: STC = 30, OITC = 29.

2.05 MATERIALS

- A. Aluminum Members.
 1. Aluminum extrusions made 6061 or 6063 aluminum alloys.
 2. Sheet and plate to conform to ASTM-B209.
 3. Alloy and temper to be selected by manufacturer for strength, corrosion resistance, and application of required finish, and control of color.
- B. Fiberglass.
 1. See 2.02.C.5.
- C. Fasteners.
 1. All exposed fasteners will have a finish to match material being fastened.
 2. 410 stainless steel or other non-corrosive metal.
 3. Must be compatible with items being fastened.

2.06 FABRICATION

- A. Factory Assembly.
 1. Door and frame components from the same manufacturer.
 2. Required size for door and frame units, shall be as indicated on the drawings.
 3. Complete cutting, fitting, forming, drilling, and grinding of metal before assembly.
 4. All cut edges to be free of burs.
 5. Welding of doors or frames is not acceptable.
 6. Maintain continuity of line and accurate relation of planes and angles.
 7. Secure attachments and support at mechanical joints with hairline fit at contact surfaces.
- B. Shop Fabrication
 1. All shop fabrication to be completed in accordance with manufactures process work instructions.
 2. Quality control to be performed before leaving each department.

2.07 FINISHES

- A. Door.
 1. Aluminum.
 - a. Mill.
 - 1) AA-M10C22A21-Flash.
 - b. Paint.
 - 1) Aluminum.
 - (a) KYNAR®.
 - (1) Topcoat: 70% KYNAR or HYLAR 5000 Coating, meets or exceeds all AAMA 2605 specifications, 2.5 to 4.0 wet mils, 1.00 to 1.20 dry mils.
 - (2) Color: As selected by Architect from manufacturer's full range of colors.
 2. FRP Face Sheets
 - a. Through color.
 - 1) Color: As selected by Architect from manufacturer's full range of colors.
 - B. Frame
 1. Aluminum.
-

- a. Mill.
 - 1) AA-M10C22A21-Flash.
- b. Paint.
 - 1) Aluminum.
 - (a) KYNAR®.
 - (1) Topcoat: 70% KYNAR or HYLAR 5000 Coating, meets or exceeds all AAMA 2605 specifications, 2.5 to 4.0 wet mils, 1.00 to 1.20 dry mils.
 - (2) Color: As selected by Architect from manufacturer's full range of colors.

2.08 ACCESSORIES

- A. Vision Lites.
 - 1. Factory Glazing.
 - a. Model: FL Standard.
 - b. Glazing Thickness: 1".
 - c. Rectangular Lites.
 - (a) Size, as indicated on drawings.
- B. Hardware.
 - 1. Pre-machine doors in accordance with templates from specified hardware manufactures and hardware schedule.
 - 2. Factory install hardware.
 - 3. Hardware Schedule: See Section 08 7100.
- C. Architectural Panels.
 - 1. FRP Panels.
 - a. SL-37.
 - 1) Size, as indicated on drawings.
 - 2) Thickness: 1-3/4".
 - 3) Face Sheet.
 - (a) Material.
 - (1) Standard exterior and interior face, Class C 0.120" thick, pebble texture, through color with integral surfaseal film FRP sheet.
 - (2) Interior face, Class A 0.120" thick, pebble texture, through color with integral surfaseal film FRP sheet.
 - (b) Color: As selected by Architect from manufacturer's full range of standard colors.
 - 4) Performance.
 - (a) Face Sheet.
 - (1) See 2.02.C.5.
 - (b) 1-3/4" Thick Panel.
 - (1) Wood or aluminum frame perimeter.
 - (2) Poured-in-place Polyurethane Foam Core.
 - (3) Thermal Performance, AAMA 1503-98: U-Factor = 0.10 Btu/hr-ft²-°F; CRFp=87.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive doors.
- B. Notify architect of conditions that would adversely affect installation or subsequent use.
- C. Do not proceed with installation until unsatisfactory conditions are corrected.

3.02 PREPARATION

- A. Ensure openings to receive frames are plumb, level, square, and in tolerance.
-

3.03 ERECTION

- A. Install doors in accordance with manufacturer's instructions.
- B. Install doors plumb, level, square, true to line, and without warp or rack.
- C. Anchor frames securely in place.
- D. Separate aluminum from other metal surfaces with bituminous coatings or other means approved by architect.
- E. Set thresholds in bed of mastic and back seal.
- F. Install exterior doors to be weathertight in closed position.
- G. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by architect.
- H. Remove and replace damaged components that cannot be successfully repaired as determined by architect.

3.04 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services.
 - 1. Manufacturer's representative shall provide technical assistance and guidance for installation of doors.

3.05 ADJUSTING

- A. Adjust doors, hinges, and locksets for smooth operation without binding.

3.06 CLEANING

- A. Clean doors promptly after installation in accordance with manufacturer's instructions.
- B. Do not use harsh cleaning materials or methods that would damage finish.

3.07 PROTECTION

- A. Protect installed doors to ensure that, except for normal weathering, doors will be without damage or deterioration at time of substantial completion.

END OF SECTION

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**SECTION 083313
COILING COUNTER DOORS**

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section Includes:
 - 1. Fire-rated counter doors.

1.03 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. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.
 - 1. Include plans, elevations, sections, and mounting details.
 - 2. Include details of equipment assemblies, 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, activation devices, and other accessories.
 - 5. Include diagrams for power, signal, and control wiring.
- C. Samples for Initial Selection: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.
 - 1. Include similar Samples of accessories involving color selection.
- D. Samples for Verification: For each type of exposed finish on the following components, in manufacturer's standard sizes:
 - 1. Curtain slats.
 - 2. Bottom bar with sensor edge.
 - 3. Guides.
 - 4. Brackets.
 - 5. Hood.
 - 6. Locking device(s).
 - 7. Counter.
 - 8. Include similar Samples of accessories involving color selection.

1.04 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and testing and inspecting agency.
 - 1. Submit copy of DHI Fire and Egress Door Assembly Inspector (FDAI) certificate.

1.05 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For coiling counter doors to include in maintenance manuals.
- B. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this
-

Project.

1. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.
- B. Fire-Rated Door Inspector Qualifications: Inspector for field quality control inspections of fire-rated door assemblies shall meet the qualifications set forth in NFPA 80, section 5.2.3.1 and the following:
 1. Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Source Limitations: Obtain coiling counter doors from single source from single manufacturer.
 1. Obtain operators and controls from coiling counter door manufacturer.

2.02 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: 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. (0.01524 cu. m/s x sq. m) of door opening at 0.10 inch wg (24.9 Pa) for both ambient and elevated temperature tests.

2.03 FIRE-RATED COUNTER DOOR ASSEMBLY

- A. Fire-Rated Counter Door: Overhead fire-rated coiling door formed with curtain of interlocking metal slats.
 1. Basis of Design:
 - a. CornellCookson, Inc., 24 Elmwood Avenue, Mountain Top, PA 18707. Telephone: (800) 233-8366.
 - b. Model: ERC10, with AlarmGard Closing System, battery backup, SmokeShield smoke and draft control.
 - B. Operation Cycles: Door components and operators capable of operating for not less than 20,000. One operation cycle is complete when a door is opened from the closed position to the fully open position and returned to the closed position.
 - C. Fire Rating: As indicated on drawings, with smoke control.
 - D. Door Curtain Material: Stainless steel.
 - E. Door Curtain Slats: Flat profile slats of 1-1/2-inch (38-mm) center-to-center height.
 - F. Curtain Jamb Guides: Stainless steel with exposed finish matching curtain slats.
 - G. Hood: Stainless steel.
 1. Mounting: Face of wall.
 - H. Integral Frame, Hood, and Fascia: Stainless steel.
 1. Mounting: Face of wall.
 - I. Countertop: 2" thick, 14 gauge stainless steel in #4 finish, with a refractory fiber core, UL 1-1/2 hour label.
 - J. Locking Devices: Equip door with locking device assembly.
 1. Locking Device Assembly: Single-jamb side locking bars, operable from inside with thumbturn.
 - K. Electric Door Operator:
 1. Usage Classification: Standard duty, up to 25 cycles per hour and up to 90 cycles per day.
 2. Operator Location: Top of hood.
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3. Motor Exposure: Interior.
4. Motor Electrical Characteristics:
 - a. Horsepower: As recommended by door manufacturer.
 - b. Voltage: 115-V ac, single phase, 60 Hz.
5. Emergency Manual Operation: Crank type.
6. Obstruction-Detection Device: Automatic electric sensor edge on bottom bar.
 - a. Sensor Edge Bulb Color: Black.
7. Control Station(s): Interior-side mounted. Coordinate actual location with Owner.
8. Other Equipment:
 - a. Provide AlarmGard Closing System connected to existing fire alarm system and new smoke detectors, with:
 - 1) Battery Backup.
 - 2) Sensing edge.
 - 3) Operator cover.
 - 4) Provide smoke detectors on each side of the opening.
 - 5) AlarmGard System to also activate during power failure.
- L. Curtain Accessories: Equip door with smoke seals, automatic closing device, astragal, and push/pull handles.
- M. Door Finish:
 1. Stainless Steel Finish: ASTM A480/A480M No. 4 (polished directional satin).
 2. Interior Curtain-Slat Facing: Match finish of exterior curtain-slat face.

2.04 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.

2.05 DOOR CURTAIN MATERIALS AND CONSTRUCTION

- 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. Stainless Steel Door Curtain Slats: ASTM A 666, Type 304; sheet thickness of 0.025 inch (0.64 mm); and as required.
 2. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face.
- 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.

2.06 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. Stainless Steel: 0.025-inch- (0.64-mm-) thick, stainless steel sheet, Type 304, complying with ASTM A 666.
 2. Include automatic drop baffle on fire-rated doors to guard against passage of smoke or flame.
 - B. Integral Frame, Hood, and Fascia: Welded sheet metal assembly of the following sheet metal(s):
 1. Stainless Steel: Type 304, complying with ASTM A 666.
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- C. Removable Metal Soffit: Formed or extruded from same metal and with same finish as curtain if hood is mounted above ceiling unless otherwise indicated.

2.07 LOCKING DEVICES

- A. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.
 - 1. Lock Cylinders: As standard with manufacturer.
 - 2. Keys: Three for each cylinder.
- B. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

2.08 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. Astragal: Equip each door bottom bar with a replaceable, adjustable, continuous, compressible gasket of flexible vinyl, rubber, or neoprene as a cushion bumper.
- C. Push/Pull Handles: Equip each push-up-operated or emergency-operated door with lifting handles on each side of door, finished to match door.
- D. Pull-Down Strap: Provide pull-down straps for doors more than 84 inches (2130 mm) high.
- E. Pole Hooks: Provide pole hooks and poles for doors more than 84 inches (2130 mm) high.
- F. 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 shall allow testing without mechanical release of the door. Automatic-closing device shall be designed for activation by the following:
 - 1. Basis of Design: Cornell AlarmGard Closing Systems connected to a smoke detector located on each side of the door, and connected to the building's fire alarm system. Contractor to provide all equipment, devices, and power and fire alarm connections.

2.09 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. (2.5 mm/m) of span under full load.
- C. Counterbalance Spring: One or more oil-tempered, heat-treated steel helical torsion springs. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Secure ends of springs to barrel and shaft with cast-steel barrel plugs.
 - 1. Fire-Rated Doors: Equip with auxiliary counterbalance spring and prevent tension release from main counterbalance spring when automatic closing device operates.
- D. Torsion Rod for Counterbalance Shaft: Fabricate of manufacturer's standard cold-rolled steel, sized to hold fixed spring ends and carry torsional load.
- E. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.10 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
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factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, control stations, control devices, integral gearing for locking door, and accessories required for proper operation.

1. Comply with NFPA 70.
 2. Control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6, with NFPA 70 Class 2 control circuit, maximum 24-V ac or dc.
- B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each door.
- C. Door Operator Location(s): Operator location indicated for each door.
1. Top-of-Hood Mounted: Operator is mounted to the right or left door head plate with the operator on top of the door-hood assembly and connected to the door drive shaft with drive chain and sprockets. Headroom is required for this type of mounting.
- 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. (203 mm/s) and not more than 12 in./sec. (305 mm/s), 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 (111 N).
- I. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.
- J. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.

2.11 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.

2.12 STAINLESS STEEL FINISHES

- A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
- B. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
 - 1. Run grain of directional finishes with long dimension of each piece.
 - 2. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
 - 3. Directional Satin Finish: ASTM A480/A480M No. 4.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates areas and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.
- B. Examine locations of electrical connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- 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. Fire-Rated Doors: Install according to NFPA 80.
- D. Smoke-Control Doors: Install according to NFPA 80 and NFPA 105.

3.03 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 with the assistance of a factory-authorized service representative:
 - 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. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.
- D. Reinspect repaired or replaced installations to determine if replaced or repaired 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 and NFPA 101.

3.04 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.
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3.05 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.

3.06 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of coiling-door Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
 - 1. Perform maintenance, including emergency callback service, during normal working hours.

3.07 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

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SECTION 084113
ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS**PART 1 GENERAL****1.01 RELATED DOCUMENTS**

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

1.02 SUMMARY

- A. Section Includes: Architectural Aluminum Storefront Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront units.
1. Types of Aluminum Storefront Systems include:
 - a. Basis of Design: Kawneer Trifab™ 451UT Framing – 2" x 4-1/2" (50.8 mm x 114.3 mm) nominal dimension; Thermal; Center Plane, Screw Spline Fabrication.

1.03 DEFINITIONS

- A. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG).

1.04 PERFORMANCE REQUIREMENTS

- A. Storefront System Performance Requirements:
1. Wind loads: Provide storefront system; include anchorage, capable of withstanding wind load design pressures required by the Building Code of New York State.
 2. Air Leakage: The test specimen shall be tested in accordance with ASTM E 283. Air Leakage rate shall not exceed 0.06 cfm/ft² (0.3 l/s · m²) at a static air pressure differential of 6.2 psf (300 Pa) with interior seal, or, rate shall not exceed 0.06 cfm/ft² (0.3 l/s · m²) at a static air pressure differential of 1.6 psf (75 Pa) without interior seal. CSA A440 Fixed Rating.
 3. Water Resistance: The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a minimum static air pressure differential of 10 psf (479 Pa) as defined in AAMA 501.
 4. Uniform Load: A static air design load of 30 psf (1436 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.
 5. Seismic: When tested to AAMA 501.4, system must meet design displacement of 0.010 x the story height and ultimate displacement of 1.5 x the design displacement.
 6. Thermal Movements: Allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures:
 - a. Temperature Change (Range): 0 deg F (-18 deg C); 180 deg F (82 deg C).
 - b. Test Interior Ambient-Air Temperature: 75 deg F (24 deg C).
 - c. Test Performance: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5 for a minimum 3 cycles.
 7. Energy Efficiency:
 - a. Thermal Transmittance (U-factor): When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than the following:
 - 1) Fixed fenestration: 0.36.
 - 2) Operable fenestration: 0.43.
 - 3) Entrance doors: 0.77.
 8. Condensation Resistance (CRF): When tested to AAMA Specification 1503, the condensation resistance factor shall not be less than:
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- a. 68frame and 68glass (low-e).
 9. Condensation Resistance (I): When tested to CSA A-440, the condensation index shall not be less than:
 - a. 60frame and 62glass (low-e).
 10. Sound Transmission Class (STC) and Outdoor-Indoor Transmission Class (OITC): When tested to AAMA Specification 1801 and in accordance with ASTM E1425 and ASTM E90, the STC and OITC Rating shall not be less than:
 - a. 37 (STC) and 30 (OITC).

1.05 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, hardware, finishes, and installation instructions for each type of aluminum-framed storefront system indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware, and attachments to other work, operational clearances and installation details.
- C. Samples for Initial Selection: For units with factory-applied color finishes including samples of hardware and accessories involving color selection.
- D. Samples for Verification: For aluminum-framed storefront system and components required.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type of aluminum-framed storefront.
- F. Fabrication Sample: Of each vertical-to-horizontal intersection of aluminum-framed systems, made from 12" (304.8 mm) lengths of full-size components and showing details of the following:
 1. Joinery.
 2. Anchorage.
 3. Expansion provisions.
 4. Glazing.
 5. Flashing and drainage.
- G. Other Action Submittals:
 1. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.
 - B. Manufacturer Qualifications: A manufacturer capable of providing aluminum framed storefront system that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.
 - C. Source Limitations: Obtain aluminum-framed storefront system through one source from a single manufacturer.
 - D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum-framed storefront system and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements". Do not modify size and dimensional requirements.
 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
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- E. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination".

1.07 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of aluminum-framed storefront openings by field measurements before fabrication and indicate field measurements on Shop Drawings.

1.08 WARRANTY

- A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty.
1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Basis-of-Design Product:
1. Kawneer Company Inc.
 2. Trifab™ 451UT Framing (Thermal)
 3. System Dimensions: 2" x 4-1/2" (50.8 mm x 114.3 mm)
 4. Glass: Center Plane

2.02 MATERIALS

- A. Aluminum Extrusions: Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070" wall thickness at any location for the main frame and complying with ASTM B 221: 6063-T6 alloy and temper.
- B. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum window members, trim hardware, anchors, and other components.
- C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
- D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
- E. Sealant: For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.
- F. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

2.03 STOREFRONT FRAMING SYSTEM

- A. Thermal Barrier (Trifab™ 451UT):
1. Kawneer DUAL Isolock™ Thermal Break with two (2) 1/4" (6.4 mm) separations consisting of a two-part chemically curing, high-density polyurethane, which is mechanically and adhesively joined to aluminum storefront sections.
 - a. Thermal Break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.
- B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
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- C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposed shall be stainless steel.
- D. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- E. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- F. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after storefront installation.

2.04 GLAZING SYSTEMS

- A. Glazing: As specified in Division 08 Section "Glazing".
- B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.
- C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.
- D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.
- E. Glazing Sealants: As recommended by manufacturer for joint type, and as follows:
 - 1. Weatherseal Sealant: ASTM C 920 for Type S, Grade NS, Class 25, Uses NT, G, A, and O; single-component neutral-curing formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and aluminum-framed-system manufacturers for this use.

2.05 ENTRANCE DOOR SYSTEMS

- A. Entrance Doors: As specified in Division 08 4113 Section "Aluminum-Framed Entrances and Storefronts".
- B. Entrance Door Hardware: As specified in Division 08 4113 Section "Door Hardware".

2.06 ACCESSORY MATERIALS

- A. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 07 Section "Joint Sealants".
- B. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30 mil (0.762 mm) thickness per coat.

2.07 FABRICATION

- A. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
 - 1. Profiles that are sharp, straight, and free of defects or deformations.
 - 2. Accurately fit joints; make joints flush, hairline and weatherproof.
 - 3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
 - 4. Physical and thermal isolation of glazing from framing members.
 - 5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 - 6. Provisions for field replacement of glazing.
 - 7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

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- B. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
 - C. Structural-Sealant-Glazed Framing Members: Include accommodations for using temporary support device to retain glazing in place while structural sealant cures.
 - D. Storefront Framing: Fabricate components for assembly using manufacturer's standard installation instructions.
 - E. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.08 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Factory Finishing:
 - 1. Kawneer Permanodic™ AA-M10C21A41 / AA-M45C22A41, AAMA 611, Architectural Class I Clear Anodic Coating (Color #14 Clear).

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weather tight aluminum-framed storefront installation.
 - 1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
 - 2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches (76 mm) of opening.
 - 3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum-framed storefront system, accessories, and other components.
- B. Install aluminum-framed storefront system level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- C. Set sill members in bed of sealant or with gaskets, as indicated, for weather tight construction.
- D. Install aluminum-framed storefront system and components to drain condensation, water penetrating joints, and moisture migrating within aluminum-framed storefront system to the exterior.
- E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.03 FIELD QUALITY CONTROL

- A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected
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as part of the contract amount.

1. Testing: Testing shall be performed by a qualified independent testing agency. Refer to Testing Section for payment of testing and testing requirements. Testing Standard per AAMA 503, including reference to ASTM E 783 for Air Infiltration Test and ASTM E 1105 Water Infiltration Test.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², whichever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.2 psf (300 Pa).
- B. Manufacturer's Field Services: Upon Owner's written request, provide periodic site visit by manufacturer's field service representative.

3.04 ADJUSTING, CLEANING, AND PROTECTION

- A. Clean aluminum surfaces immediately after installing aluminum framed storefronts. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.
- C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION

SECTION 084114
ALUMINUM-FRAMED ENTRANCES**PART 1 GENERAL****1.01 RELATED DOCUMENTS**

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

1.02 SUMMARY

- A. This Section includes Kawneer Thermally Broken Aluminum Entrances (Basis-of-Design), glass and glazing, and door hardware and components.
1. Types of Kawneer Thermally Broken Aluminum Entrances include:
 - a. 500T Insulpour™ Thermal Entrance; Wide stile, 5" (127 mm) vertical face dimension, 2-1/4" (57 mm) depth, high traffic applications.

1.03 DEFINITIONS

- A. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG).

1.04 PERFORMANCE REQUIREMENTS

- A. General Performance: Aluminum-framed entrance doors shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:
- B. Aluminum-Framed Entrance Performance Requirements:
1. Wind loads: Provide entrance system; include anchorage, capable of withstanding wind load design pressures required by the Building Code of New York State, latest edition.
 2. Air Infiltration: For single acting offset pivot or butt hung entrances in the closed and locked position, the test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 1.57 psf (75 Pa) for pairs of doors. A single 3'0" x 7'0" (915 mm x 2134 mm) entrance door and frame shall not exceed 1.0 cfm/ft². A pair of 6'0" x 7'0" (1830 mm x 2134 mm) entrance doors and frame shall not exceed 1.0 cfm per square foot.
 3. Uniform Load Deflection: A static air design load of;
 - 1) 500T: 70.19 psf (3360 Pa) for single doors and 60.15 psf (2880 Pa) for pairs of doors.
 - b. shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 for typical application or L/180 for Small-Missile and Large-Missile impact, of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.
 4. Windborne-Debris-Impact Resistance Performance: 500T, Shall be tested in accordance with ASTM E1886, information in ASTM E1996, and TAS 201/203.
 - a. Large-Missile Impact: For aluminum-framed systems located within 30 feet (9.1m) of grade.
 - b. Small-Missile Impact: For aluminum-framed systems located above 30 feet (9.1 m) of grade.
 5. Forced Entry: Tested in accordance with AAMA 1304.
 6. Energy Efficiency:
 - a. Thermal Transmittance (U-factor): 0.77 maximum (per the International Energy Conservation Construction Code of New York State, latest edition).
 - b. Solar Heat-Gain Coefficient (SHGC) : Glazed thermally broken aluminum door and frame shall have a Solar Heat Gain Coefficient (SHGC) of no greater than 0.40 as determined according to NFRC 200.

1.05 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, and fabrication methods, dimensions of individual components and profiles, hardware, finishes, and installation instructions for each type of aluminum-framed entrance door indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware, and attachments to other work, operational clearances and installation details.
- C. Samples for Initial Selection: For units with factory-applied color finishes including samples of hardware and accessories involving color selection.
- D. Samples for Verification: For aluminum-framed door and components required.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type of aluminum-framed entrance doors.
- F. Fabrication Sample: Corner sample consisting of a door stile and rail, of full-size components and showing details of the following:
 - 1. Joinery, including welds.
 - 2. Glazing.
- G. Other Action Submittals:
 - 1. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.
- B. Manufacturer Qualifications: A manufacturer capable of fabricating thermally broken aluminum-framed entrance doors and storefronts that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports and calculations.
- C. Source Limitations: Obtain thermally broken aluminum-framed door through one source from a single manufacturer.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum-framed glass entrance doors and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements". Do not modify size and dimensional requirements.
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- E. Pre-installation Conference: Conduct conference at Project site.

1.07 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of thermally broken aluminum-framed door openings by field measurements before fabrication and indicate field measurements on Shop Drawings.

1.08 WARRANTY

- A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty.
 - 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Basis-of-Design Product:
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1. Kawneer Company Inc.
 - a. Vertical Stile Top Rail Bottom Rail
 - b. 5" (127 mm) 5" (127 mm) 10" (254 mm)
 2. Major portions of the door members to be 0.188" (4.8 mm) nominal in thickness and glazing molding to be 0.05" (1.3 mm) thick
 3. Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.
 4. Provide adjustable glass jacks to help center the glass in the door opening.
- B. Subject to compliance with requirements, provide a comparable product by the following:
1. YKK AP Corp.
 2. EFCO Corporation.
- C. Substitutions: Refer to Section 01 6000 for procedures and submission requirements.

2.02 MATERIALS

- A. Aluminum Extrusions: Alloy and temper recommended by aluminum-framed door manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.188" (4.8 mm) wall thickness at any location for the main frame and door leaf members.
1. Recycled Content: Shall have a minimum of 50% mixed pre- and post-consumer recycled content.
- B. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum-framed door members, trim hardware, anchors, and other components.
- C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
- D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
- E. Slide-In-Type Weather Stripping: Provide woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric. Comply with AAMA 701/702.
1. Weather Seals: Provide weather stripping with integral barrier fin or fins of semi-rigid, polypropylene sheet or polypropylene-coated material. Comply with AAMA 701/702.
- F. Thermal Barrier: Shall be IsoPour™ utilizing two continuous rows of polypropylene with a nominal 7/32" (5.5 mm) separation consisting of a two-part, chemically curing high density polyurethane which is mechanically and adhesively bonded to the aluminum at door rails and stiles.

2.03 GLAZING

- A. Glazing: As specified in Division 08 Section "Glazing".
- B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.
- C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

2.04 HARDWARE

- A. General: Refer to Section 087100 for hardware requirements not specified in this section.
- B. Standard Hardware:
1. Weather-stripping:
 - a. Meeting stiles on pairs of doors shall be equipped with two lines of weather-stripping utilizing wool pile with polymeric fin.

- b. The door weathering on a single acting offset pivot or butt hung door and frame (single or pairs) shall be comprised of a thermoplastic elastomer weathering on a tubular shape with a semi-rigid polymeric backing and a wool pile with polymeric fin.
2. Sill Sweep Strips: EPDM blade gasket sweep strip in an aluminum extrusion applied to the interior exposed surface of the bottom rail with concealed fasteners (Necessary to meet specified performance tests).
3. Threshold: Extruded aluminum, thermally broken, with ribbed surface.

2.05 FABRICATION

- A. Fabricate thermally broken aluminum-framed entrance doors in sizes indicated. Include a complete system for assembling components and anchoring doors.
- B. Fabricate thermally broken aluminum-framed doors that are reglazable without dismantling perimeter framing.
 1. Door corner construction shall consist of mechanical clip fastening, SIGMA deep penetration plug welds and 1" (25.4 mm) long fillet welds inside and outside of all four corners. Glazing stops shall be hook-in type with EPDM glazing gaskets reinforced with non-stretchable cord.
 2. Accurately fit and secure joints and corners. Make joints hairline in appearance.
 3. Prepare components with internal reinforcement for door hardware.
 4. Arrange fasteners and attachments to conceal from view.
- C. Weather-stripping: Provide weather-stripping locked into extruded grooves in door panels or frames as indicated on manufactures drawings and details.

2.06 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Factory Finishing:
 1. Kawneer Permanodic™ AA-M10C21A41 / AA-M45C22A41, AAMA 611, Architectural Class I Clear Anodic Coating.
 2. Kawneer Permanodic™ AA-M10C21A44 / AA-M45C22A44, AAMA 611, Architectural Class I Color Anodic Coating (Color black).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated installation.
 1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
 2. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
 3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing thermally broken aluminum-framed entrance doors, hardware, accessories, and other components.
- B. Install thermally broken aluminum-framed entrance doors level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- C. Set sill threshold in bed of sealant, as indicated, for weather tight construction.

- D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.03 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Provide periodic site visits by manufacturer's field service representative.

3.04 ADJUSTING, CLEANING, AND PROTECTION

- A. Clean aluminum surfaces immediately after installing aluminum-framed door and storefronts. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.
- C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION

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SECTION 084115
ALUMINUM-FRAMED ENTRANCES & STOREFRONTS – NON-THERMAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes Kawneer Aluminum Entrances (Basis-of-Design), glass and glazing, and door hardware and components.
1. Types of Kawneer Aluminum Entrances include:
 - a. 500 Swing Door; Wide stile, 5" (127 mm) vertical face dimension, 1-3/4" (44.5 mm) depth, high traffic applications.

1.03 DEFINITIONS

- A. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG).

1.04 PERFORMANCE REQUIREMENTS

- A. General Performance: Aluminum-framed entrance system shall withstand the effects of the following performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Aluminum Framed Entrance Performance Requirements:
1. Wind loads: Provide entrance system; include anchorage, capable of withstanding wind load design pressures required by the Building Code of New York State, latest edition.
 2. Air Infiltration: For single acting offset pivot or butt hung entrances in the closed and locked position, the test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 1.57 psf (75 PA) for single and pairs of doors. A single 3'0" x 7'0" (915 mm x 2134 mm) entrance door and frame shall not exceed 1.0 cfm/ft². A pair of 6'0" x 7'0" (1830 mm x 2134 mm) entrance doors and frame shall not exceed 1.0 cfm/ft².
 3. Structural Performance: Corner strength shall be tested per the Kawneer dual moment load test procedure and certified by an independent testing laboratory to ensure weld compliance and corner integrity.

1.05 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, and fabrication methods, dimensions of individual components and profiles, hardware, finishes, and installation instructions for each type of aluminum-framed entrance door indicated.
1. Recycled Content:
 - a. Provide documentation that aluminum has a minimum of 50% mixed pre- and post-consumer recycled content with a sample document illustrating project specific information that will be provided after product shipment.
 - b. Once product has shipped, provide project specific recycled content information, including:
 - 1) Indicate recycled content; indicate percentage of pre- and post-consumer recycled content per unit of product.
 - 2) Indicate relative dollar value of recycled content product to total dollar value of product included in project.
 - 3) Indicate location recovery of recycled content.
 - 4) Indicate location of manufacturing facility.

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- B. Shop Drawings: Include plans, elevations, sections, details, hardware, and attachments to other work, operational clearances and installation details.
- C. Samples for Initial Selection: For units with factory-applied color finishes including samples of hardware and accessories involving color selection.
- D. Samples for Verification: For aluminum-framed entrance door and components required.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type of aluminum-framed entrance doors.
- F. Fabrication Sample: Corner sample consisting of a door stile and rail, of full-size components and showing details of the following:
 - 1. Joinery, including welds.
 - 2. Glazing.
- G. Other Action Submittals:
 - 1. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.
- B. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum-framed entrance doors and storefronts that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.
- C. Source Limitations: Obtain aluminum-framed entrance door through one source from a single manufacturer.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum-framed entrance doors and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements". Do not modify size and dimensional requirements.
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- E. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination".

1.07 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of aluminum-framed entrance door openings by field measurements before fabrication and indicate field measurements on Shop Drawings.

1.08 WARRANTY

- A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty.
 - 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer.

PART 1 PRODUCTS

2.01 MANUFACTURERS

- A. Basis-of-Design Product:
 - 1. Kawneer Company Inc.
-

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2. Door Vertical Stile Top Rail Bottom Rail
500 5" (127 mm) 5" (127 mm) 10" (254 mm)
3. Major portions of the door members to be 0.125" (3.2) nominal in thickness and glazing molding to be 0.05" (1.3) thick.
4. Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.
5. Provide adjustable glass jacks to help center the glass in the door opening.

2.02 MATERIALS

- A. Aluminum Extrusions: Alloy and temper recommended by aluminum-framed entrance door manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.090" (2.3 mm) wall thickness at any location for the main frame and door leaf members.
- B. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum-framed entrance door members, trim hardware, anchors, and other components.
- C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
- D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
 1. Weather Seals: Provide weather stripping with integral barrier fin or fins of semi-rigid, polypropylene sheet or polypropylene-coated material. Comply with AAMA 701/702.

2.03 STOREFRONT FRAMING SYSTEM

- A. Storefront Entrance Framing:
 1. Trifab™ VG 450 (4-1/2" depth, 1-3/4" sight line).
- B. Non-Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposed shall be stainless steel.
- D. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- E. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- F. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after storefront installation.

2.04 GLAZING

- A. Glazing: As specified in Division 08 Section "Glazing".
- B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.
- C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

2.05 HARDWARE

- A. See Section 08 7100.
-

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2.06 FABRICATION

- A. Fabricate aluminum-framed entrance doors in sizes indicated. Include a complete system for assembling components and anchoring doors.
- B. Fabricate aluminum-framed glass doors that are reglazable without dismantling perimeter framing.
 - 1. Door corner construction shall consist of mechanical clip fastening, SIGMA deep penetration plug welds and 1-1/8" (29 mm) long fillet welds inside and outside of all four corners. Glazing stops shall be hook-in type with EPDM glazing gaskets reinforced with non-stretchable cord.
 - 2. Accurately fit and secure joints and corners. Make joints hairline in appearance.
 - 3. Prepare components with internal reinforcement for door hardware.
 - 4. Arrange fasteners and attachments to conceal from view.
- C. Weather-stripping: Provide weather-stripping locked into extruded grooves in door panels or frames as indicated on manufacturer's drawings and details.

2.07 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Factory Finishing:
 - 1. Kawneer Permanodic™ AA-M10C21A44 / AA-M45C22A44, AAMA 611, Architectural Class I Color Anodic Coating (Color: Black).

PART 2 EXECUTION**3.01 EXAMINATION**

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated installation.
 - 1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
 - 2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches (76.2 mm) of opening.
 - 3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum-framed entrance doors, hardware, accessories, and other components.
 - B. Install aluminum-framed entrance doors level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
 - C. Set sill threshold in bed of sealant, as indicated, for weather tight construction.
 - D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.
-

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3.03 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Upon Owner's written request, provide periodic site visit by manufacturer's field service representative.

3.04 ADJUSTING, CLEANING, AND PROTECTION

- A. Clean aluminum surfaces immediately after installing aluminum-framed entrance doors. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.
- C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION

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**SECTION 087100
DOOR HARDWARE**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including general and supplementary conditions and division 01 specification sections, apply to this section.

1.2 SUMMARY

- A. Section includes:
 - 1. Mechanical and electrified door hardware for swinging doors
 - 2. Field verification, preparation and modification of existing doors and frame to receive new door hardware.
- B. Hardware shall comply with New York State Education Department 1998 Edition of the Manual of Planning Standards, Section S105 – Door Hardware, and NFPA 101-Life Safety Code.

1.3 RELATED SECTIONS:

- A. Division 08 Section "Hollow Metal doors and Frames"
- B. Division 08 Section "Flush Wood Doors"
- C. Division 08 Section "Aluminum-framed Entrances and Storefronts"
- D. Division 08 Section "FRP Doors and Aluminum Frames"
- E. Division 26 Section "Electrical"
- F. Division 28 Section "Fire Detection and Alarm"
- G. Division 28 section "access control" for access control devices installed at door openings and provided as part of a security system.

1.4 SUBMITTALS

- A. Product data: for each item of hardware indicated furnish manufacturer's catalog sheets highlighting information pertaining specifically to product(s) submitted. Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop drawings: details of electrified door hardware, indicating the following:
 - 1. Wiring diagrams: for power, signal, and control wiring and including the following:
 - a. Details of interface of electrified door hardware and building safety and security systems.
 - 2. Operation narrative: describe the operation of doors controlled by electrified door hardware.
- C. Other action submittals:
 - 1. Door hardware schedule: prepared by or under the supervision of installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

- a. Format: comply with scheduling sequence and vertical format in dhi's "sequence and format for the hardware schedule." double space entries, and number and date each page.
 - b. Content: include the following information:
 - 1) Identification number, location, hand, fire rating, size, and material of each door and frame.
 - 2) Locations of each door hardware set, cross-referenced to drawings on floor plans and to door and frame schedule.
 - 3) Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
 - 4) Description of electrified door hardware sequences of operation and interfaces with other building control systems.
 - 5) Fastenings and other pertinent information.
 - 6) Explanation of abbreviations, symbols, and codes contained in schedule.
 - 7) Mounting locations for door hardware.
 - 8) List of related door devices specified in other sections for each door and frame.
 - 9) Door index – cross referencing door number with page and/or set number. If the sets are not in numerical order the door number, set number and page number are required. The hardware set number shown on a door submittal does not qualify as the door index for hardware.
 2. Keying schedule: prepared by or under the supervision of installer, detailing owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the contract documents.
- D. Qualification data: for installer and architectural hardware consultant.
- E. Product certificates: for electrified door hardware, from the manufacturer.
1. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
- F. Product test reports: for compliance with accessibility requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.
- G. Maintenance data: for each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.
- H. Warranty: special warranty specified in this section.

1.5 QUALITY ASSURANCE

- A. Installer qualifications: supplier of products and an employer of workers trained and approved by product manufacturers and an architectural hardware consultant who is available during the course of the work to consult with contractor, architect, and owner about door hardware and keying.
- B. Architectural hardware consultant qualifications: a person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this project.
- C. Source limitations: obtain each type of door hardware from a single manufacturer.
- D. Fire-rated door assemblies: where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10c, unless otherwise indicated.

- E. Smoke- and draft-control door assemblies: where smoke- and draft-control door assemblies are required, provide door hardware that meet requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
 - 1. Air leakage rate: maximum air leakage of 0.3 cfm/sq. Ft. At the tested pressure differential of 0.3-inch wg of water.
- F. Electrified door hardware: listed and labeled as defined in NFPA 70, article 100, by a testing agency acceptable to authorities having jurisdiction.
- G. Means of egress doors: latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- H. Accessibility requirements: for door hardware on doors in an accessible route, comply with the U.S. Architectural & transportation barriers compliance board's ADA-aba accessibility guidelines and icc/ansi a117.1.
 - 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
 - 2. Comply with the following maximum opening-force requirements:
 - a. Interior, non-fire-rated hinged doors: 5 lbf applied perpendicular to door.
 - b. Sliding or folding doors: 5 lbf applied parallel to door at latch.
 - c. Fire doors: minimum opening force allowable by authorities having jurisdiction.
 - 3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
 - 4. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.
- I. Keying conference: conduct conference at project site to comply with requirements in division 01 section "project management and coordination." incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:
 - 1. 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.
- J. Pre-installation 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 and avoid delays.
 - 2. Inspect and discuss preparatory work performed by other trades.
 - 3. Inspect and discuss electrical roughing-in for electrified door hardware.
 - 4. Review sequence of operation for each type of electrified door hardware.
 - 5. Review required testing, inspecting, and certifying procedures.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to project site.

- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

1.7 COORDINATION

- A. Installation templates: distribute for doors, frames, and other work specified to be factory prepared. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Security: coordinate installation of door hardware, keying, and access control with owner's security consultant.
- C. Electrical system roughing-in: coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.
- D. Existing openings: where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.8 WARRANTY

- A. Special warranty: manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - 2. Structural failures including excessive deflection, cracking, or breakage.
 - 3. Faulty operation of doors and door hardware.
 - 4. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
- B. Warranty period: three years from date of substantial completion, unless otherwise indicated.
 - 1. Exit devices: three years from date of substantial completion.
 - 2. Manual closers: 25 years from date of substantial completion.
 - 3. Locksets: 10 years from date of substantial completion.
 - 4. Continuous hinges: lifetime of opening

1.9 MAINTENANCE SERVICE

- A. Maintenance tools and instructions: furnish a complete set of specialized tools and maintenance instructions for owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.10 SCHEDULED DOOR HARDWARE

- A. Provide door hardware for each door as scheduled on drawings with hardware sets scheduled in part 3 "door hardware schedule" article to comply with requirements in this section.
 - 1. Door hardware sets: provide quantity, item, size, finish or color indicated, and named manufacturers' products.

2. Sequence of operation: provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
- B. Designations: requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in part 3 "door hardware schedule" article. Products are identified by using door hardware designations, as follows:
 1. Named manufacturers' products: manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements.

2.11 HINGES

- A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.
 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Stanley Commercial Hardware; a Dormakaba Holding, Inc. Company
 - b. McKinney Products Company; an ASSA ABLOY Group Company.
 - c. Hager Companies.

2.12 CONTINUOUS HINGES

- A. Continuous hinges: BHMA A156.26; minimum 0.120-inch- thick, hinge leaves with minimum overall width of 4 inches; fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete.
- B. Continuous, gear-type hinges: extruded-aluminum, pinless, geared hinge leaves joined by a continuous extruded-aluminum channel cap; with concealed, self-lubricating thrust bearings.
 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. ABH Manufacturing, Inc.
 - b. Select Products, Ltd.
 - c. Pemko Mfg. Co; an Assa Abloy Group Company

2.13 MECHANICAL LOCKS AND LATCHES

- A. Lock functions: as indicated in door hardware schedule.
- B. Lock throw: comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
 1. Bored locks: minimum 1/2-inch latchbolt throw.
 2. Mortise locks: minimum 3/4-inch latchbolt throw.
 3. Deadbolts: minimum 1-inch bolt throw.
- C. Lock backset: 2-3/4 inches, unless otherwise indicated.
- D. Lock trim:
 1. Description: as indicated in door hardware schedule
 2. Levers: zinc alloy

3. Escutcheons (roses): wrought
- E. Strikes: provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
 1. Flat-lip strikes: for locks with three-piece antifriction latch bolts, as recommended by manufacturer.
 2. Extra-long-lip strikes: for locks used on frames with applied wood casing trim.
- F. Bored locks: BHMA A156.2; grade 1; series 4000.
 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Best Access Systems; a Dormakaba Holding, Inc. Company (to match existing)

2.14 ELECTRIC STRIKES

- A. Electric strikes: BHMA A156.31; grade 1; with faceplate to suit lock and frame.
 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. HES; an ASSA ABLOY Group Company.
 - b. Trine Access Technology.
 - c. Von Duprin; an Allegion Company.

2.15 MANUAL FLUSH BOLTS

- A. Manual flush bolts: BHMA A156.16; minimum 3/4-inch throw; designed for mortising into door edge.
 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Rockwood; an ASSA ABLOY Group Company
 - b. Door Controls International, Inc.
 - c. Ives Hardware; an Ingersoll-Rand Company.

2.16 AUTOMATIC AND SELF-LATCHING FLUSH BOLTS

- A. Automatic and self-latching flush bolts: BHMA A156.16; minimum 3/4-inch throw; designed for mortising into door edge.
 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Rockwood; an ASSA ABLOY Group Company
 - b. Ives Hardware; an Ingersoll-Rand Company.
 - c. Door Controls International, Inc.

2.17 EXIT DEVICES AND AUXILIARY ITEMS

- A. Exit devices and auxiliary items: BHMA A156.3.
 - 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Von Duprin; an Allegion Company
 - b. Precision Hardware, Inc.; a Dormakaba Holding, Inc. Company
 - c. Sargent Manufacturing Company; an ASSA ABLOY Group Company.
- B. Power Transfers:
 - 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Von Duprin; an Allegion Company
 - b. ABH; Architectural Builders Hardware Manufacturing, Inc.
 - c. Securitron; an ASSA ABLOY Group Company.

2.18 LOCK CYLINDERS

- A. Lock cylinders: tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.
 - 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Best Access Systems; a Dormakaba Holding, Inc. Company (to match existing)
- B. Standard lock cylinders: BHMA A156.5; grade 1; permanent cores that are interchangeable; face finished to match lockset.
- C. Construction cores: provide cylinders with keyed alike construction cores. Cores shall be painted a color for easy identification (blue, orange, etc.). Construction cores shall be returned to the hardware supplier. Provide 10 construction master keys and two construction control keys for removing temporary cores.
- D. Provide final permanent cores with visual key control. Stamp keys and (in a concealed location) stamp cores with keyset symbol.

2.19 KEYING

- A. Keying system: factory registered, integrated with existing Best access control key system, complying with guidelines in BHMA A156.28, appendix a. Incorporate decisions made in keying conference.
 - 1. Existing system:
 - a. Master key or grand master key locks to owner's existing Best Access Systems key system.
- B. Keys: nickel silver.
 - 1. Stamping: permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: "Do Not Duplicate."

2. Stamp cores in a concealed location with visual key control number.
3. Quantity: in addition to one extra key blank for each lock, provide the following unless otherwise directed by owner:
 - a. Cylinder change keys: three.
 - b. Master keys: five.
 - c. Grand master keys: five.
 - d. Great-grand master keys: five.

2.20 KEY CONTROL SYSTEM

- A. Key control cabinet: BHMA A156.5; metal cabinet with baked-enamel finish; containing key-holding hooks, labels, 2 sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers; with key capacity of 150 percent of the number of locks.
 1. Manufacturers: subject to compliance with requirements, provide products by one of the following:
 - a. Tel-Kee
 - b. HPC, Inc.
 - c. Lund Equipment Co., Inc.
 - d. MMF Industries.

2.21 ACCESSORIES FOR PAIRS OF DOORS

- A. General: provide accessories for pairs of doors as indicated on schedule.
- B. Coordinators: BHMA A156.3; consisting of active-leaf, hold-open lever and inactive-leaf release trigger; fabricated from steel with nylon-coated strike plates; with built-in, adjustable safety release; and with internal override.
- C. Carry-open bars: BHMA A156.3; prevent the inactive leaf from opening before the active leaf; provide polished brass or bronze carry-open bars with strike plate for inactive leaves of pairs of doors unless automatic or self-latching bolts are used.
- D. Astragals: BHMA A156.22.

2.22 SURFACE CLOSERS

- A. Surface closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Dorma Architectural Hardware; a Dormakaba Holding, Inc. Company
 - b. LCN Closers; an Allegion Company.
 - c. Sargent Manufacturing Company; an ASSA ABLOY Group Company.

2.23 MECHANICAL STOPS AND HOLDERS

- A. Wall- and floor-mounted stops: BHMA A156.16; polished cast brass, bronze, or aluminum base metal.
 - 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Rockwood; an ASSA ABLOY Group Company
 - b. Burns Manufacturing Incorporated.
 - c. Ives Hardware; an Allegion Company.

2.24 ELECTROMAGNETIC STOPS AND HOLDERS

- A. Electromagnetic door holders: BHMA A156.15, grade 1; wall-mounted or floor-mounted electromagnet unit with strike plate attached to swinging door; coordinated with fire detectors and interface with fire alarm system for labeled fire-rated door assemblies.
 - 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Rixson; an ASSA ABLOY Group Company
 - b. Architectural Builders Hardware Mfg., Inc.
 - c. LCN Closers; an Allegion Company

2.25 OVERHEAD STOPS AND HOLDERS

- A. Overhead stops and holders: BHMA A156.8.
 - 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Glynn-Johnson; an Ingersoll-Rand Company.
 - b. Sargent Manufacturing Company; an ASSA ABLOY Group Company.
 - c. Architectural Builders Hardware Mfg., Inc.

2.26 DOOR GASKETING

- A. Door gasketing: BHMA A156.22; air leakage not to exceed 0.50 cfm per foot of crack length for gasketing other than for smoke control, as tested according to astm e 283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
 - 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Pemko Manufacturing Co.; an ASSA ABLOY Group Company.
 - b. National Guard Products.
 - c. Zero International; an Allegion Company

2.27 THRESHOLDS

- A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.

1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Pemko Manufacturing Co.; an ASSA ABLOY Group Company.
 - b. National Guard Products.
 - c. Zero International; an Allegion Company

2.28 SLIDING DOOR HARDWARE

- A. Sliding door hardware: BHMA A156.14; consisting of complete sets including rails, hangers, supports, bumpers, floor guides, and accessories indicated.
 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Stanley Commercial Hardware; a Dormakaba Holding, Inc. Company
 - b. Hager Companies.
 - c. Henderson, PC Inc.
 - d. Johnson, L. E., Products, Inc.

2.29 FOLDING DOOR HARDWARE

- A. General: BHMA A156.14; complete sets including overhead rails, hangers, supports, bumpers, floor guides, and accessories indicated.
 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Stanley Commercial Hardware; a Dormakaba Holding, Inc. Company
 - b. Hager Companies.
 - c. Henderson, PC Inc.
 - d. Johnson, L. E., Products, Inc.

2.30 METAL PROTECTIVE TRIM UNITS

- A. Metal protective trim units: BHMA A156.6; fabricated from 0.050-inch- thick stainless steel as scheduled; with four beveled edges and countersunk screw holes with manufacturer's standard machine or self-tapping screw fasteners.
 1. Basis-of-design product: subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Rockwood; an ASSA ABLOY Group Company
 - b. Burns Manufacturing Incorporated.
 - c. Ives Hardware; an Allegion Company.

2.31 FABRICATION

- A. Manufacturer's nameplate: do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by architect.
 1. Manufacturer's identification is permitted on rim of lock cylinders only.

- B. Base metals: produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.
- C. Fasteners: provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted.
 - 1. Fire-rated applications:
 - a. Wood or machine screws: for the following:
 - 1) Hinges mortised to doors or frames; use threaded-to-the-head wood screws for wood doors and frames.
 - 2) Strike plates to frames.
 - 3) Closers to doors and frames.
 - b. Steel through bolts: do not use through bolts for installation where bolt head or nut on opposite face is exposed unless noted or it is the only means of securely attaching the door hardware and approved by architect.
 - 1) Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
 - 2) Verify that blocking is provide for the following:
 - a) Surface hinges to doors.
 - b) Closers to doors and frames.
 - c) Surface-mounted exit devices.
 - c. Spacers or sex bolts: for through bolting of hollow-metal doors.
 - 2. Fasteners for wood doors: comply with requirements in DHI wdhs.2, "recommended fasteners for wood doors."
 - 3. Gasketing fasteners: provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.32 FINISHES

- A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of finished work: variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.10 EXAMINATION

- A. Examine doors and frames, with installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.11 PREPARATION

- A. Steel doors and frames: for surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
- B. Wood doors: comply with DHI WDHS.5 "Recommended hardware reinforcement locations for mineral core wood flush doors."

3.12 INSTALLATION

- A. Mounting heights: mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard steel doors and frames: ANSI/SDI A250.8.
 - 2. Wood doors: DHI WDHS.3, "Recommended locations for architectural hardware for wood flush doors."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in division 09 sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards. Hand tighten screws and fasteners, use of power tools must be limited to preliminary driving screws if permitted by the door and hardware manufacturer.
- C. Hinges: install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Door closers shall be installed to obtain the greatest degree swing allowed by field conditions. Follow manufacturer's instructions for proper door closer adjustment for spring power, back check, closing and latching speed.
- E. Lock cylinders: install construction cores to secure building and areas during construction period.
 - 1. Replace construction cores with permanent cores as indicated in keying schedule.
- F. Key control system: tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
- G. Provide and install all low voltage control wiring from power supply to all door hardware. Provide and install 120v power wiring from EC-provided junction box to power supply (supplied under this section). Provide wiring as recommended by device manufacturer.
- H. Boxed power supplies: locate power supplies as indicated or, if not indicated, above accessible ceilings. Verify location with architect.

1. Configuration: provide one power supply for each door opening with electrified door hardware unless otherwise specified
- I. Thresholds: set thresholds for exterior and interior doors in full bed of sealant complying with requirements specified in division 07 section "joint sealants."
- J. Stops: provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.
- K. Perimeter gasketing: apply to head and jamb, forming seal between door and frame.
- L. Meeting stile gasketing: fasten to meeting stiles, forming seal when doors are closed.
- M. Door bottoms: apply to bottom of door, forming seal with threshold when door is closed.

3.13 ADJUSTING

- A. Initial adjustment: adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 1. Electric strikes: adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
 2. Door closers: adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
- B. Occupancy adjustment: approximately three months after date of substantial completion, installer's architectural hardware consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.14 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of substantial completion.

3.15 DOOR HARDWARE SCHEDULE

- A. Supplier shall assume full responsibility for examination of the drawings and shall be responsible for the accuracy of the quantities, size, finish and proper hardware whether specifically mentioned or not. Hardware not listed specifically must be furnished to match other hardware in similar openings.
- B. Provide all required accessories and options necessary for complete installation of each hardware component, to ensure proper operation of the product
- C. GC is to confirm the salvage status of the removed hardware with the Owner prior to disposal. Turn over to Owner any hardware items identified for salvage and dispose of the balance.
- D. Hardware Codes

- 001 1 ea. continuous hinge A160HD Clear
- 001A 1 ea. continuous hinge A160HD Clear - Prep EPT
- 100 1 ea. continuous hinge A110HD Clear
- 100A 1 ea. continuous hinge A110HD Clear - Prep EPT
- 101 1 ea. continuous hinge A240HD Clear
- 101A 1 ea. continuous hinge A240HD Clear - Prep EPT

- 200A 1 ea. closer (pull side hold open) Dorma 8916 ISH FMC 689 SN1
- 202 1 ea. closer (push side stop arm) 4111-CUSH MC AL x TB
- 203 1 ea. closer (push side stop hold open arm) 4111H-CUSH MC AL x TB

Note: Provide drop plates, long arms, shoe support and spacers, as required.

- 300 1 ea. rim exit device CD98NL-OP US26D SNB
- 300A 1 ea. rim exit device CD98EO US26D SNB
- 300B 1 ea. rim exit device LD98EO US26D (Exit Only, less dogging)
- 301 1 ea. rim exit device CD98NL x 696NL US26D SNB
- 301A 1 ea. rim exit device CD98DT x 696DT US26D SNB
- 302 1 ea. rim exit device HD-QEL98NL-OP-CON US26D SNB
with electric latch retraction, connectors & hex key dogging
- 302A 1 ea. rim exit device HD-QEL98NL-CON x 696NL US26D SNB
with electric latch retraction, connectors & hex key dogging
- 303 1 ea. rim exit device CD35A-NL-OP US26D
- 304 1 ea. rim exit device CD35A-EO US26D
- 305 1 ea. rim exit device HD-QEL35A-NL-OP-CON US26D
with electric latch retraction, connectors & hex key dogging
- 306 1 ea. keyed removable mullion KR4954 SP28
- 307 1 ea. electrified keyed removable mullion KR4854 Blank SP28
- 308 1 ea. power transfer EPT-10-CON SP28 with connectors
- 309 1 ea. door cord Securitron TSB-C
- 310 1 ea. power supply PS902 x 900-2RS x 900-BBK with batteries
- 311 1 ea. dummy touch pad 350 US26D

Note: Provide all wiring harnesses as necessary for a complete installation where CON (quick connect) is specified.

- 400 1 ea. rim cylinder 12E72 or mortise 1E74, as required 626
- 402 1 ea. lockset (storeroom) 9K3-7D15D 626

Note: Provide 7/8" LTC (Lip to Center of Strike) @ Pair Doors

- 500 2 ea. flush bolts 555 12" US26D x 570 dust proof strike
- 600 1 ea. kick plate K1050 8" x 2"LDW for Single Drs., 8" x 1"LDW @ Pair Drs.
US32D B4E .050 x countersunk screw holes
- 601 1 ea. door pull BF157 - 1" diameter x 10" CTC US32D
- 602 1 ea. flush pull by Section 081743

- 603 1 ea. latch protector (lock guard) 322 US32D
- 604 1 ea. door viewer 622 DCRM
- 605 1 ea. pull plate BF111 x 70C US32D

- 701 1 ea. door sweep 315CN x Tek
- 702 1 set weatherstrip 332CR x Tek for H&J
- 703 1 ea. mullion gasketing 5110BL
- 704 1 set weatherstrip for H, J & Meeting Stile by Section 084114/081743
- 705 1 set weatherstrip for meeting stile 316AS x Tek
- 706 1 ea. astragal 357SS

- 800 1 ea. aluminum thermal break threshold by Section 084114
- 801 1 ea. aluminum threshold 253x3AFG - 1/2"H x 6-1/8"W x MSES25SS
- 802 1 ea. aluminum threshold 252x3AFG - 1/2"H x 5-1/8"W x MSES25SS
- 803 1 ea. aluminum cover plate 14/1 - 1/4"H x 6"W x MS10SS

- 900 1 ea. electric strike HES 9600 x 2005M3 24VDC Fail Secure 630
- 901 1 ea. power supply Securitron BPS-24 x B-24-5

- 1000 1 ea. access control and/or remote release by others

E. Hardware Sets (Doors/Codes):

PHOENICIA ELEMENTARY SCHOOL:	
<u>SET 1</u>	
PH-1 (2)	2/001-2/202-303-304-306-4/400-2/601-2/701-703-704-800
PH-5 (2)	2/001-2/202-303-304-306-4/400-2/601-2/701-703-704-800
<u>SET 2</u>	
PH-6 (2)	2/001-2/202-303-304-306-4/400-2/601-2/701-703-704-800-803
PH-7 (2)	2/001-2/202-303-304-306-4/400-2/601-2/701-703-704-800-803
<u>SET 3</u>	
PH-2 (2)	2/101-2/203-301-301A-307-4/400-2/602-2/701-703-704-801-900-901-1000
<u>SET 4</u>	
PH-3	101-202-301-2/400-600-701-702-802
PH-4	101-202-301-2/400-600-701-702-802
<u>SET 5</u>	
PH-8 (2)	2/100-2/202-300-300A-306-4/400-2/601-2/701-703-704-801
	BID ALTERNATE
<u>SET 6</u>	

PH-9 (2)	100-100A-2/202-304-305-306-308-310-3/400-2/601-2/701-703-704-801-1000
	BID ALTERNATE
	<u>WOODSTOCK ELEMENTARY SCHOOL:</u>
<u>SET 7</u>	
WD-1	001A-202-305-308-310-400-601-701-704-800-1000
	Share power supply with WD-3
<u>SET 8</u>	
WD-3	001A-202-305-308-400-601-1000 (Share power supply with WD-1)
<u>SET 9</u>	
WD-10 (2)	001-001A-2/202-304-305-306-308-310-3/400-2/601-2/701-703-704-800-1000
WD-11 (2)	001-001A-2/202-304-305-306-308-310-3/400-2/601-2/701-703-704-800-1000
WD-16 (2)	001-001A-2/202-304-305-306-308-310-3/400-2/601-2/701-703-704-800-1000
<u>SET 10</u>	
WD-2 (2)	2/001-2/202-303-304-306-4/400-2/601-2/701-703-704-800
WD-12 (2)	2/001-2/202-303-304-306-4/400-2/601-2/701-703-704-800
WD-13 (2)	2/001-2/202-303-304-306-4/400-2/601-2/701-703-704-800
<u>SET 11</u>	
WD-4 (2)	2/001-2/202-303-304-306-4/400-2/601
<u>SET 12</u>	
WD-6 (2)	101-101A-2/202-301A-302A-306-308-310-3/400-2/600-2/701-702-703-705-802-1000
WD-8 (2)	101-101A-2/202-301A-302A-306-308-310-3/400-2/600-2/701-702-703-705-802-1000
<u>SET 13</u>	
WD-23	101-202-300B-701-702-802
<u>SET 14</u>	
WD-17	101-202-301-2/400-600-701-702-802
<u>SET 15</u>	
WD-20	101-202-402-603-701-702-802
WD-22	101-202-402-603-701-702-802
WD-24	101-202-402-603-701-702-802
<u>SET 16</u>	
WD-21	101-200A-402-604-702-702-802

<u>SET 17</u>	
WD-5 (2)	2/101-2/203-2/311-2/600-2/605
WD-7 (2)	2/101-2/203-2/311-2/600-2/605
WD-9 (2)	2/101-2/203-2/311-2/600-2/605
WD-15 (2)	2/101-2/203-2/311-2/600-2/605
WD-18 (2)	2/101-2/203-2/311-2/600-2/605
<u>SET 18</u>	
WD-19 (2)	2/101-2/202-301-301A-307-4/400-2/600-2/701-703-705-801-900-901-1000
<u>SET 19</u>	
WD-14 (2)	2/101-2/202-402-500-2/701-702-706-802

END OF SECTION 08 7100

**SECTION 088000
GLAZING**

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Glass for doors, interior borrowed lites, and windows.
 - 2. Glazing sealants and accessories.

1.02 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. ASTM C 1036 also includes traditional thickness designations in IP units, but the actual thickness is based on the equivalent IP designation in millimeters.
- C. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.
- D. BCNYS: Building Code of New York State.
- E. Interspace: Space between lites of an insulating-glass unit.

1.03 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Group 1: Interior Adhesives and Sealants
 - 1. Adhesive Sealant and Primers must comply SCAQMD Rule #1168
 - 2. Aerosol Adhesives must comply with GS-36
 - 3. Adhesives and Sealants shall contain no carcinogen or reproductive toxicant more than 1% of total mass as defined in OEHHA
- C. Glass Samples: For each type of the following products; 12 inches square.
 - 1. Laminated glass.
 - 2. Insulating glass.
 - 3. Spandrel Glass.
 - 4. Tempered Glass.
- D. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations as indicated on Drawings.
- E. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.05 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and manufacturers of insulating-glass units with sputter-coated, low-E coatings.
 - B. Product Certificates: For glass.
 - C. Product Test Reports: For insulating glass and glazing sealants, for tests performed by a qualified testing agency.
 - 1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.
 - D. Sample Warranties: For special warranties.
-

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.
- B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
- C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.
- D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
- B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.08 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.
- B. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

1.09 WARRANTY

- A. Manufacturer's Special Warranty for Laminated Glass: Manufacturer 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.
 - 1. Warranty Period: Ten years from date of Substantial Completion.
- B. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
 - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - 1. PPG Industries, Inc.
 - 2. Guardian Industries.
 - 3. Pilkington.
 - B. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.
 - C. Obtain reflective-coated glass from single source from single manufacturer.
-

- D. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.02 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design glazing.
- C. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the IBC and ASTM E 1300.
1. Design Wind Pressures: per all applicable codes..
 2. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.
 3. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.
- D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- E. Thermal and Optical Performance Properties: Provide glass 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 insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
 3. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
 4. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
 5. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.03 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
1. GANA Publications: "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. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.
- D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.
1. Minimum Glass Thickness for Exterior Lites: 6 mm.
 2. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout Project.
- E. Strength: Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements"
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Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.04 GLASS PRODUCTS

- A. Clear Annealed Float Glass: ASTM C 1036, Type I, Class 1 (clear), Quality-Q3.
- B. Tinted Annealed Float Glass: ASTM C 1036, Type I, Class 2 (tinted), Quality-Q3.
- C. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
 - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
- D. Reflective-Coated Vision Glass: ASTM C 1376.
- E. Ceramic-Coated Spandrel Glass: ASTM C 1048, Condition B, Type I, Quality-Q3, and complying with other requirements specified.

2.05 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190.
 - 1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
 - 2. Spacer: Manufacturer's standard spacer material and construction.
 - 3. Desiccant: Molecular sieve or silica gel, or a blend of both.
 - 4. See Section 08 5113 for window glazing.

2.06 LAMINATED GLASS

- A. Laminated Glass: ASTM C 1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
 - 1. Construction: Laminate glass with polyvinyl butyral interlayer to comply with interlayer manufacturer's written instructions.
 - 2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
 - 3. Interlayer Color: Clear unless otherwise indicated.

2.07 GLAZING SEALANTS

- A. General:
 - 1. Compatibility: Compatible with one another and with other materials they contact, including glass 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 glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 - 3. Field-applied sealants shall have a VOC content of not more than 250 g/L.
 - 4. Colors of Exposed Glazing Sealants: Match Architect's samples.
- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Dow Corning Corporation.

2.08 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 glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
 - 1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
-

2.09 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.10 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
 - 1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
 - a. Temperature Change: 120 deg F, 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

3.01 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 - 2. Presence and functioning of weep systems.
 - 3. Minimum required face and edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.03 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches.
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- J. 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.
- K. 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 by gasket manufacturer.

3.04 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, 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 glass 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.

3.05 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
-

- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

3.06 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass 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 glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.07 CLEANING AND PROTECTION

- A. Immediately after installation remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.08 MONOLITHIC GLASS SCHEDULE

- A. Glass Type G-1: Clear fully tempered float glass.
 - a. Minimum Thickness: 6 mm.
 - b. Safety glazing required.

3.09 INSULATING GLASS SCHEDULE

- A. Glass Type IG-1 Low-E-coated, tinted insulating glass.
 - 1. Basis-of-Design Product: Product: Guardian – SunGuard Solar Control.
 - 2. Overall Unit Thickness: 1 inch
 - 3. Minimum Thickness of Each Glass Lite: 6 mm.
 - 4. Outdoor Lite: Clear fully tempered float glass.
 - 5. Tint Color: Clear.
 - 6. Appearance: Silver
 - 7. Interspace Content: Argon.
-

8. Indoor Lite: Clear fully tempered float glass.
9. Low-E Coating: Sputtered on second surface.
10. Glass Unit Performance Characteristics:
 - a. Visible Light Transmittance: 18 percent
 - b. Visible Light Reflectance Outdoors: 31 percent
 - c. Direct Solar Energy Transmittance: 13 percent
 - d. Direct Solar Energy Reflectance Outdoors: 27 percent
 - e. Winter U-Value Nighttime: 0.36
 - f. Shading Coefficient: 0.24
 - g. Solar Heat Gain Coefficient: 0.21
 - h. Summer Relative Heat Gain: 55
11. Safety glazing required.

END OF SECTION

**SECTION 088700
SECURITY GLAZING FILMS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section Includes:
 - 1. Security Glazing film applied to existing glazing assemblies.

1.03 CODES AND REFERENCES:

- A. FTD SA – Filti Testing and Development Shooter/Attack Certification.
- B. GSA Level C – General Services Administration Standard Test Method for Glazing and Window Systems Subject to Dynamic Overpressure Loadings.
- C. ASTM F1642 – Standard Test Method for Glazing and Glazing Systems Subject to Air blast Loadings.
- D. UL972 – Standard for Burglary Resisting Glazing.
- E. EN356 P4 – Testing and Classification of Resistance Against Manual Attack.
- F. ASTM E330 – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- G. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Consumer Products Safety Commission; current edition.
- H. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test; 2010.
- I. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials; 2013a.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Glazing film manufacturer specializing in manufacture of security glazing films with minimum 10 years successful experience.

1.05 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Test Reports: Detailed reports of full-scale chamber tests to specified criteria, using assemblies identical to those required for this project.
- C. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Record of product certification for safety requirements.
 - 2. Preparation instructions and recommendations.
 - 3. Storage and handling requirements and recommendations.
 - 4. Installation methods.
- D. Samples: For each film product to be used, minimum size 4 inches by 6 inches, representing actual product, color, and patterns.
- E. Specimen warranty.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufactures unopened packaging until ready for installation.
 - B. Store and dispose of solvent-based materials, and materials used with solvent—based materials, in accordance with requirements of authorities having jurisdiction.
-

1.07 FIELD CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.08 WARRANTY

- A. Provide 15 Year manufacturers replacement warranty to cover film against peeling, cracking, discoloration, and deterioration.

PART 2 PRODUCTS

2.01 MANUFACTURER'S

- A. Acceptable Manufacturer: Armoured One, LLC., Which is located at: 386 North Midler Ave. Syracuse, NY 13206. Tel: 315-720-4186; Email:info@armouredone.com; Web: www.armouredone.com.
- B. Requests for substitutions will be considered in accordance with provisions in Division 1.

2.02 MATERIALS

- A. Security Glazing Film:
 - 1. Transparent polyester film for permanent bonding to glass.
 - 2. Final installed product must be a minimum of 0.023 inches (23 Mil) thick.
 - a. Installing multiple layers of thinner film to accomplish the required thickness is not allowed.
 - 3. Adhesive Type: Pressure sensitive.
 - 4. FTD SA-C2 – Standard for shooter/attack certification, Class 1.
 - 5. Tensile Strength: ASTM D-882, 32,000 psi minimum.
 - 6. Breaking Strength: ASTM D-882, 640 lbs. / inch.
 - 7. Elongation at Break: ASTM D-882, 230%
 - 8. Haze: ASTM D1003, <4%
 - 9. Color b: ASTM D2244, 4.2
 - 10. Visible Light Transmission: 87%
 - 11. Visible Light Reflected (Int): 12%
 - 12. Visible Light Reflected (Ext): 12%
 - 13. UV Block:>99%
 - 14. Total Solar Energy Reflected: 11%
 - 15. Total Solar Energy Transmitted: 77%
 - 16. Total Solar Energy Absorbed: 12%
 - 17. Shading Coefficient: 0.93
 - 18. Total Solar Energy Rejected: 19%
 - 19. Solar Heat Gain Coefficient: 0.81
 - 20. U-Value Winter: 1.03
 - 21. K-Value Winter: 5.85
 - 22. Glare Reduction: 3%
 - 23. Surface Burning Characteristics: Flame spread index of 25, maximum, and smoke developed index of 450, maximum, when tested in accordance with ASTM E84 (Class A).
 - B. Retrofit existing glazing assemblies to provide impact resistance and forced/attack resistance complying with FTD SA-C1, ANSI Z97. I and CPSC 16 CFR 1201 Category II, ASTM E330, UL972, EN356 P4A, and GSA Level C as specified:
 - C. Provide supplemental anchoring system as required to meet forced entry resistance requirements.
 - D. Light Transmission of Film Applied on 1/4-inch-Thick Clear Annealed Glass:
 - 1. Visible light Transmittance: 86 percent.
-

- E. Anchoring System: DOW 995 or GE SCS2000 SilPruf Structural Sealant with high impact styrene trim.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Field -Applied Film: Verify that existing conditions are adequate for proper application and performance of film.
- B. Examine glass and frames, insure that existing conditions are adequate for proper application and
 - 1. Performance of film.
- C. Verify glass is not cracked, chipped, broken, or damaged.
- D. Verify that frames are securely anchored and free of defects.

3.02 PREPARATION

- A. Clean glass of dust, dirt, paint, oil, grease, mildew, mold, and other contaminants that would inhibit adhesion.
- B. Immediately prior to applying film, thoroughly wash glass with neutral cleaning solution.
- C. Protect adjacent surfaces.
- D. Do not begin installation until substrates have been properly prepared.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions, without air bubbles, wrinkles, streaks, bands, thin spots, pinholes, or gaps, as required to achieve specified performance.
- B. Accurately cut film with straight edges to required sizes allowing 1/16-inch to 1/8-inch gap at perimeter of glazed panel unless otherwise required by anchorage method.
- C. Seams. Seam film only as required to accommodate material sizes; seam without overlaps.
- D. Clean glass prior to film installation with neutral cleaning solution.
- E. Peel back release liner and apply film to glass. Using squeegees, push out solution between film and glass.
- F. Once film is installed, anchor the edges of the film by applying approved structural sealant and high impact styrene to the edges of the frames and film.
- G. Clean glass and excess structural sealants from finished surfaces
- H. Remove any labels or protective covers.

3.04 FILM VERIFICATION

- A. Awarded contractor will be required to verify that film installed meets the requirements highlighted in this bid. By submitting a bid, you as the contractor understand that three pieces of glass, chosen at random will be removed and film applied will be measured to verify that film installed meets specifications as requested. Film may need to be removed as part of the verification process.

3.05 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

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**SECTION 088853
SECURITY GLAZING**

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

1.03 SECTION INCLUDES

- A. Shooter/Attack Resistant Security Glazing
- B. Shooter/Attack Resistant Insulating Security Glazing

1.04 CODES AND REFERENCES

- A. FTD SA – Filti Testing and Development Shooter/Attack Certification.
- B. GSA Level C – General Services Administration Standard Test Method for Glazing and Window Systems Subject to Dynamic Overpressure Loadings.
- C. ASTM F1642 – Standard Test Method for Glazing and Glazing Systems Subject to Airblast Loadings
- D. UL972 – Standard for Burglary Resistant Glazing
- E. EN356 P4 – Testing Classification of Resistance Against Manual Attack
- F. ASTM E330 – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- G. 16 CFR 1201 – Safety Standard for Architectural Glazing Materials; Consumer Products Commission; current edition.
- H. ANSI Z97.1 – American National Standard for Safety Glazing Materials Used in Building, Safety Performance Specifications and Methods of Test; 2010.
- I. ASTM C 1036-06 – Standard Specification for Flat Glass
- J. ASTM C 1349-04 - Standard Specification for Architectural Flat Glass Polycarbonate
- K. NFPA 80 – Fire Doors and Windows.
- L. ICC/BC – International Building Code.
- M. NFPA 252 Standard Methods of Fire Tests of Door Assemblies.
- N. Tested in accordance with Underwriters Laboratory Standard for Positive Pressure Fire Tests of Door Assemblies UL9, UL10B and UL10C.
- O. State Building Codes, Local Amendments.

1.05 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Provide glazing systems produced by a manufacturer with not less than 5-years successful experience in the fabrication of assemblies of the type and quality required.
- B. Installer’s Qualifications: Glazed systems shall be installed by a firm that has not less than 5-years successful experience in the installation of systems like those required.
- C. Source Limitations for Glass: Obtain all glass products from a single manufacturer.
- D. Glass Product Testing: Obtain glass test results for product test reports in “Submittals” Article from a qualified independent agency.

1.06 SUBMITTALS

- A. Submit under provisions of Division 1
 - B. Product Data: Manufacturers data sheets of each product to be used, including:
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- C. Preparation instructions and recommendation
- D. Storage and handling requirements and recommendations
- E. Installation methods.
- F. Glazing Schedule:
- G. Use same designations indicated on Drawings.
- H. Listing types and thicknesses for each size, opening and location.
- I. Samples:
 - 1. Submit one 12" x 12" sample of each glass type specified
 - 2. Submit one sample of each glazing sealant and/or glazing tape for color review.
- J. Warranty: Warranty documents specified herein.
- K. Certifications:
- L. Certification that all sealants are fully compatible with the surfaces and finishes with which they are in applied.
- M. Certification that all products comply with the test methods listed under Paragraph 1.3 Codes and References.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's unopened and undamaged packaging, with manufacturer's labels intact.
- B. Protect glass and glazing materials from damage in ordinance with manufacturer's recommendations.

1.08 WARRANTIES

- A. Non-Rated Glass Units: Warrant for 10 years from date of Delivery to be free from delamination and failure of seals and not to develop material obstruction of vision, as a result of dust, moisture or film formation on internal glass surfaces.
- B. Low-E Glass: Warrant for 10 years from date of Delivery to be free of peeling or other deterioration of the Low-E coating.
- C. Glazing Sealants: Warrant for 10 years per sealant manufacturer's standard warranty of merchantable quality. Warranty shall certify that cured sealants:
- D. Will perform as a watertight weather-seal.
- E. Will not become brittle or crack due to weathering or normal expansion and contraction of adjacent surfaces.
- F. Will not harden beyond a Shore A durometer of 50, nor soften below a durometer of 10.
- G. Will not change color when used with compatible back-up materials.
- H. Will not bleed.

PART 2 – PRODUCTS

2.01 MANUFACTURER'S

- A. Acceptable Manufacturer: Armoured One, LLC.
- B. Requests for substitutions will be considered in accordance with provisions in Division 1.

2.02 MATERIALS

- A. Shooter/Attack Resistant Security Glass, Non-Rated: AOTSG516
 - 1. Glass Type SA-1.
 - 2. Thickness: 5/16"
 - 3. FTD SA-C2 – Standard for shooter/attack certification, Class 2.
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4. GSA Level C – General Services Administration Standard Test Method for Glazing and Window Systems Subject to Dynamic Overpressure Loadings.
 5. ASTM F1642 – Standard Test Method for Glazing and Glazing Systems Subject to Air blast Loadings.
 6. UL972 – Standard for Burglary Resisting Glazing.
 7. EN356 P4 – Testing and Classification of Resistance against manual attack.
 8. ASTM E330 – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 9. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Consumer Products Safety Commission; current edition.
 10. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test; 2010.
- B. Shooter/Attack Resistant Security Glass, Non-Rated Insulated: AOTSG1-IGU
1. Glass Type SA-2: Clear insulating panel
 2. Overall Thickness: 1"
 3. Outdoor light: ¼" Fully tempered
 - a. Coatings: Guardian, SunGuard, SNZ 51/23
 - b. Tint color: Light Gray
 4. Interspace content: Argon
 5. Indoor light: AOTSG516
 6. Winter nighttime U-factor: 0.24
 7. Visible Light Transmittance (VLT): 36%
 8. Solar heat gain Coefficient: 0.20 maximum
 9. Visible Light Reflectance Out: 9%
 10. Visible Light Reflectance In 13%
 11. FTD SA-C2 – Standard for shooter/attack certification, Class 2.
 12. GSA Level C – General Services Administration Standard Test Method for Glazing and Window Systems Subject to Dynamic Overpressure Loadings.
 13. ASTM F1642 – Standard Test Method for Glazing and Glazing Systems Subject to Air blast Loadings.
 14. UL972 – Standard for Burglary Resisting Glazing.
 15. EN356 P4 – Testing and Classification of Resistance against manual attack.
 16. ASTM E330 – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 17. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Consumer Products Safety Commission; current edition.
 18. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test; 2010.
- C. GLAZING MATERIAL
1. General: Provide standard color of glazing materials as selected by Architect. Comply with manufacturer's recommendations for applications and conditions at time of installation.
 2. 3M VHB 5952 – 3M (Anchoring tape applied on vision kits to adhere glazing to vision kit.)
 3. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.
 4. Setting Blocks: Neoprene, silicone or EPDM, 70-90 durometer hardness, with proven compatibility with glazing materials used.
 5. Spacers: Neoprene, silicone or EPDM, 40-50 durometer hardness with proven compatibility with glazing materials used.
 6. Compressible Fillers: Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, proven to be compatible with sealants used, flexible and resilient, with 5-10 psi compression strength for 25% deflection.
- D. FABRICATION
1. Cut glass to full fit and play, consistent with glass and glazing material manufacturers' recommendations and the requirements of the Drawings and References, Codes and
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- Standards Article.
2. Follow code requirements and glass manufacturer's recommendations for minimum bite and edge and face clearances.
 3. Cut lights to smooth straight edges, clean, free of nicks and flares; nipping not permitted. Follow glass manufacturer's directions exactly for tinted and Low-E glass
 4. Glass Identification:
 - a. Glazing in fire rated doors and fire rated windows shall bear UL classification marking in accordance with UL 9.
 - b. Manufacturer's and UL identifications for glazing shall be permanently etched to be visible after glass has been set in place and glazed.

PART 3 – EXECUTION

3.01 GENERAL

- A. Each glazing installation must withstand normal temperature changes, and impact loading without failure of glass, failure of sealants or gaskets, deterioration of glazing materials and other defects in the work.
- B. Protect glass from damage during handling and installation, and subsequent operation of glazed components of the work. Discard units with edge damage or other imperfections.
- C. Glazing channel dimensions are intended to provide for necessary bite on glass, minimum edge clearance, and adequate tape or sealant thicknesses, with reasonable tolerances.
- D. Comply with recommendations by manufacturers of glass and glazing products, except where more stringent requirements are indicated, including those of referenced glazing standards.

3.02 PREPARATION

- A. Clean glazing channel and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrate.
- B. Where sealants are used, apply primer or sealant to joint surfaces where recommended by sealant manufacturer.

3.03 INSTALLATION

- A. Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.
 - B. Where sealants are used at butt joints, apply sealant in thin continuous clear bead. Tool sealant to a uniform, continuous, even profile.
 - C. Apply glazing stops and clean up any excess structural sealants from finished surfaces.
 - D. Conform to recommendations of glass manufacturer where such covers points not shown on Drawings or specified herein.
 - E. Remove "loose" stops furnished with the units and reinstall as a part of the glazing operation.
 - F. Handle glass so as to prevent nicks and flares on glass edges.
 - G. Install glass exceeding 1/8" thickness on identical setting blocks permanently mounted and centered at 1/4 points. If necessary to reduce deflection of horizontal supporting member, blocks may be placed at 1/8 points or with the nearest end 6" (whichever is greater) from edge of glass unit. Ensure that blocks are equidistant from centerline of glass. Do not obstruct weep holes.
 - H. Provide permanently mounted edge blocks at head and jambs of dry-glazed lights to prevent damage to glass edges during installation and lateral shifting of glass due to thermal and seismic loads and vibrations. Follow recommendations of Flat Glass Marketing Assn. Glazing Manual.
 - I. Set glass to maintain bite, edge and face clearance stipulated by code and the glass manufacturer.
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- J. Take special precautions to protect laminated glass edges from deterioration of vinyl interlayer by moisture.
- K. Glaze dry-glazed aluminum doors and frames as per manufacturer's directions using glazing gaskets and seals furnished with the units.
- L. Miter gaskets at corners and install so as to prevent pulling away at corners. Gaskets with gaps or other visible irregularities on door and window units shall be corrected by manufacturer or fabricator at no additional cost to University.

3.04 PROTECTION AND CLEANING

- A. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.
- B. Wash and polish glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish Date of Substantial Completion in each area of project. Comply with glass manufacturer's recommendations for final cleaning.

END OF SECTION

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SECTION 092216
NON-STRUCTURAL METAL FRAMING**PART 1 GENERAL****1.01 RELATED DOCUMENTS**

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

1.02 SUMMARY

- A. Section Includes:
 - 1. Non-load-bearing steel framing systems for interior gypsum board assemblies.
- B. Related Requirements:
 - 1. Section 09 29 00 "Gypsum Board."

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.04 REFERENCES

- A. SSMA: Steel Stud Manufacturers Association

1.05 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For steel studs and runners, from ICC-ES.

PART 2 PRODUCTS**2.01 FRAMING SYSTEMS**

- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
 - 2. Protective Coating: hot-dip galvanized unless otherwise indicated.
- B. Studs and Runners: ASTM C 645. Use steel studs and runners.
 - 1. Steel Studs and Runners:
 - a. Minimum Base-Metal Thickness: 25 gauge or a 25 gauge equivalent high performance stud certified under SSMA code compliance program.
 - b. Depth: As indicated on Drawings.
- C. Slip-Type Head Joints: Where indicated, provide one of the following:
 - 1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch- deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
 - 2. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch- deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.
 - 3. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
 - 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) Dietrich Metal Framing; SLP-TRK Slotted Deflection Track.
 - 2) Superior Metal Trim; Superior Flex Track System (SFT).
 - 3) Marino ware: Deep Leg Deflection Track.

2.02 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
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1. Fasteners for Metal 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 one of the following:
 1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.
 2. 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

3.01 EXAMINATION

- A. Examine areas and substrates, with Installer present for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754.
 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install bracing at terminations in assemblies.
- C. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.03 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.
- B. Attach steel stud tracks to gypsum deck.
- C. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- D. Install studs so flanges within framing system point in same direction.
- E. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
- F. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

END OF SECTION

**SECTION 092900
GYPSUM BOARD**

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Interior gypsum board.
 - 2. Tile backing panels.

1.02 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For the following products:
 - 1. Trim Accessories: Full-size Sample in 12-inch long length for each trim accessory indicated.

1.03 QUALITY ASSURANCE

- A. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Install mockups for the following:
 - a. Each level of gypsum board finish indicated for use in exposed locations.
 - b. Each texture finish indicated.
 - 2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
 - 3. Simulate finished lighting conditions for review of mockups.
 - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.04 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.

1.05 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
 - B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.
-

- C. Low-Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- D. Food storage, preparation, and serving areas, toilet rooms, shower, and locker rooms, and similar areas shall have appropriate non-absorbent, impervious floor, ceiling and wall surfaces which will facilitate cleaning.

2.02 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.

2.03 INTERIOR GYPSUM BOARD

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. USG Corporation.
 - 2. Georgia Pacific
 - 3. National Gypsum
- B. Gypsum Wallboard: ASTM C 1396/C 1396M.
 - 1. Thickness: 5/8", unless noted otherwise.
- C. Gypsum Wallboard: Type X: ASTM C 1396/C 1396M.
 - 1. Thickness: 5/8", unless noted otherwise.
- D. Moisture and Mold-Resistant Abuse Resistant Gypsum Board: With moisture, mold-and impact resistant surfaces.complying with ASTM C473 and D3273
 - 1. Basis of design product: USG Mold Tough AR Firecode X Panels
 - 2. Impact Resistance: Level 2 per ASTM C1629
 - 3. Core: 5/8 inch, Type X.
 - 4. Long Edges: Tapered.
 - 5. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274
- E. Impact-Resistant Gypsum Board with polycarbonate backer per ASTM C 1396/C 1396M gypsum board, tested according to ASTM C 1629/C 1629M.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. USG Corporation.
 - b. Georgia Pacific
 - c. National Gypsum
 - d. Nudo: Secure Sheild
 - e. Pinnacle Armor: Corguard
 - 2. Core: 5/8 inch, Type X.
 - 3. Backer; 0.080 Polycarbonate.
 - 4. Surface Abrasion: ASTM C 1629/C 1629M, meets or exceeds Level 3 requirements.
 - 5. Indentation: ASTM C 1629/C 1629M, meets or exceeds Level 3 requirements.
 - 6. Hard-Body Impact: ASTM C 1629/C 1629M, meets or exceeds Level 3 requirements according to test in Annex A1.
 - 7. Long Edges: Tapered.
 - 8. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.04 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 and ASTM C 1288 or 1325, with manufacturer's standard edges.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. USG Corporation; DUROCK Cement Board.
 - 2. Thickness: As indicated.
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3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.05 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
 1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
 2. Shapes:
 - a. Cornerbead.
 - b. Bullnose bead.
 - c. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - d. L-Bead: L-shaped; exposed long flange receives joint compound.
 - e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
 - f. Expansion / Reveal joints.
 - 1) Manufacturer: Gordon Interior Specialties
 - 2) Product: Series 400 Wall Trim Reveals and Series 500 Wall Reveals
 - 3) Locations :As indicated
 - g. End Cap.
 - 1) Manufacturer: Gordon Interior Specialties
 - 2) Product: Series 911 End Cap
 - 3) Location: As indicated
 - h. Mullion Mate Adjustable Partition Closure
 - 1) Manufacturer: Gordon Interior Specialties
 - 2) Product: Mullion Mate 4
 - (a) Provide Series 911-EC -375
 - (b) Coverage: 4 to 4-15/16"
 - (c) Locations: End of wall and window framing and other locations as indicated.
 - 3) Product: Mullion Mate 5
 - (a) Provide Series 911-EC -375
 - (b) Coverage: 5 to 6-15/16"
 - (c) Locations: End of wall and window framing and other locations as indicated.

2.06 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 1. Interior Gypsum Board: Paper.
 2. Exterior Gypsum Soffit Board: Paper.
 3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
 4. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 3. Fill Coat: For second coat, use setting-type, sandable topping compound.
 4. Finish Coat: For third coat, use setting-type, sandable topping compound.
 5. Skim Coat: For final coat of Level 4 finish, use setting-type, sandable topping compound.
- D. Joint Compound for Tile Backing Panels:
 1. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.07 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
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- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
 - 1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Laminating 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."
- C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
 - 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- D. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. USG Corporation; SHEETROCK Acoustical Sealant.
 - 2. Acoustical joint sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 3. Acoustical joint sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
 - B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
 - C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch 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-
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to 3/8-inch wide joints to install sealant.

- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. 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. STC-Rated 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 C 919 and with manufacturer's written recommendations 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.

3.03 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Type X: As indicated on Drawings.
 - 2. Impact Resistant Type: As indicated on Drawings.
 - 3. Moisture- and Mold-Resistant Type: As indicated on Drawings.
- B. Single-Layer Application:
 - 1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
 - 2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
 - 3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.
- C. Multilayer Application:
 - 1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
 - 2. 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.
 - 3. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.04 APPLYING TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A108.11, at ceramic tile and where indicated.
 - B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.
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3.05 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 at locations indicated on Drawings.
- C. Interior Trim: Install in the following locations:
 - 1. Cornerbead: Use at outside corners unless otherwise indicated.
 - 2. Bullnose Bead: Use at outside corners where indicated.
 - 3. LC-Bead: Use at exposed panel edges.
 - 4. L-Bead: Use where indicated.
 - 5. U-Bead: Use where indicated.
 - 6. Curved-Edge Cornerbead: Use at curved openings.

3.06 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 - 2. Level 2: Panels that are substrate for tile.
 - 3. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.

3.07 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

**SECTION 095113
ACOUSTICAL PANEL CEILINGS**

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes acoustical panels and exposed suspension systems for ceilings.

1.02 ACTION SUBMITTALS

- A. Product Data: For each type of product, including proposed hanger wire anchors.
- B. Samples: For each exposed product and for each color and texture specified, 6 inches in size.

1.03 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For each acoustical panel ceiling suspension system, from ICC-ES.

1.04 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

1.05 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 Panels: Full-size panels equal to 2 percent of quantity installed.
 - 2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.

1.06 QUALITY ASSURANCE

- A. Test reports: Manufacturer will provide test certification for minimum requirements as tested in accordance with applicable industry standards and/or to meet performance standards specified by various agencies.
- B. Changes from system: System performance following any substitution of materials or change in assembly design must be certified by the manufacturer.
- C. All ceiling panel cartons must contain UL label for acoustical compliance.
- D. All suspension system cartons must contain UL label for load compliance per ASTM C635.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site in original, unopened packages 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.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.08 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, 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.
 - 1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to Seismic Category C.
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1. Provide manufacturer's approved and tested seismic assembly complying with:
 - a. American Society of Civil Engineers 7-05: Minimum Design Loads for Buildings and Other Structures.
 - b. CISCA: Guidelines for Seismic Restraint Direct Hung Suspended Ceiling Assemblies Seismic Zones 3 & 4.
- B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials. Finish units not less than 5/8" thick, with flame spread of 25 or less complying with ASTM E-84. Classrooms, and meeting rooms shall be provided with an acoustical ceiling tile with a minimum Noise Reduction Coefficient (NRC) rating of 0.65.
 2. Smoke-Developed Index: 25 or less.
- C. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.02 ACOUSTICAL PANELS, GENERAL

- A. Low-Emitting Materials: Acoustical panel ceilings 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. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system from single source from single manufacturer.
- C. Glass-Fiber-Based Panels: Made with binder containing no urea formaldehyde.
- D. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances unless otherwise indicated.
 1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface according to ASTM E 795.
- E. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.
 1. Where appearance characteristics of acoustical panels are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

2.03 ACOUSTICAL PANELS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide "Fine Fissured" by Armstrong World Industries or comparable product by one of the following:
 1. USG Corp.
 2. CertainTeed Corp.
 - B. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern as follows:
 1. Type and Form: Type III, mineral base with painted finish; Form 2, water felted.
 2. Pattern: E (lightly textured).
 - C. Fire Classification: Class A.
 - D. Color: White.
 - E. NRC: Not less than 0.70.
 - F. CAC: Not less than 35.
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- G. Edge/Joint Detail: Square.
- H. Thickness: 5/8 inch.
- I. Modular Size: 24 by 24 inches.

2.04 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension-System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635/C 635M.
 - 1. High-Humidity Finish: Comply with ASTM C 635/C 635M requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes are indicated.
- B. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- C. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
 - 1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 - 2. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch- diameter wire.
- D. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.
- E. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch- thick, galvanized-steel sheet complying with ASTM A 653/A 653M, G90 coating designation; with bolted connections and 5/16-inch- diameter bolts.
- F. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.
- G. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.
- H. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical panels in place.

2.05 METAL SUSPENSION SYSTEM

- 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. Armstrong World Industries, Inc.
 - 2. CertainTeed Corp.
 - 3. Chicago Metallic Corporation.
 - 4. USG Interiors, Inc.; Subsidiary of USG Corporation.
- B. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 coating designation; with prefinished 15/16-inch- wide metal caps on flanges.
 - 1. Structural Classification: Heavy-duty system.
 - 2. End Condition of Cross Runners: Override (stepped) or butt-edge type.
 - 3. Face Design: Flat, flush.
 - 4. Cap Material: Steel or aluminum cold-rolled sheet.
 - 5. Cap Finish: Match panel color.
 - 6. Basis of Design: Armstrong Prelude XL 15/16" Exposed Tee.

2.06 METAL EDGE MOLDINGS AND TRIM

- 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. Armstrong World Industries, Inc.
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2. CertainTeed Corp.
 3. Chicago Metallic Corporation.
 4. USG Interiors, Inc.; Subsidiary of USG Corporation.
- B. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum 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. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.
 2. Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils. Comply with ASTM C 635/C 635M and coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

2.07 ACOUSTICAL SEALANT

- 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. Acoustical Sealant for Exposed and Concealed Joints:
 - a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
 - b. USG Corporation; SHEETROCK Acoustical Sealant.
 - B. Acoustical Sealant: Manufacturer's standard sealant complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 1. Exposed and Concealed Joints: Nonsag, paintable, nonstaining latex sealant.
 2. Acoustical sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 EXECUTION

3.01 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.

3.02 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, and comply with layout shown on reflected ceiling plans.

3.03 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
 1. Fire-Rated Assembly: Install fire-rated ceiling systems according to tested fire-rated design.
 - 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
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- 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 either to structures 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, including intermediate framing members, 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 and publications.
- 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 post installed 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, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Ceiling Perimeter (Seismic Considerations): Install edge moldings (7/8" minimum) and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Tee ends shall be tied together with manufacturer supplied Stabilizer Bars or other approved means to prevent the tees from spreading apart.
 2. Maintain a 3/8" clearance between the ends of the suspension members and the wall. The unattached ends of the suspension members shall rest upon and be free to slide perpendicularly to the perimeter molding.
 3. Alternate Perimeter Attachment: When approved by local code officials install 7/8" edge molding with grid manufacturers Seismic Clip accessory in lieu of stabilizer bars.
- F. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- G. 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 a neat, precise fit.
1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
-

2. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
3. For reveal-edged panels on suspension-system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension-system surfaces and panel faces flush with bottom face of runners.
4. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
5. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.04 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. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 096513
RESILIENT BASE AND ACCESSORIES**PART 1 GENERAL****1.01 SUMMARY**

- A. Section Includes:
 - 1. Resilient base.
 - 2. Resilient molding accessories.

1.02 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of product indicated.

1.03 QUALITY ASSURANCE

- A. 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.

1.04 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 50 deg F or more than 90 deg F.

1.05 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 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 95 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

1.06 EXTRA MATERIALS

- A. Furnish extra materials described below that match the products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Resilient Base and Moldings: provide 5% extra stock of the total installed quantity for each color, style, and size installed.

PART 2 PRODUCTS**2.01 THERMOPLASTIC-RUBBER BASE**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Armstrong World Industries, Inc.
 - 2. Burke Mercer Flooring Products; a division of Burke Industries Inc.
 - 3. Johnsonite; A Tarkett Company.
 - 4. Nora Systems, Inc.
 - 5. Roppe Corporation, USA.
 - B. Products: Subject to compliance with requirements, provide the basis of design product indicated by Architect or the following equivalent products matching the basis of design products, characteristics and color:
-

-
1. Approved equal.
 - C. Colors: As selected by Architect from full range of industry colors
 - D. Product Standard: ASTM F 1861, Type TP (rubber, thermoplastic).
 1. Group: I solid, homogeneous
 2. Style and Location:
 - a. Style B, Cove: Provide in areas with resilient flooring
 - 1) Profile: As indicated
 - E. Thickness: 0.125 inch
 - F. Height: 4".
 - G. Lengths: Cut lengths 48 inches long or coils in manufacturer's standard length.
 - H. Outside Corners: Job formed or preformed.
 - I. Inside Corners: Job formed or preformed.

2.02 RESILIENT MOLDING ACCESSORY (TS)

- A. Resilient Molding Accessory:
 1. Basis-of-Design Product: Subject to compliance with requirements, available products that may be incorporated into the Work include, but not limited to the products indicated by Architect.
- B. Description:
 1. Reducer strip for resilient floor covering
 2. Joiner for tile
 3. Carpet Transition strips.
- C. Material: Vinyl
- D. Colors and Patterns: To be determined by Architect from manufacturer's full range of standard colors and patterns.

2.03 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, Portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
 1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Cove Base Adhesives: Not more than 50 g/L.
 - b. Rubber Floor Adhesives: Not more than 60 g/L.

PART 3 EXECUTION

3.01 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.

3.02 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
-

- B. 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.
- C. 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.
- D. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.03 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. Preformed Corners: Install preformed corners before installing straight pieces.
- H. Job-Formed Corners:
 - 1. Inside Corners: Use straight pieces of maximum lengths possible.

3.04 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of carpet that would otherwise be exposed.

3.05 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.
- 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.

END OF SECTION

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**SECTION 096519
RESILIENT TILE FLOORING**

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Vinyl composition floor tile.

1.02 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- 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 special patterns.
- C. Samples: Full-size units of each color and pattern of floor tile required.
 - 1. For heat-welding bead, manufacturer's standard-size Samples, but not less than 9 inches long, of each color required.
- D. Samples for Initial Selection: For each type of floor tile indicated.
- E. Samples for Verification: Full-size units of each color and pattern of floor tile required.
 - 1. For heat-welding bead, manufacturer's standard-size Samples, but not less than 9 inches long, of each color required.

1.03 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.04 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.05 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. Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.06 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 and seaming method indicated.
 - 1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

1.08 FIELD 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. After installation and 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

2.01 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient tile flooring, 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.
- B. FloorScore Compliance: Resilient tile flooring shall comply with requirements of FloorScore certification.
- C. Low-Emitting Materials: Flooring system shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.02 VINYL COMPOSITION FLOOR TILE

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - 1. Armstrong World Industries, Inc.
- B. Products: Standard Excelon Multicolor
- C. Color: "Harlequin White: 52505".
- D. Tile Standard: ASTM F 1066, Class 2, through-pattern tile.
- E. Wearing Surface: Smooth.
- F. Thickness: 0.125 inch
- G. Size: 12 by 12 inches.

2.03 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.
 - 1. Products:
 - a. Ardex Feather Finish
 - b. Mapei Planipatch
- B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.
 - 1. Adhesives shall comply with the following limits for VOC content:
 - a. Vinyl Composition Tile Adhesives: 50 g/L or less.
 - 2. Adhesives shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- C. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.
 - B. Proceed with installation only after unsatisfactory conditions have been corrected.
-

3.02 PREPARATION

- A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F 710.
 - 1. Apply moisture vapor barrier (Basis of Design: Laticrete DRYTEK Moisture Vapor Barrier) over new concrete slabs. Install per manufacturer's written instructions.
 - 2. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - a. Coordinate removal of existing flooring systems with the selective demolition and asbestos abatement specifications.
 - 3. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
 - a. If Solvent methods are used to remove asbestos mastics comply with the procedures outlined in the asbestos abatement specifications regarding solvent removal of mastics.
 - 4. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
 - 5. Moisture Testing: Proceed with installation only after substrates pass testing according to floor tile manufacturer's written recommendations, but not less stringent than the following:
 - a. Perform anhydrous calcium chloride test according to 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 according to ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level.
- C. Floor Preparation Sequence
 - 1. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
 - 2. Flash Patch and Skim Coat the entire floor surface. Lightly sand ridges and bumps using a commercial grade floor sander to produce uniform and smooth substrate.
- D. Do not install floor tiles until they are the same temperature as the space where they are to be installed.
 - 1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.03 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.
 - C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
 - 1. Lay tiles in pattern of colors and sizes indicated.
 - D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
 - E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
-

- F. 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 marking device.
- G. 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.
- H. 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.

3.04 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile 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, adhesive, and blemishes from floor tile surfaces before applying liquid floor polish.
 - 1. Apply three coat(s).
- E. Joint Sealant: Apply sealant to resilient terrazzo floor tile perimeter and around columns, at door frames, and at other joints and penetrations.
- F. Sealers and Finish Coats: Remove soil, visible adhesive, and surface blemishes from resilient terrazzo floor tile surfaces before applying liquid cleaners, sealers, and finish products.
 - 1. Sealer: Apply two base coats of liquid sealer.
 - 2. Finish: Apply three coats of liquid floor finish.
- G. Cover floor tile until Substantial Completion.

END OF SECTION

**SECTION 099113
EXTERIOR PAINTING**

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes surface preparation and the application of paint systems on exterior substrates.

1.02 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523, a matte flat finish.
- B. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523, a high-side sheen flat, velvet-like finish.
- C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523, an eggshell finish.
- D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523, a satin-like finish.
- E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523, a semi-gloss finish.
- F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523, a gloss finish.

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples for Initial Selection: For each type of topcoat product.
- C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
 - 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.
- D. 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. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.
 - 3. VOC content.

1.04 CLOSEOUT SUBMITTALS

- A. Coating Maintenance Manual: Provide coating maintenance manual including area summary with finish schedule, area detail designating location 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.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Handling: Deliver products to Project site in an undamaged condition in manufacturer's original sealed containers, complete with labels and instructions for handling, storing, unpacking, protecting, and installing. Packaging shall bear the manufacture's label with the following information:
 - 1. Product name and type (description).
 - 2. Batch date.
 - 3. Color number.
 - 4. VOC content.
 - 5. Environmental handling requirements.
-

6. Surface preparation requirements.
 7. Application instructions.
- B. 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.

1.06 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
- C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company products indicated or comparable product from one of the following:
1. Benjamin Moore & Co.
 2. Devoe
 3. Glidden Professional, Division of PPG Architectural Finishes, Inc.
 4. M.A.B. Paints.
 5. PPG Architectural Finishes, Inc.

2.02 PAINT, GENERAL

- A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."
- B. Material Compatibility:
1. Provide materials for use within each paint 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 paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- C. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.
- D. Colors: As selected by the architect

PART 3 EXECUTION

3.01 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. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers. Where acceptability of substrate conditions is in question, apply samples and perform in-situ testing to verify compatibility, adhesion, and film integrity of new paint application.
1. Report, in writing, conditions that may affect application, appearance, or performance of paint.
- B. Proceed with coating application only after unsatisfactory conditions have been corrected; application of coating indicates acceptance of surfaces and conditions.
- a. Application of coating indicates acceptance of surfaces and conditions.

3.02 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.
- B. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- C. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.03 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
 - 3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
 - 4. Paint entire exposed surface of window frames and sashes.
 - 5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.04 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.05 EXTERIOR PAINTING SCHEDULE

- A. Galvanized-Metal
 - 1. Water-Based Light Industrial Coating System:
 - a. Prime Coat: Shop primer specified in Section where substrate is specified.
 - b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
 - c. Topcoat: Light industrial coating, exterior, water based, gloss, (Gloss Level 6), MPI #164: S-W Pro Industrial Acrylic Gloss Coating, B66-600 Series, at 2.5 to 4.0 mils dry, per coat.

END OF SECTION

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**SECTION 099123
INTERIOR PAINTING**

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes surface preparation and the application of paint systems on interior substrates.

1.02 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523, a matte flat finish.
- B. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523, a high-side sheen flat, velvet-like finish.
- C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523, an eggshell finish.
- D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523, a satin-like finish.
- E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523, a semi-gloss finish.
- F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523, a gloss finish.

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. CLOSEOUT SUBMITTALS
- C. Coating Maintenance Manual: Provide coating maintenance manual including area summary with finish schedule, area detail designating location 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.

1.04 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. Provide in unopened cans no larger than 1 gallon in size.
- B. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.05 QUALITY ASSURANCE

- A. Contractor Qualifications: Contractor and contractor's staff shall have a minimum 5 years' satisfactory experience in jobs similar in size and nature of the work of this contract. Upon request provide list of projects with references for work performed in the last 5 years.
 - B. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Mock up required at the following locations.
 - a. Classroom walls
 - b. Toilet Room walls.
 - C. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - 1. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
 - 2. Other Items: Architect will designate items or areas required.
 - D. Final approval of color selections will be based on mockups.
 - 1. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
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- E. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
- F. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Handling: Deliver products to Project site in an undamaged condition in manufacturer's original sealed containers, complete with labels and instructions for handling, storing, unpacking, protecting, and installing. Packaging shall bear the manufacturer's label with the following information:
 - 1. Product name and type (description).
 - 2. Batch date.
 - 3. Color number.
 - 4. VOC content.
 - 5. Environmental handling requirements.
 - 6. Surface preparation requirements.
 - 7. Application instructions.
- B. 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.

1.07 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
- C. Lead Paint: Lead paint may be present in buildings and structures to be painted. Refer to Division 2 for report. Examine report to become aware of locations where lead paint is present.
 - 1. Use Lead Safe Work Practices in accordance with US Dept.of Housing and Urban Development. All employees working with Lead based paint Materials shall have HUD approved training.
 - 2. Do not disturb lead paint or items suspected of containing hazardous materials except under procedures specified.
 - 3. Perform preparation for painting of substrates known to include lead paint in accordance with EPA Renovation, Repair and Painting Rule and additional requirements of authorities having jurisdiction.

PART 1 PRODUCTS

2.01 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Benjamin Moore & Co. products indicated or comparable product from one of the following:
 - 1. Sherwin-Williams Company.
 - 2. Devoe
 - 3. Glidden Professional, Division of PPG Architectural Finishes, Inc.
 - 4. Pratt & Lambert.
- B. Colors: As indicated.

2.02 PAINT, GENERAL

- A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."
 - B. Material Compatibility:
-

1. Provide materials for use within each paint 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 paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.
1. Flat Paints and Coatings: 50 g/L.
 2. Nonflat Paints and Coatings: 150 g/L.
 3. Dry-Fog Coatings: 400 g/L.
 4. Primers, Sealers, and Undercoaters: 200 g/L.
 5. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
 6. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
 7. Pretreatment Wash Primers: 420 g/L.
 8. Floor Coatings: 100 g/L.
 9. Shellacs, Clear: 730 g/L.
 10. Shellacs, Pigmented: 550 g/L.
- D. Low-Emitting Materials: Interior paints and coatings 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."

2.03 PATCHING MATERIALS

- A. Wood Patching Compound: 2-part polyester or epoxy-resin wood compound with a 10- to 15-minute cure at 70 deg F, in knife grade formulation and recommended by manufacturer for type of wood repair indicated. Compound shall be produced for filling damaged wood materials that have deteriorated due to weathering and exposure. Filler shall be capable of filling deep holes and capable of spreading to featheredge.
- B. Metal Patching Compound: 2-part polyester-resin metal patching compound with a 10- to 15-minute cure at 70 deg F, in knife grade formulation and recommended by manufacturer for type of metal repair indicated. Compound shall be produced for filling metal that has deteriorated due to corrosion. Filler shall be capable of filling deep holes and capable of spreading to featheredge.
- C. Interior Plaster Patching Compound: Provide spackle and plaster patching compounds and repair materials specifically manufactured for surface preparation and sanding prior to repainting.
1. Keene's Cement.
- D. CLEANING MATERIALS
1. Detergent Cleaning Solution: Mix 2 cups of tetrasodium polyphosphate, 1/2 cup of laundry detergent, 5 quarts of 5 percent sodium hypochlorite bleach, and 15 quarts of warm water for each 5 gal. of solution required.
 2. Job-Mixed Mold, Mildew, and Algae Remover: Mix 2 cups of tetrasodium polyphosphate, 5 quarts of 5 percent sodium hypochlorite bleach, and 15 quarts of hot water for every 5 gal. of solution required.
 3. Paint Deglosser: "Paint Deglosser" Item No. 42124 by Zinsser Company, Inc., or comparable product by an approved manufacturer.

PART 1 EXECUTION

3.01 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. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers. Where acceptability of substrate conditions is in question, apply samples and perform in-situ testing to verify compatibility, adhesion, and film integrity of new paint application.
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1. Report, in writing, conditions that may affect application, appearance, or performance of paint.
- B. Substrate Conditions:
 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: 12 percent.
 2. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
 3. Plaster Substrates: Verify that plaster is fully cured.
 4. Spray-Textured Ceiling Substrates: Verify that surfaces are dry.
- C. Proceed with coating application only after unsatisfactory conditions have been corrected; application of coating indicates acceptance of surfaces and conditions.
 - a. Application of coating indicates acceptance of surfaces and conditions.

3.02 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates indicated.
 - B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
 - C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
 - D. Glossy surfaces of old paint films shall be cleaned and dulled prior to re-painting
 - E. Fill any open joints of metal walls and metal ceilings with a paintable caulk. Remove existing prior to application.
 - F. Fill all joints between metal walls and wood casings with a paintable caulk. Remove existing prior to application.
 - G. Plaster surfaces: Fill and patch any cracks in plaster surfaces. Sand surfaces to minimize the surface profile of cracked and peeling areas. Eliminate defects causing abrupt surface profile differences exceeding 1/32"
 - H. Cracks, holes, bulges or gouges in wall and ceiling surfaces shall be spackled and sanded smooth. Loose, peeling, blistering, chalking and scaling paint shall be removed to the refusal point by scraping. Resulting edges of all areas so scraped shall be spackled to a feathered edge and sanded smooth when dry.
 - I. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
 1. Concrete Floors: Remove oil, dust, grease, dirt, and other foreign materials. Comply with SSPC-SP-13/NACE 6 or ICRI 03732.
 - J. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceed that permitted in manufacturer's written instructions.
 - K. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any.
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1. Remove all rust with wire brushes. If areas of rust still remain, use a chemical rust remover to remove the last traces, or as much of the rust as is possible.
- L. 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.
- M. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- N. Aluminum Substrates: Remove loose surface oxidation.
- O. Wood Substrates:
 1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 2. Sand surfaces that will be exposed to view, and dust off.
 3. Prime edges, ends, faces, undersides, and backsides of wood.
 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 5. Wood surfaces scheduled to be finished with an opaque finish shall be sanded as required to produce a smooth substrate for application of the new coatings. Correct new and existing abrupt surface profile differences exceeding 1/32"
- P. Wood Floors: wood surfaces scheduled to be refinished with a transparent finish shall have existing coating stripped and sanded prior to application of new coatings
- Q. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.03 APPLICATION

- A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
 1. Use applicators and techniques suited for paint and substrate indicated.
 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
 - B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
 - C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
 - D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
 - E. 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.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
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- e. Metal conduit.
 - f. Plastic conduit.
 - g. Tanks that do not have factory-applied final finishes.
 - h. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other 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 other paintable jacket material.
 - h. Other items as directed by Architect.
- F. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.04 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.
- E. Do not paint over name plates or instruction labels. Keep sprinkler heads free of paint

3.05 INTERIOR PAINTING SCHEDULE

- A. See Room Paint Schedule on A204.

END OF SECTION

SECTION 130700
NATURAL VOICE RAIL TRANSACTION WINDOW**PART 1 GENERAL****1.01 REFERENCE**

- A. Underwriters Laboratory UL 752-Standard for Bullet Resisting Equipment & ASTM E119-98-Standard Test Methods for Fire Tests of Building Construction and Materials, NIJ Standard 0108.01-(National Institute of Justice) Standard for Ballistic Resistant Protective Materials, ASTM B 209/B 209M- Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate, ASTM A 666-Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar.

1.02 SUBMITTALS

- A. Submit for approval prior to fabrication: samples, product data (including preparation, storage and installation methods), cuts & anchor spacing, reinforcement & location , product specifications, shop drawings, test reports (current UL Listing Verification & UL 752 Test Results as provided by Underwriters Laboratories), and printed data in sufficient detail to indicate compliance with the contract documents.
- B. Manufacturer's Instructions for installation and cleaning of Bullet Transaction Window Assemblies. All required submittals shall be approved prior to installation.

1.03 DESIGN PERFORMANCE

- A. Through the design, manufacturing techniques and material application the Natural Voice Rail Transaction Window shall be of the "non-ricochet" type. This design is intended to permit the encapture and retention of an attacking projectile lessening the potential of a random injury or lateral penetration. This design shall employ a spacer within the frame to allow for natural sound transmission. Each transaction position shall have a stainless-steel dip tray. Components must be manufactured in strict accordance with the specifications, design and details. All vision panels shall be cut to size with all exposed edges polished. Necessary holes shall be pre-drilled and tapped where required. Stainless Steel assembly screws and acrylic spacers shall be provided. Frame and channel shall be provided.
- B. No field alterations to the construction of the units fabricated under the acceptable standards shall be allowed unless approved by the manufacturer. Standard manufacturing tolerances shall be +/- 1/16".
- C. Materials shall meet or exceed UL 752 requirements.

1.04 QUALITY ASSURANCE

- A. Manufacturer shall be a Company that specializes in manufacturing products of the specified type with a minimum of five years' experience. Installer shall be a Company that specializes in product type specified and Certified for the installation by the manufacturer. Manufacturer shall provide a Mock-up for evaluation of surface preparation and application workmanship and color/finish to the Architect for approval prior to start of work.

1.05 DELIVERY, STORAGE & HANDLING

- A. Handle the materials with care to prevent damage. Store materials inside and under cover, stack flat and off floor. Project conditions (temperature, humidity, and ventilation) shall be within the maximum limit recommendations set by manufacturer. Do not install products that are under conditions outside these limits.

1.06 WARRANTY

- A. All materials shall be warranted against defects for a period of 1 year for the date of Substantial Completion. Certificates of manufacturer's standard limited warranty shall be provided at project completion.

PART 2 PRODUCTS**2.01 ACCEPTABLE MANUFACTURERS**

- A. Basis-of-Design: Products shall be manufactured by: Total Security Solutions, Inc, 170 National Park Drive, Fowlerville, MI 48836, 800-513-1468. Attn: Sales Department, info@tssbulletproof.com. Web: www.tssbulletproof.com.

2.02 BULLET RESISTANT NATURAL VOICE RAILS TRANSACTION WINDOW

- A. Basis of Design: Product shall be: TSS Natural Voice Rails Transaction Window. The window system consists of custom prefabricated bullet resistant glazing section with secure air passage through frames with black foam & wood spacers as required for natural voice transmission. Includes frame with plastic laminate base and recessed cash tray. All accessories for installation shall be included.
- B. Glazing Options:
 - 1. Bullet-Resisting Glazing Material:
 - a. Bullet Resistant Level 3
 - 1) 1 1/4" LP 1250 Laminated
 - 2) TSS 003 L/S
- C. Provide a counter 1 1/2" thick with a recessed stainless steel cash tray. The counter to be full width of window, 18" deep, centered under the glazing and covered with a black high-pressure laminate.
- D. Aluminum frame to be manufactured in accordance with ASTM B209, Extruded aluminum alloy 6063 T5 powder coated finish (color to be black) and be free of sharp edges or burrs when in place. Glazing Channel: U-Channel specifically designed for securing transparencies tightly in place. Angles and stops are only acceptable for top attachment.
 - 1. The bottom of the glazing to be capped with corresponding material on the frame.
- E. Product size shall be: As indicated on drawings (36" maximum width, 48" maximum height).

PART 3 EXECUTION**3.01 PREPARATION**

- A. Prior to installing the bullet resistant material, the contractor shall verify that all supports have been installed as required by the manufacturer, and approved shop drawings.
- B. Clean and prepare all surfaces per manufacturer's written recommendations for achieving the best results for the substrate under the project conditions.

3.02 INSTALLATION

- A. Do not begin installation until openings have been verified and surfaces properly prepared in accordance with manufacturer's written instructions. Install in accordance with manufacturer's instructions and UL 752. Set all equipment plumb.
- B. Natural Voice Rail Transaction Window: shall arrive on site as a completed unit. Unit shall be installed in provided opening and secured to structure.

3.03 POST APPLICATION

- A. Natural Voice Rail Transaction Window: shall be installed in accordance with manufacturer's printed recommendations, including adhering to anchoring and finishing details.
- B. Inspection and Cleaning: Verify installation is complete and complies with manufacturer's requirements. Clean product and accessories, removing excess sealant, labels and protective covers.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

- D. Product Warranty: Applicable warranty shall be issued to owner upon final release of completed project.

END OF SECTION

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SECTION 230000
GENERAL PROVISIONS FOR MECHANICAL WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Requirements of this Section apply to work in every Section of Division 23 equally as if incorporated therein.

1.02 WORK INCLUDED

- A. Work included in Division 23 - Mechanical: Materials, equipment, fabrication, installation, and tests in conformity with applicable codes and authorities having jurisdiction for Mechanical Work covered by all sections within this Division.

1.03 SCOPE

- A. Division of the Specification into sections is for the purpose of simplification alone. Responsibility for the work of various trades shall rest with the Contractor. Various sections of this Division are related to each other as well as the mechanical drawings. Examine all drawings and read all applicable parts of the project manual in order to ensure complete execution of all work in this Division, coordinating where required with other trades in order to avoid conflicts.
 - B. These specifications and accompanying drawings are intended to cover the furnishing of all labor, materials, equipment and services necessary for the complete installation and acceptable performance of the mechanical systems. Small items of material, equipment and appurtenances not mentioned in detail or shown on the drawings, but necessary for complete and operating systems shall be provided by this contractor without additional charge to the Owner and shall be included under this contract.
 - C. In general, specifications establish the quality of material, equipment and workmanship. The contract documents are intended to secure for the Owner, a first-class installation in every respect. Labor shall be performed by skilled mechanics, and the entire facility, when delivered to the Owner, shall be ready for satisfactory and efficient operation.
 - D. The Contractor shall carefully examine the drawings and specifications before accepting the contract. He shall call attention to any changes or additions which, in his opinion, are necessary to make possible the fulfillment of any guarantee called for by these specifications; failing which, it shall be deemed that he has accepted full responsibility for all such guarantees.
 - E. The contractor shall put his work in place as fast as is reasonably possible. He shall, at all times, keep a competent foreman in charge of the work, to make decisions necessary for the diligent advancement of the work. The Contractor shall facilitate the inspection of the work by the Owner's Representative.
 - F. The Contractor shall coordinate all work in the building in order to facilitate intelligent execution of the work. He shall also remove any rubbish as expeditiously as possible.
 - G. Materials or products specified herein and/or indicated on the drawings by trade's names, manufacturer's names, model number or catalog numbers establish the quality of materials or products to be furnished. Model numbers are to be confirmed by the manufacturer to provide required capacities and material to meet the specifications and design intent. In no instance shall an obsolete, incomplete or inaccurate trade name, manufacturer name, model number or catalog number indicated on the drawings, result in additional charges to the owner.
 - H. Points of connection or continuation of work under this contract are so marked on drawings or herein specified. In case of any doubt as to the required exact location of such points, the Owner's Representative shall decide and direct.
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- I. The plumbing contractor shall provide water services to within two (2) feet of HVAC equipment requiring same, and shall terminate service with a shutoff valve. The mechanical contractor shall make the final connection to the equipment.

1.04 REFERENCE STANDARDS, CODES AND REGULATIONS

- A. Requirements of Regulatory Agencies:
 1. Nothing contained in these specifications or shown on the drawings shall be construed to conflict with any State or local laws, ordinances, rules and regulations, the UL and NFPA regulations. The Contractor shall make all changes required by the enforcing authorities. Where alterations to and / or deviations from the Contract Documents are required by the authorities having jurisdiction, report the requirements to the Engineer and secure acceptance before work is started. All such changes shall be made in a manner acceptable to the Engineer and shall be made without cost to the Owner.
 2. When drawings or specifications exceed requirements of applicable laws, ordinances, rules and regulations, comply with documents establishing the more stringent requirement. All work shall be done in full conformity with the requirements of all authorities having jurisdiction. Installation shall be made in compliance with all applicable regulations, and utility company rules, all of which shall be considered a part of this specification and shall take precedence in the order of listing.
 3. It is not the intent of drawings or specifications to repeat requirements of codes except where necessary for completeness in individual sections.
 - B. Published specifications, standards, tests or recommended method of trade, industry or governmental organizations as listed below apply to all work in this Division, in addition to other standards which may be specified in individual sections:
 1. Associated Air Balance Council
 2. Air Diffuser Balance Council
 3. Air Moving and Conditioning Association
 4. American Gas Association
 5. American National Standards Institute
 6. Air Conditioning and Refrigeration Institute
 7. American Society of Heating, Refrigeration and Air Conditioning Engineers
 8. American Society of Mechanical Engineers
 9. American Society for Testing and Materials
 10. Cast Iron Soil Pipe Institute
 11. ETL Testing Laboratories
 12. Factory Mutual Engineering and Research Corporation
 13. National Standard Plumbing Code
 14. National Electrical Manufacturer's Association
 15. National Fire Protection Association
 16. National Board of Fire Underwriters
 17. National Electric Code
 18. Occupational Safety and Health Administration
 19. Plumbing Drainage Institute
 20. Sheet Metal & Air Conditioning Contractors National Association
 21. Underwriters Laboratories, Inc.
 - C. Furnish and file with the proper authorities, all drawings required by them in connection with the work. Contractor shall secure and obtain all approvals, permits, licenses and inspections and pay all legal and proper fees and charges in this connection, before commencing work in order to avoid delays during construction. He shall deliver the official records of the granting of the permits, etc., to the Owner's Representative.
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1.05 QUALITY ASSURANCE

- A. All equipment and accessories to be the product of a manufacturer regularly engaged in its manufacture.
- B. Supply all equipment and accessories new and free from defects.
- C. Supply all equipment and accessories in compliance with the applicable standards listed in Article 1.4 of this section with all applicable national, state and local codes.
- D. All items of a given type shall be the product of same manufacturer.

1.06 DESCRIPTION OF BID DOCUMENTS

- A. Specifications:
 - 1. Specifications, in general, describe quality and character of materials and equipment.
 - 2. Specifications are of simplified form and include incomplete sentences.
 - 3. Words or phrases such as "The Contractor shall", "shall be", "furnish", "provide", "a", "an", "the", and "all" may have been omitted for brevity.
- B. Drawings: Mechanical drawings under this contract are made a part of these specifications. Deviations from these specifications as noted below must have the approval of the Engineer or Construction Manager without an increase in contract price.
 - 1. The drawings shall be considered as being diagrammatic and for bidding purposes only. Intention is to show size, capacity, approximate location, direction and general relationship of one work phase to another, but not exact detail or arrangement. The attention of the contractor is called to the fact that while these drawings are generally to scale and are made as accurately as the scale will permit, all critical dimensions shall be determined in the field. They are not to be considered as erection drawings.
 - 2. The drawings do not indicate every fitting, elbow, offset, valve, etc. which is required to complete the job. Contractor shall prepare field erection drawings as required for the use of his mechanics to insure proper installation.
 - 3. Scaled and figured dimensions are approximate and are for estimating purposes only. Indicated dimensions are limiting dimensions.
 - 4. Before proceeding with work check and verify all dimensions in field.
 - 5. Assume all responsibility for fitting of materials and equipment to other parts of equipment and structure.
 - 6. Make adjustments that may be necessary or requested in order to resolve space problems, preserve headroom, and avoid architectural openings, structural members and work of other trades.
 - 7. For exact locations of building elements, refer to dimensional Architectural/Structural drawings.
- C. Description of systems: Provide all materials to provide functioning systems in compliance with performance requirements specified, and any modifications resulting from reviewed shop drawings and field coordinated drawings.
 - 1. Installation of all systems and equipment is subject to clarification as indicated in reviewed shop drawings and field coordination drawings.
- D. Do not use equipment exceeding dimensions indicated or equipment or arrangements that reduce required clearances or exceed specified maximum dimensions.
- E. If any part of Specifications or Drawings appears unclear or contradictory, apply to Architect for his interpretation and decision as early as possible, including during bidding period.
 - 1. Do not proceed with work without Engineer's decision.

1.07 EQUIPMENT MANUFACTURERS

- A. The first named manufacturer is used as the basis of design. Other named manufacturers are identified as equivalent manufacturers, not equivalent products. Naming other manufacturers does not necessarily imply conformance of any specific product with the written specifications.

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- B. The contractor is required to verify that equipment and material to be used on the project meets the requirements of the specifications and will physically fit the available space, clearance and service requirements of the particular piece of equipment and include all pertinent information when he submits material for acceptance. Contractor shall also be responsible for and bear the cost of any modifications to openings available or anticipated as being available for rigging equipment to its final installation place. This shall include openings in exterior envelope, walls and roofs, interior walls, corridors, passage ways or door openings. Any on site dismantling and any reassembly of equipment made necessary by impediment to the rigging of said equipment shall be the sole responsibility of the contractor.
 - C. Contract document indicates power and physical requirements based on the equipment manufacturer's data as first named. If equipment requiring more system capacity is furnished, the contractor shall be responsible for the cost associated with modifying the design and installation of associated services, including any redesign costs associated with the engineer's review.

1.08 DEFINITIONS

- A. "Provide": To supply, furnish, install and connect up complete and ready safe and regular operation of particular work referred to unless specifically noted.
 - B. "Install": To erect, mount and connect complete with related accessories.
 - C. "Supply", "Furnish": To purchase, procure, acquire and deliver complete with related accessories.
 - D. "Work": Labor, materials, equipment, apparatus, controls, accessories, and other items required for proper and complete installation.
 - E. "Piping": Pipe, tube, fittings, flanges, valves, controls, strainers, hangers, supports, unions, traps, drains, insulation, and related items.
 - F. "Wiring": Raceway, fittings, wire, boxes and related items.
 - G. "Concealed": Items referred to as hidden from normal sight, embedded in masonry or other construction, installed in furred spaces, within double partitions or hung ceilings, in trenches, in crawl spaces, or in enclosures.
 - H. "Exposed": Not installed underground or "concealed" as defined above.
 - I. "Indicated", "Shown", or "Noted": As indicated, shown or noted on drawings or specifications.
 - J. "Directed": Directed by Engineer.
 - K. "Similar" or "Equal": Of base bid manufacture, equal in materials, weight, size, design, and efficiency of specified product.
 - L. "Reviewed", "Satisfactory", or "Directed": As reviewed, satisfactory, or directed by or to Engineer.
 - M. "Motor Controllers": Manual or magnetic starters (with or without switches), individual pushbuttons or hand-off-automatic (HOA) switches controlling the operation of motors.
 - N. "Control or Actuating Devices": Automatic sensing and switching devices such as thermostats, pressure, float, electro-pneumatic switches and electrodes controlling operation of equipment.
 - O. "Remove": Dismantle, demolish and take away from the site and dispose of in accordance with all applicable rules and regulations or, should the Owner so require, deliver to a location as designated by the Owner for the use of the Owner, at no additional costs to the Owner.
 - P. "Replace": Remove existing and provide an equivalent product or material as specified.
 - Q. "Extract (and Reinstall) ": Carefully disassemble, dismantle existing, save or store where directed by the Owner, in such a manner as to preserve the existing condition and reinstall as indicated on the drawings or as described in the specifications.
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- R. Where any device or piece of equipment is referred to in the singular number, such reference shall be deemed to apply to as many devices as are required to complete the installation.

1.09 JOB CONDITIONS

- A. This contractor shall investigate all conditions affecting his work and shall provide such offsets, fittings, valves, sheet metal work, etc., as may be required to meet conditions at the building.
- B. The contractor shall verify all measurements at the building site and shall be responsible for the correctness of same before ordering materials or before starting work of any Section.
1. Report to Architect, in writing, conditions which will prevent proper provision of this work.
 2. Beginning work of any Section without reporting unsuitable conditions to Architect constitutes acceptance of conditions by Contractor.
 3. Perform any required removal, repair or replacement of this work caused by unsuitable conditions at no additional cost to Owner.
- C. Piping and ductwork shall be concealed or run behind furring in finished spaces unless otherwise noted to be run exposed.
- D. Horizontal piping and ductwork not run below slabs on grade shall be run as close as possible to underside of roof or floor slab above and parallel to building lines. Maintain maximum headroom in all areas.
- E. Determine possible interference between trades before the work is fabricated or installed. The contractor must coordinate his work to insure that erection will proceed without such interference. Coordination is of paramount importance and no request for additional payment will be considered where such request is based upon interference between trades.
- F. Connections to Existing Work:
1. Install new work and connect to existing work with minimum of interference to existing facilities.
 2. Temporary shutdowns of existing services:
 3. At no additional charges
 - a. At times not to interfere with normal operation of existing facilities.
 - b. Only with written consent of Owner.
 4. Maintain continuous operation of existing facilities as required with necessary temporary connections between new and existing work.
 5. Restore existing disturbed work to original condition.
- G. Removal, extraction and relocation of existing work.
1. The work includes demolition or removal of all construction indicated or specified. All materials resulting from demolition work, except as indicated or specified otherwise, shall become the property of the Contractor and shall be removed from the site. Rubbish and debris shall be removed from the site daily unless otherwise directed so as to not allow accumulation inside or outside the building. Materials that cannot be removed daily shall be stored in areas specified by the Owner.
 2. Title to all materials and equipment to be demolished, excepting Owner salvage and historical items, is vested in the Contractor upon receipt of notice to proceed. The Owner will not be responsible for the condition, loss or damage to such property after notice to proceed.
 3. The Owner reserves the "Right of First Refusal" on all material for salvage. Material for salvage shall be stored as approved by the Owner. Salvage materials shall be removed from the site before completion of the Contract. Material for salvage shall not be sold on the site.
 4. Property of the Owner: Salvaged items remaining the property of the Owner shall be removed in a manner to prevent damage and packed or crated to protect the items from damage while in storage or during shipment and relocated by the contractor at no cost, to the Owners designated storage facility on the site. Containers shall be properly identified
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- as to contents.
5. Damaged Items: Items damaged during removal or storage shall be repaired or replaced to match existing.
 6. Disconnect, remove or relocate material, equipment, plumbing fixtures, piping and other work noted and required by removal or changes in existing conditions.
 7. Where existing pipes, conduits and/or ducts which are to remain prevent installation of new work as indicated, relocate, or arrange for relocation, of existing pipes, conduits, and/or ducts.
 8. Provide new material and equipment required for relocated equipment.
 9. Plug or cap active piping or ductwork behind or below finish.
 10. Do not leave long dead-end branches.
 - a. Cap or plug as close as possible to active line.
 11. Remove unused piping, ductwork and equipment.
 12. Dispose of unusable piping, ductwork and material.

1.10 CLEARANCE FROM ELECTRICAL EQUIPMENT

- A. Piping or ductwork:
 1. Prohibited, except as noted, in:
 - a. Electric rooms and closets.
 - b. Telephone rooms and closets.
 - c. Elevator machine rooms.
 - d. Electric switchboard room.
 2. Prohibited, except as noted, over or within 5 ft. of:
 - a. Transformers.
 - b. Substations.
 - c. Switchboards.
 - d. Motor control centers.
 - e. Standby power plant.
 - f. Bus ducts.
 - g. Electrical panels.
 3. Drip pans under piping:
 - a. Only where unavoidable and approved.
 - b. 18 gauge galvanized steel.
 - 1) With bituminous paint coating.
 - c. Reinforced and supported.
 - d. Watertight.
 - e. With 1-1/4 inch drain outlet piped to floor drain or service sink.

1.11 TEMPORARY FACILITIES

- A. Temporary facilities are not included within this Section.

1.12 SPECIAL TOOLS

- A. Furnish to Owner at completion of work:
 1. One set of any special tools required to operate, adjust, dismantle or repair equipment furnished under any section of the Division.
 2. "Special tools": those not normally found in possession of mechanics or maintenance personnel.
 3. One pressure grease gun for each type of grease required.
 - a. With adapters to fit all lubricating fittings on equipment.
 - b. Include lubricant for lubricated plug valves.
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1.13 PRODUCT DELIVERY, HANDING AND STORAGE

- A. Provide adequate and secure storage facilities for materials and equipment during the progress of the work.
- B. Contractor shall be responsible for the condition of all materials and equipment employed in the mechanical installation until final acceptance by the Owner. Protect same from any cause whatsoever.
- C. Where necessary, ship in crated sections of size to permit passing through available space.
- D. Ship equipment in original packages, to prevent damaging or entrance of foreign matter.
- E. Handle and ship in accordance with manufacturer's recommendations.
- F. Provide protective coverings during construction.
- G. Replace at no expense to Owner, equipment or material damaged during storage or handling, as directed by Engineer.
- H. Tag all items with weatherproof tag, identifying equipment by name and purchase order number.
- I. Include packing and shipping lists.
- J. Adhere to special requirements as specified in individual sections.

1.14 PROTECTION OF MATERIALS

- A. Protect from damage, water, dust, etc., material, equipment and apparatus provided under this Division, both in storage and installed, until Notice of Completion has been filed.
- B. Provide temporary storage facilities for materials and equipment.
- C. Material, equipment or apparatus damaged because of improper storage or protection will be rejected.
 - 1. Remove from site and provide new, duplicate, material, equipment, or apparatus in replacement of that rejected.
- D. Cover motors and other moving machinery to protect from dirt and water during construction. Rotate moving equipment, shafts, bearings, motors etc. to prevent corrosion and to circulate lubricants.
- E. Protect premises and work of other Divisions from damage arising out of installation of work of this Division.
 - 1. Contractor shall be responsible for the replacement of all damaged or defective work, materials or equipment. Do not install sensitive or delicate equipment until major construction work is completed.
 - 2. Remove replaced parts from premises.
- F. Make good any damage to the work caused by floods, storms, accidents, acts of God, acts of negligence, strikes, violence or theft up to time of final acceptance by the Owner.
- G. Do not leave any mechanical work in a hazardous condition, even temporarily.

1.15 REVIEW OF CONSTRUCTION

- A. Work may be reviewed at any time by representative of the Engineer.
 - B. Advise Architect and Engineer that work is ready for review at following times:
 - 1. Prior to backfilling buried work.
 - 2. Prior to concealment of work in walls and above ceilings.
 - 3. When all requirements of Contract have been completed.
 - C. Neither backfill nor conceal work without Engineer's consent.
 - D. Maintain on job a set of Specifications and Drawings for use by Engineer's representatives.
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1.16 SCHEDULE OF WORK

- A. Arrange work to conform to schedule of construction established or required to comply with Contract Documents.
- B. In scheduling, anticipate means of installing equipment through available openings in structure.
- C. Confirm in writing to Architect and Engineer, within 30 days of signing of contract, anticipated number of days required to perform test, balance, and acceptance testing of mechanical systems.
 - 1. This phase must occur after completion of mechanical systems, including all control calibration and adjustment, and requires substantial completion of the building, including closure, ceilings, lighting, partitioning, etc.
 - 2. Submit for approval at this time, names and qualifications of test and balancing agencies to be used.
- D. Arrange with Owner schedule for work in each area.
- E. Unless otherwise directed by Owner, perform work during normal working hours.
- F. Work delays:
 - 1. In case noisy work interferes with Owner's operations, Owner may require work to be stopped and performed at some other time, or after normal working hours.

1.17 ACCESS TO MECHANICAL WORK

- A. Access doors in walls and ceilings.
- B. Access Units Fire-Resistance Ratings: Where fire-resistance rating is indicated for construction penetrated by access units, provide UL listed-and-labeled units, except for units which are smaller than minimum size requiring ratings as recognized by governing authority.
- C. Product Data, Access Units: Submit manufacturer's technical data and installation instructions for each type of access door assembly, including setting drawings, templates, instructions and directions for installation of anchorage devices.
- D. Furnish to the general contractor all access doors necessary for access through inaccessible wall or ceiling construction, for installation by the general contractor. Information on the size and location of the subject access doors is to be communicated in writing to the general contractors during the bidding period.

1.18 CONCRETE FOR MECHANICAL WORK

- A. Concrete for Mechanical Work
 - 1. Basins and curbs for mechanical equipment.
 - 2. Mechanical equipment foundations and housekeeping pads.
 - 3. Inertia bases for isolation of mechanical work.
 - 4. Rough grouting in and around mechanical work.
 - 5. Patching concrete cut to accommodate mechanical work.
- B. Quality control testing for concrete is required as work of this section.
- C. Concrete Work Codes and Standards:
 - 1. Comply with governing regulations and, where not otherwise indicated, comply with the following industry standards; whichever is the most stringent in its application to work in each instance.
 - a. ACI 301: "Specifications for Structural Concrete for Buildings"
 - b. ACI 311: "Recommended Practice for Concrete Inspection"
 - c. ACI 318: "Building Code Requirements for Reinforced Concrete"
 - d. ACI 347R: "Recommended Practice for Concrete Form work"
 - e. ACI 304R: "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete"

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- f. Concrete Reinforcing Steel Institute's, "Manual of Standard Practice"
 - D. Submittals: Shop Drawings, Mechanical Concrete Work: Submit shop drawings for structural type concrete work, showing dimensions of formed shapes of concrete; bending, placement, sizes and spacing of reinforcing steel; location of anchors, isolation units, hangers and similar devices to be integrated with concrete work; and piping penetrations, access openings, inlets and other accessories and work to be accommodated by concrete work.
 - E. Laboratory Test Reports, Mechanical Concrete Work: Submit laboratory test reports for concrete work materials, and for tested samples of placed concrete (where required as work of this section).

1.19 NOISE REDUCTION

- A. Cooperate in reducing objectionable noise or vibration caused by mechanical systems.
 - 1. To extent of adjustments to specified and installed equipment and appurtenances.
- B. Correct noise problems caused by failure to install work in accordance with Contract Documents.
 - 1. Include labor and materials required as result of such failure.

1.20 CUTTING AND PATCHING

- A. Provide all carpentry, cutting and patching required for proper installation of material and equipment specified.
- B. Do not cut or drill structural members without consent of Architect.

1.21 COORDINATION DRAWINGS

- A. Layout Shop Drawings Required:
 - 1. Prepare layout shop drawings for all areas; minimum 3/8 inch scale.
 - 2. Individual coordinated trade layout drawings are to be prepared for all areas.
 - 3. General Contractor is to assure that each trade has coordinated work with other trades, prior to submittal where submittal is required.
 - a. Include stamp on each submittal indicating that layout shop drawing has been coordinated.
 - 4. No layout shop drawing will be reviewed without stamped and signed coordinated assurance by General Contractor.
 - 5. All changes shall be clearly marked on each submitted layout drawing.
 - 6. Drawings shall show work of all trades including but not limited to'
 - a. Ductwork.
 - b. Piping: All Trades.
 - c. Mechanical Equipment.
 - d. Electrical Equipment.
 - e. Main Electrical conduits and bus ducts.
 - f. Equipment supports and suspension devices.
 - g. Structural and architectural constraints.
 - h. Show location of:
 - 1) Valves
 - 2) Piping specialties
 - 3) Dampers
 - 4) Access Doors
 - 5) Control and electrical panels
 - 6) Disconnect switches
 - 7. Drawings shall indicate coordination with work in other Divisions that must be incorporated in mechanical spaces, including, but not limited to:
 - a. Elevator equipment.
 - b. Cable trays not furnished under Division 16.

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- c. Computer equipment.
 8. Submission of drawings:
 - a. Prepare reproducible drawings.
 - b. Submit to other trades for review of space allocated to all trades.
 - c. Revise drawings to compensate for requirements of existing conditions and conditions created by other trades.
 - d. Review revisions and other trades.
 - e. Submit one reproducible and one blue-line print to Engineer for review.
 9. Final prepared drawings shall show that other trades affected have made reviews and signed, by each trade, at completions of coordination.
 - a. General Contractor
 - b. Include stamp on each submittal indicating that layout shop drawing has been coordinated.
 10. No layout shop drawing will be reviewed without stamped and signed coordination assurance by General Contractor.
- B. Shop Drawings:
1. Layout drawings of mechanical equipment rooms and penthouses showing all related equipment and equipment clearances required by other trades.
 2. Layout drawings of areas in which it may be necessary to deviate substantially from layout shown on the drawings. Minor transitions in ductwork, if required due to job conditions, need not be submitted as long as the duct area is maintained. Show major relocation of ductwork and major changes in size of ducts. Coordinate shop drawings with all trades prior to ductwork fabrication.
 3. Details of intermediate structural steel members required to span main structural steel for the support of ductwork.
 4. Method of attachment of duct hangers to building construction.
 5. Duct material, gage, type of joints and duct reinforcing for each size range, including sketches or SMACNA plate numbers for joints, method of fabrication and reinforcing.

1.22 GUARANTEE

- A. Furnish guarantee covering all work in accordance with general requirements of the contract for minimum period of one year. This personal guarantee shall exist for a period of one (1) year from the date of final acceptance of the work and shall apply to defects in materials and to defective workmanship of any kind.
 - B. For factory-assembled equipment and devices on which the manufacturers furnish standard published guarantees as regular trade practice, obtain such guarantees and replace any such equipment that proves defective during the life of these guarantees.
 - C. Guarantee all work for which materials are furnished, fabricated or field erected by the contractor, all factory-assembled equipment for which no specific manufacturer's guarantee is furnished, and all work in connection with installing manufacturer's guarantee is furnished, and all work in connection with installing manufacturer's guaranteed equipment.
 - D. In the event of failure of any work, equipment or device during the life of the guarantee, repair or replace the equipment or defective work. Remove, replace or restore, at no cost to the Owner, any part of the structure or building which may be damaged either as the direct result of the defective work or in the course of the contractor's making replacement of the defective work or materials. Work shall be done at a time and in a manner as to cause no undue inconvenience to the Owner. Provide new materials, equipment, apparatus and labor to replace that determined by Engineer to be defective or faulty.
 - E. This guarantee also applies to services including Instructions, Adjusting, Testing, Noise, Balancing, etc.
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- F. Additional equipment and material guarantees and warranties may be indicated in other sections. In all cases, the more stringent guarantee or warranty shall be provided.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT QUALITY

- A. Material and equipment furnished under this Division of specification shall be new. Defective or inferior materials must be replaced by contractor at no cost to Owner regardless of the stage of construction. Inferior material shall be defined as material or equipment of a quality or performance less than that specified as determined by the Owner's Representative.
- B. Provide each item of equipment with manufacturer's identification tag which is readily accessible and clearly shows model and size.

2.02 ACCESS TO MECHANICAL WORK

- A. Access Doors:
1. General: Where walls and ceilings must be penetrated for access to mechanical work, access doors shall be provided. Furnish adequate size for intended and necessary access. Furnish doors with UL Fire Rating to match wall or ceiling construction. Furnish manufacturer's complete units, of type recommended for application in indicated substrate construction, in each case, complete with anchorages and hardware.
- B. Access Door Construction: Refer to Section 083113 – ACCESS DOORS AND FRAMES

PART 3 - EXECUTION

3.01 FIELD QUALITY CONTROL

- A. Tests:
1. Perform as specified in individual sections, and as required by authorities having jurisdiction.
 2. Duration as noted.
- B. Provide required labor, material, equipment, and connections.
- C. Furnish written report and certification those tests have been satisfactorily completed.
- D. Repair or replace defective work, as directed.
- E. Pay for restoring or replacing damaged work due to tests as directed.
- F. Pay for restoring or replacing damaged work of others, due to tests, as directed.

3.02 ACCESS TO MECHANICAL WORK

- A. Coordinate installation and placement of access doors and panels with contractor for general construction.
- B. Remove or replace panels or frames that are warped, bowed, or otherwise damaged.

END OF SECTION

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SECTION 230002
MECHANICAL AND ELECTRICAL COORDINATION

PART 1 - GENERAL**1.01 WORK INCLUDED**

- A. Work Included in This Section: Materials, equipment, fabrication, installation, and tests in conformity with applicable codes and authorities having jurisdiction for the following:
1. Motors.
 2. Factory-wired equipment (FWE).
 3. Factory-wired control panels (FWCP).
 4. Motor controllers where provided as part of mechanical equipment.
 5. Motor controllers where supplied under Division 23 - Mechanical Work.
 6. Disconnects and safety switches for mechanical equipment.
 7. Fuses for equipment provided, and starters and disconnect switches.
 8. Emergency Pushbutton Operator Station.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 23 - HVAC Instrumentation and Controls, Motors.
B. Installation and Power Wiring of Motor Controllers.

1.03 REFERENCE STANDARDS

- A. Published specifications standards, tests, or recommended methods of trade, industry or governmental organization as apply to work in this section where cited below:
1. ANSI - American National Standards Institute.
 2. NEMA - National Electrical Manufacturer's Association.
 3. IEEE - Institute of Electrical and Electronic Engineers.

1.04 QUALITY ASSURANCE

- A. All equipment and accessories to be the product of a manufacturer regularly engaged in its manufacture.
B. Supply all equipment and accessories new and free from defects.
C. Supply all equipment and accessories in compliance with the applicable standards listed in Article 1.03 of this Section and with all applicable National, State and local codes.
D. All items of a given-type shall be the products of the same manufacturer.

1.05 DIVISION OF WORK

- A. This section delineates the work required to be performed by Contractors under Division 23 and Division 26.

1.06 WORK REQUIRED UNDER DIVISION 23

- A. Furnish motors, manual and combination starters, pushbutton devices, contactors, disconnect switches, electric thermostats, low voltage transformers, Emergency Break Glass Stations and other electrical devices required for equipment furnished.
B. Install all items in piping and ductwork such as control valves, aquastats, ductstats, etc.
C. All external wiring of equipment, all temperature control wiring, external wiring of control circuits of magnetic starters, interlocking wiring, boiler wiring, Emergency Break Glass Stations, and mounting of control devices, etc., shall be included under Division 23. All external wiring shall be in conduit. (Unless specifically shown to be provided by the Electrical Contractor)
D. The Electrical Contractor, under Division 26, shall furnish and install all power wiring and conduit to junction box, to disconnect switch on unit, to motor starters and contactors, and between motor starters and contactors to motor or other load. Electrical Contractor shall be
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responsible for proper direction of rotation for all three phase equipment. The Electrical Contractor shall mount all starters, disconnects.

- E. Wiring required under Division 23 shall comply with the specifications as described in Division 26.
- F. The Plumbing Contractor, under Division 22, shall provide water and natural gas services to within two (2) feet of HVAC equipment requiring same and terminating with shut-off valves. The HVAC Contractor, under Division 23, shall make final connections to equipment.
- G. Provide disconnect switches or safety switches for equipment. (Unless specifically shown to be provided by the Electrical Contractor, starters and disconnects shown on the electrical drawings are for installation and do not require the Electrical Contractor to furnish units)
- H. Emergency Generator - Exhaust muffler and flexible exhaust connection shall be furnished by the generator manufacturer under Division 26. Installation of the exhaust system including providing piping, insulation and accessories shall be included under Division 23.

1.07 SUBMITTALS

- A. Shop Drawings: Complete wiring diagrams of all power and control connections (standard diagrams will not be accepted). Deliver 2 copies of approved wiring diagrams to the Electric Contractor for installation of wiring and connections required under the Electric Contract.
- B. Product Data for Motor Controllers and Disconnect Switches: Manufacturer's catalog sheets, specifications and installation instructions. Submit enclosure type coordinated for service and location. Submit simultaneously with product data required for motors. Identify each controller for use with corresponding motor. Submit shop drawings and product data in accordance with project requirements.
- C. All warranties shall be delivered as part of the close-out submission.
- D. A receipt shall be delivered as part of the close-out submission that states all required spare parts have been delivered to the owner. This receipt must be signed and dated by the owner.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Motor Controllers and Disconnects
 1. Square D
 2. Allen-Bradley
 3. General Electric
 4. Cutler-Hammer

2.02 MOTOR CONTROLLERS

- A. General: All starters shall be correctly sized to motor connected thereto. Provide one (1) additional auxiliary contact over and above that normally furnished, at least two (2) required. Provide overload heaters for each phase. Coordinate starters and controllers with the temperature control Contractor and sequence of operations.
 - B. Minimum Size: The minimum allowable size of single or three phase magnetic motor controller is NEMA size 0.
 - C. Enclosures: Unless otherwise indicated furnish NEMA 1 enclosures, except where installed outdoors furnish NEMA 3R enclosures.
 - D. Control Power: Furnish control power transformer (maximum control voltage 120 volts) mounted within each magnetic motor controller enclosure.
 - E. Pilot Lights: Furnish pilot lights of the neon lamp type mounted in the controller enclosure, green for running, red for not running.
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2.03 MOTOR CONTROLLER TYPES:

- A. Type A (Full Voltage, Manual, Non-Magnetic):
 - 1. Allen-Bradley Co. Bulletin 609 (or Bulletin 600 - single phase, 1 HP or less only).
 - 2. General Electric Co. CR-1062 (or CR-101 - single phase, 1 HP or less only).
 - 3. Cutler-Hammer. B100 (or MS - single phase, 1 HP or less only).
- B. Type A2 (2 Speed, 2 Winding, Full Voltage, Manual, Non-Magnetic):
 - 1. Allen-Bradley Co. Bulletin 609TS (or Bulletin 600 - single phase, 1 HP or less only).
 - 2. General Electric Co. CR-1062 (or CR-101 - single phase, 1 HP or less only).
 - 3. Square D Co. Class 2512, Type M (or Class 2512, Type F - single phase, 1 HP or less only).
- C. Type B (Full Voltage Magnetic):
 - 1. Allen-Bradley Co. Bulletin 709.
 - 2. General Electric Co. CR-206.
 - 3. Square D Co. Class 8536.
 - 4. Cutler-Hammer. ECN05.
- D. Type B-COM (Combination Full Voltage Magnetic/Safety Switch):
 - 1. Allen-Bradley Co. Bulletin 712.
 - 2. General Electric Co. CR-208.
 - 3. Square D Co. Class 8538.
 - 4. Cutler-Hammer. ECN16.
- E. Type B2 (2 Speed, 2 Winding, Full Voltage, Magnetic):
 - 1. Allen-Bradley Co. Bulletin 715.
 - 2. General Electric Co. CR209.
 - 3. Square D Co. Class 8810.
 - 4. Cutler-Hammer. ECN33.
- F. Type C (Automatic, Reduced Voltage, Magnetic):
 - 1. Allen-Bradley Co. Bulletin 746.
 - 2. General Electric Co. CR-231.
 - 3. Square D Co. Class 8606.
 - 4. Cutler-Hammer. ECA42.
- G. Type C-COM (Combination Automatic, Reduced Voltage, Magnetic/ Safety Switch):
 - 1. Allen-Bradley Co. Bulletin 746C.
 - 2. Square D Co. Class 8606.
 - 3. Cutler-Hammer. ECA43.
- H. Type D (Part Winding, Magnetic):
 - 1. Allen-Bradley Co. Bulletin 736.
 - 2. General Electric Co. CR-230.
 - 3. Square D Co. Class 8640.
 - 4. Cutler-Hammer. ECA45.

2.04 REMOTE PUSH BUTTON STATIONS

- A. Start-Stop with pilot light in NEMA 1 enclosure unless otherwise indicated.
 - 1. Allen-Bradley Co. Bulletin 800S.
 - 2. General Electric Co. CR-2943.
 - 3. Square D Co. Class 9001.
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4. Cutler-Hammer. Class 10250.

2.05 SAFETY SWITCHES

- A. General Electric Co. Type TH; Square D Co. Heavy Duty Series; Cutler-Hammer HD Series; with the following:
 1. Fused switches equipped with fuseholders to accept only the fuses specified in Section 16181 (U.L. Class RK-1, RK-5, L).
 2. NEMA 1 enclosure unless otherwise indicated on drawing or required. 3R for devices installed outdoors.
 3. Switch rated 240V for 120V, 208V, 240V, circuits; 600 V for 277V, 480V circuits.
 4. Switch rated 600V for 277V, 480V circuits.
 5. Solid neutral bus when neutral or grounding conductor is included with circuit.
 6. Current rating and number of poles as indicated on drawings.

2.06 NAMEPLATES

- A. Phenolic Type: Standard phenolic nameplates with 3/8" minimum size lettering engraved thereon.
- B. Embossed Aluminum: Standard stamped or embossed aluminum tags: Tech Products, Inc., Seton Name Plate Corp.

2.07 EMERGENCY PUSHBUTTON OPERATOR STATION

- A. Acceptable Manufacturer: Square D or equal.
- B. Switch Style: Class 9001, NEMA 4 rated emergency mushroom head pushbutton.
- C. Voltage: 120VAC, 60Hz as required.
- D. Contacts: 20A, 2-NO/2-NC contact.
- E. Operation: Manual.
- F. Normal position: Operator out.
- G. Activated position: Operator in.
- H. Reset: Manual, turn to release.
- I. Enclosure: NEMA 4.

2.08 CUSTOM LEGEND PLATE

- A. "EMERGENCY BOILER SHUTOFF"

PART 3 - EXECUTION

3.01 GENERAL

- A. Equipment shall be connected in a neat and skillful manner. Equipment delivered with terminal boxes that are inadequate shall be equipped with special boxes that suit the conditions by the Mechanical Contractor furnishing the equipment.
 - B. In general, rigid conduit or tubing shall be used, but equipment that requires movement or that would transmit vibration to conduit shall be wired with flexible (liquid tight) steel conduit not over 18" long.
 - C. All equipment shall be grounded with a green-covered ground wire run inside the conduit and connected to equipment frame on one end and to grounding system on the other end.
 - D. All electrical work required in the Mechanical Contract shall conform to the applicable requirements of Division 26 of these Specifications.
 - E. The Heating, Ventilating, and Air Conditioning Contractor shall assign all Electrical Work required under his contract to the approved Automatic Temperature Control Contractor, who shall perform this work with qualified electricians employed by that Contractor.
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- F. The Mechanical Contractors shall cooperate with the Contractor for Electrical Work in making all necessary tests and in receiving, storing, and setting all motor-driven equipment, electrical devices, and controls furnished and/or installed under these contracts.
 - G. Install heaters correlated with full load current of motors provided.
 - H. Set overload devices to suit motors provided.

3.02 INSTALLATION

- A. Control Wiring:
 - 1. Provide control wiring and connections.
 - 2. Where control circuit interlocking is required between individually mounted motor controllers, provide a single pole on-off switch in a threaded type box mounted adjacent to motor safety switches which are remote from the control transformer (to enable interlock circuit to be opened when the motor safety switch is opened).
- B. Nameplates: Rivet or bolt the nameplate on the cover of NEMA 1 enclosures. Rivet or bolt and gasket the nameplate on cover of NEMA 3R or NEMA 12 enclosures. Provide phenolic or embossed aluminum nameplates as follows:
 - 1. On each remote control station, indicating motor controlled.
 - 2. On each interlock circuit switch, indicating purpose of switch.
- C. Emergency Pushbutton Operator Station: Wire all switches in series with boiler control branch circuits.

3.03 TYPES OF MOTOR CONTROLLERS REQUIRED FOR SINGLE SPEED MOTORS (SYSTEMS UNDER 250 VOLTS)

- A. Single Phase Motors Less than 5 HP - Manually Operated: Type A.
- B. Single Phase Motors Less than 1/2 HP - Automatically Operated: Type A.
- C. Single Phase Motors 1/2 to 5 HP - Automatically Operated: Type B.
- D. Three Phase Squirrel Cage Motors Less than 7-1/2 HP: Type B (B-COM when indicated on drawings).
- E. Three Phase Squirrel Cage Motors 7-1/2 HP and Larger: Type C (C-COM when indicated on drawings).
- F. Three Phase Hermetically Sealed Compressor Motors Less than 7-1/2 HP: Type B.
- G. Three Phase Hermetically Sealed Compressor Motors 7-1/2 HP and Larger: Type D.

3.04 TYPES OF MOTOR CONTROLLERS REQUIRED FOR SINGLE SPEED MOTORS (277/480 VOLT SYSTEM)

- A. Single Phase Motors Less than 5 HP - Manually Operated: Type A.
 - B. Single Phase Motors Less than 1 HP - Automatically Operated: Type A.
 - C. Single Phase Motors 1 to 5 HP - Automatically Operated: Type B.
 - D. Three Phase Squirrel Cage Motors Less than 15 HP: Type B (B-COM when indicated on drawings).
 - E. Three Phase Squirrel Cage Motors 15 HP and Larger: Type C (C-COM when indicated on drawings).
 - F. Three Phase Hermetically Sealed Compressor Motors Less than 15 HP: Type B.
 - G. Three Phase Hermetically Sealed Compressor Motors 15 HP and Larger: Type D.
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3.05 TYPES OF MOTOR CONTROLLERS REQUIRED FOR 2 SPEED MOTORS (SYSTEMS UNDER 250 VOLTS)

- A. Single Phase Motors Less than 5 HP - Manually Operated: Type A2.
- B. Single Phase Motors Less than 1/2 HP - Automatically Operated: Type A2.
- C. Single Phase Motors 1/2 to 5 HP - Automatically Operated: Type B2.
- D. Three Phase Squirrel Cage Motors Less than 7-1/2 HP: Type B2.

3.06 TYPES OF MOTOR CONTROLLERS REQUIRED FOR 2 SPEED MOTORS (277/480 VOLT SYSTEM)

- A. Single Phase Motors Less than 5 HP - Manually Operated: Type A2.
- B. Single Phase Motors Less than 1 HP - Automatically Operated: Type A2.
- C. Single Phase Motors 1 to 5 HP - Automatically Operated: Type B2.
- D. Three Phase Squirrel Cage Motors Less than 15 HP: Type B2.

3.07 DISCONNECTS

- A. Motor Controllers: Provide safety switch for all motor controllers. Provide combination type starter-disconnect unless otherwise noted on drawings.
- B. Motors: Provide a disconnect switch for all motors. Provide a separate safety switch for motors which are not within sight of the starter.
- C. Provide safety switches for all factory packaged equipment.
- D. Provide NEMA 3R safety switch for all rooftop and outdoor equipment.
- E. Provide unit mounted disconnect switches for all equipment such as unit heaters, fans, unit ventilators, incremental units, etc

3.08 EMERGENCY PUSHBUTTON OPERATOR STATION

- A. Provide Emergency Pushbutton Operator Station at each boiler room exit to de-energize the primary control circuit and to close the main fuel valves to stop the flow of fuel to the burner during an emergency.
- B. Review plans for locations.
- C. Provide all conduit and wiring for interlock of each boiler.

END OF SECTION

**SECTION 238300
RADIANT HEATING AND COOLING UNITS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electric infrared radiant heaters.

1.02 REFERENCE STANDARDS

- A. UL 2021 - Fixed and Location Dedicated Electric Room Heaters Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for ceiling panel heaters, electric cabling, electric mats, and electric infrared radiant heaters.
- C. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

PART 2 PRODUCTS

2.01 ELECTRIC INFRARED RADIANT HEATERS

- A. Provide products listed, classified, and labeled by Underwriters Laboratories Inc. (UL), Intertek (ETL), or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.
- B. Factory assembled including heating element, reflector, heater housing, mounting brackets, element holders, wire guards, and high temperature internal wiring for non-residential, indoor use only.
- C. Heating Element:
 - 1. Minimum 3/8 inch diameter quartz tube with coiled resistor wire.
 - 2. Element operating temperature range: 1200 to 1800 degrees F.
- D. Heater Housing:
 - 1. Factory fabricated from aluminum clad steel, stainless steel, aluminum, or low carbon steel for indoor use as indicated.
 - 2. Provide with baked enamel finish over corrosion-resistant primer.
 - 3. Furnish chrome plated or stainless steel wire guard designed to protect heating elements from damage.
- E. Reflector: Polished aluminum or stainless steel.
- F. Wiring:
 - 1. Fully enclosed internal wiring.
 - 2. Provide minimum 6 inch slack fixture (heater) wire for connection to branch circuit wiring.
- G. Accessories:
 - 1. External indicating knob for controller with manual adjustment from 0 to 100 percent.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Electric Infrared Radiant Heaters: Verify and maintain minimum distances from combustibles. Verify heater installation is not in a hazardous location.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's recommendations.

END OF SECTION

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SECTION 260010
GENERAL PROVISIONS FOR ELECTRICAL WORK

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The work included in this Contract is shown on the drawings and described in these specifications. It consists of furnishing all labor, material, services, supervision and connection of all systems shown and/or specified including the requirements of:
 - 1. DIVISION 00 - BIDDING AND CONTRACT REQUIREMENTS
 - 2. DIVISION 1 - GENERAL REQUIREMENT
 - 3. DIVISION 26,27,28 - GENERAL REQUIREMENT
- B. Contractor is responsible to review and understand all drawings and all work of all trades to ensure a complete and thorough project.
- C. Provide all labor, tools, materials, equipment, coordination, and plans necessary for installation and proper operation of the electrical systems.
- D. Contract drawings and specifications are complementary and must be so used to ascertain all requirements of the work.

1.02 DEFINITIONS

- A. Provide, furnish, install, and furnish and install shall have the same meaning. That is, the Contractor shall purchase, transport to the site and install all required components of the work unless specifically stated otherwise in the contract documents.
- B. Wiring pertains to raceway, fittings, conductors, terminations, hangers, supports, etc. as required to form a complete system.

1.03 DRAWINGS AND SPECIFICATIONS

- A. The plans are diagrammatic and indicate only the sizes and general arrangement of conduit, devices, and equipment; exact locations of all elements shall be determined as work progresses, in cooperation with the work of other trades. It is not intended to show every item of work or minor piece of equipment, but every item shall be furnished and installed without additional remuneration as necessary to complete the system in accordance with the best practice of the trade.
- B. As previously stated, the exact locations of electrical devices and equipment are diagrammatic. The owner may request for any devices or equipment to be installed at different locations than what is indicated on the drawings in a specific area or room. It is the responsibility of the Electrical Contractor to coordinate the locations of devices in all areas prior to installation.

1.04 PRODUCT EQUIVALENTS

- A. Where, in these specifications or on drawings, certain kinds, types, brands, or manufacturers of materials are named, they shall be regarded as required standard of quality. Where two or more are named these are presumed to be equal, and Contractor may select one of those items.
 - B. If Contractor desires to use any kind, type, brand, or manufacturer of material other than those named in specification, he may submit the request for approval to the Architect well in advance of the bid date.
 - C. Requests for approval of proposed equivalents will be received by Architect only from the Contractor.
 - D. If the Architect approves a proposed equivalent prior to receipt of Bids, such approval will be set forth in an Addendum.
 - E. After the bid opening the apparent low bidder or bidders will be notified by the Architect or Owner and shall submit to the Architect in writing, within ten (10) calendar days what equivalent
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kind, type, brand, or manufacture is included in bid in lieu of specified items. No equivalents will be considered after this submission.

- F. Contractor shall have burden of proving, at Contractor's own cost and expense, to satisfaction of Owner/Architect, that proposed product is similar and equal to named product. In making such determination Owner/Architect will be sole judge of objective and appearance criteria that proposed product must meet in order for it to be approved.
 - 1. Supporting data on equivalency is responsibility of bidder. For each equivalent to base specification, included in products list, submit information describing in specific detail:
 - a. Wherein it differs from quality and performance required by base specification.
 - b. Changes required in other elements of work because of equivalent.
 - c. Effect on construction schedule.
 - d. Any required license fees or royalties.
 - e. Availability of maintenance service, and source of replacement materials.
 - f. Such other information as may be required by Owner.
- G. Owner, through Architect, shall be judge of acceptability of proposed equivalents. Risk of whether bid equivalents will be accepted is borne by Contractor.
- H. Submission of an equivalent product and/or material constitutes a representation that Contractor:
 - 1. Has investigated proposed product and determined it is equal to or superior in all respects to that specified.
 - 2. Will provide same warranties or bonds for equivalent as for product specified.
 - 3. Will coordinate installation of an accepted equivalent into work and make such other changes as may be required to make work complete in all respects.
 - 4. Waives all claims for additional costs, under his responsibility, which may subsequently become apparent.
 - 5. Will provide, at own cost and expense, any different quantity and/or arrangement of ductwork, piping, wiring, conduit or any part of work from that specified, detailed or indicated in Contract Documents if required for proper installation of an approved equivalent.
 - 6. Will provide, at own cost and expense, all such revision and redesign and all new drawings and details required by Architect for approval if proposed equivalent product requires a revision or redesign of any part of work covered by this contract.
- I. Contractor must sign the "Equivalent Certification" following this specification section and deliver it to the Architect along with a complete list of proposed equivalents within ten (10) calendar days after notification from the Architect or Owner. This is mandatory and must be done prior to award of contracts.

1.05 APPLICABLE STANDARDS

- A. All equipment shall bear the UL label.
- B. The latest edition of the following minimum standards shall apply wherever applicable:
 - 1. American Standards Association
 - 2. American Society for Testing Materials
 - 3. Electrical Testing Laboratories, Inc.
 - 4. Institute of Electrical and Electronic Engineers
 - 5. Insulated Power Cable for Engineers Association
 - 6. Occupational Safety and Health Act
 - 7. National Electric Code
 - 8. National Electrical Manufacturers Association
 - 9. National Electrical Safety Code
 - 10. National Fire Protection Association
 - 11. Underwriters Laboratories, Inc.

12. Local and state codes.

- C. In the event there are conflicts between specifications and standards, standards shall govern unless specifications are in excess of standards.

1.06 PERMITS AND INSPECTIONS

- A. Permits: The Contractor shall apply for and pay the cost for any local permits necessary for the work of this contract.
- B. Inspections: The Contractor shall be responsible for obtaining a 3rd party electrical inspection of and the certificate by the approved inspection agency for the entire electrical system.
- C. The undertaking of periodic inspections by the Owner or Engineer shall not be construed as supervision of actual construction. The Owner or Engineer is not responsible for providing a safe place of work for the Contractor, Contractor's employees, suppliers or subcontractors for access, visits, use, work, travel or occupancy by any person.

1.07 CODES AND REGULATIONS

- A. Comply with all applicable rules and regulations of the municipal laws and ordinances and latest revisions thereof. All work shall be done in full conformity with the requirements of all authorities having jurisdiction. Modifications required by the above authorities will be made without additional charges to the Owner. Where alterations to and/or deviations from the Contract Documents are required by the authorities, report the requirements to the Engineer and secure approval before work is started.
- B. Furnish and file with the proper authorities, all drawings required by them in connection with the work. Obtain all permits, licenses, and inspections and pay all legal and proper fees and charges in this connection.
- C. Should any work shown or specified be of lighter or smaller material than Code requires, same shall be executed in strict accordance with the regulations.
- D. Heavier or larger size material than Code requires shall be furnished and installed, if required by the Plans and Specifications.
- E. This Contractor shall have the electrical work inspected from time to time by authorized inspectors and shall pay all expense incurred by same. At the completion of the work, the Contractor shall furnish a Certificate of Approval, in triplicate, indicating full approval of the work furnished and installed in this Contract from the local authority having jurisdiction.
- F. Equipment and components parts thereof shall bear manufacturer's name-plate, giving manufacturer's name, size, type and model number or serial number, electrical characteristic to facilitate maintenance and replacements. Name plates of distributors or contractors are not acceptable.
- G. Engineer will have privilege of stopping any work or use of any material that in his opinion is not being properly installed and each Contractor shall remove all materials delivered, or work erected, which does not comply with Contract Drawings and Specifications, and replace with proper materials, or correct such work as directed by the Engineer, at no additional cost to Owner.
- H. If equipment or materials are installed before proper approvals have been obtained, each Contractor shall be liable for their removal and replacement including work of other trades affected by such work, at no additional cost to Owner, if such items do not meet intent of the Drawings and Specifications.

1.08 RECORD DRAWINGS

- A. The Electrical Contractor shall keep an accurate location record of all underground and concealed piping, and of all changes from the original design. He is required to furnish this information to the Engineer prior to his application for final payment.
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1. Submit prior to final acceptance inspection, one complete marked-up set of reproducible engineering design drawings.
 - a. Fully illustrate all revisions made by all crafts in course of work.
 - b. Include all field changes, adjustments, variances, substitutions and deletions, including all Change Orders.
 - c. Exact location of raceways, equipment and devices.
 - d. Exact size and location of underground and under floor raceways, grounding conductors and duct banks.
 - e. These drawings shall be for record purposes for Owner's use and are not considered shop drawings.
 - B. At completion of the project, all changes and deviations from the Contract Documents shall be recorded by the Contractor.
 - C. Four (4) corrected sets of all operating and maintenance instructions and complete parts lists bound in hard covers shall be furnished to the Owner.

1.09 SLEEVES

- A. Sleeves: furnished, set in Electrical Work; built-in under General Construction Work.
- B. Sleeves shall be as follows:
 1. Sleeves in floors and partitions shall be galvanized steel with lock seam joints or a manufactured conduit floor seal.
 2. Sleeves of extra heavy cast iron pipe or galvanized steel pipe shall be used in outside walls, foundations, and footing or manufactured compression-type wall seal (waterproof).
 3. Conduit sleeves shall be two (2) sizes larger than the conduit passing through it.
 4. Terminate sleeves flush with walls, partitions, and ceilings. Sleeves in floor shall terminate 1/4" above floors.
 5. Fill space between sleeve and conduit in foundation walls with oakum and caulk with lead on both sides of wall. When using pipe sleeves, fill space between sleeve and pipe with fiberglass blanket insulation when sleeve does not occur in a foundation wall.
 6. An approved fire stop seal shall be used when conduits penetrate fire stopping walls and floors (between fire zone).
- C. Set sleeves, obtain review of their locations in ample time to permit pouring of concrete or progressing of other construction work as scheduled.

1.10 CLEANING CONDUIT, EQUIPMENT

- A. Conduit, equipment: thoroughly cleaned of dirt, cuttings, other foreign substances. Should any conduit, other part of systems be stopped by any foreign matter, disconnect, clean wherever necessary for purpose of locating, removing obstructions. Repair work damaged in course of removing obstructions.

1.11 VIBRATION ISOLATION

- A. Vibration isolators shall prevent, as far as practicable, transmission of vibration, noise or hum to any part of building.
- B. Design isolators to suit vibration frequency to be absorbed; provide isolator units of area, distribution to obtain proper resiliency under machinery load, impact.
- C. Wiring and other electrical connections to equipment mounted on vibration isolators; made flexible with minimum 180 degree loop of "greenfield" in order to avoid restraining equipment and short circuiting vibration isolator.

1.12 BALANCED LOAD

- A. It is intended that design and features of the work as indicated will provide balanced load on the feeders and main service. Contractor shall provide material and installation to provide this balance load insofar as possible.
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- B. Contractor shall take current and voltage measurements at all panels of at least 1/2 hour. Reconnections of loads shall be made when deemed necessary by the Engineers.

1.13 JOB CONDITIONS

- A. Examine site related work and surfaces before starting work of any Section. Failure to do so shall in no way relieve the Contractor of the responsibility to properly install the new work.
1. Report to the Engineer, in writing, conditions, which will prevent proper provision of this work ten (10) days prior to bid date, in time for an addendum to be issued .
 2. Beginning work of any Section without reporting unsuitable conditions to the Engineer constitutes acceptance of conditions by the Contractor.
 3. Perform any required removal, repair or replacement of this work caused by unsuitable conditions at no additional cost to Owner.
 4. The Contractor is responsible for performing routine maintenance and cleaning of any existing equipment where he is making connections to new work and to the building where his work adds debris.
- B. Connections to existing work:
1. Install new work and connect to existing work with minimum interference to existing facilities.
 2. Provide temporary shutdowns of existing services only with written consent of Owner at no additional charges and at time not to interfere with normal operation of existing facilities.
 3. Maintain continuous operation of existing facilities as required with necessary temporary connections between new and existing work.
 4. Do not interrupt alarm and emergency systems.
 5. Connect new work to existing work in neat and acceptable manner.
 6. Restore existing disturbed work to original condition including maintenance of wiring and continuity as required. Replace damaged or rusted conduit to which new equipment is being installed and connected.
- C. Removal and relocation of existing work.
1. Disconnect, remove or relocate electrical material, equipment and other work noted and required by removal or changes in existing construction.
 2. Provide new material and equipment required for relocated equipment.
 3. Disconnect load and line end of conductors feeding existing equipment.
 4. Remove conductors from existing raceways to be rewired.
 5. Remove conductors and cap outlets on raceways to be abandoned.
 6. Cut and cap abandoned floor raceways flush with concrete floor or behind walls and ceilings.
 7. Dispose of removed raceways and wire.
 8. Dispose of removed electrical equipment as directed by Owner. The Owner shall provide a list of equipment of the Contractor of equipment to be delivered to the Owner.

1.14 SPECIAL TOOLS AND LOOSE ITEMS

- A. Furnish to Owner at completion of work:
1. One set of any special tools required to operate, adjust, dismantle or repair equipment furnished under any section of this Division.
 2. "Special Tools": Those not normally found in possession of mechanics or maintenance personnel.
 3. Keys
 4. Redundant components and spare parts.
- B. Deliver items to Owner and obtain receipt prior to approval of final payment.

1.15 REVIEW OF CONSTRUCTION

- A. Work may be reviewed at any time by representative of the Engineer.
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- B. Advise Architect and Engineer that work is ready for review at following times:
 - 1. Prior to backfilling buried work.
 - 2. Prior to concealment of work in walls and above ceilings.
 - 3. When all requirements of contract have been completed.
 - C. Neither backfill nor conceal work without Engineer's consent.

1.16 SHOP DRAWING SUBMITTALS

- A. Submit required shop drawings, samples and product information in accordance with Division 1, requirements and as required in the various sections of these specifications.
- B. Submittals shall show evidence of checking by the Contractor for accuracy. Product information (catalog sheets) shall indicate complete catalog number, color, accessories, etc., as well as, name of manufacturer and local distributor or manufacturer's representative.
- C. Submit for review detailed coordination drawings 3/8" or larger scale plans for all major electrical equipment and any areas of conflicts by drafting location of equipment, lighting fixtures, cable trays and conduits larger than 1-1/2" trade size. Contractor shall refer to Division 1 for preparing coordination drawings.
- D. Incomplete submittals will be rejected.
- E. Additionally, the Contractor will submit data on the following:
 - 1. All electrical equipment including all panelboards and switching devices (disconnects, switches, occupancy sensors, etc.).
 - 2. Fire stop seals used for wall penetrations.
 - 3. Any proposed variation in specified wiring plans and circuitry.
 - 4. All special items and panels, made or constructed specifically for this project, including wiring diagrams, component layout and component data or materials list.
 - 5. All settings of installed equipment, such as overcurrent protection, overload settings, temperature settings, time settings, etc. This includes equipment provided by other contractors or subcontractors and connected and tested by this Contractor.
- F. All submittals of NON SPECIFIED equipment and components will be reviewed. It is the submitting Contractor's responsibility to prove compliance and not the Architect/Engineer to prove non-compliance. The submitting Contractor will be charged the prevailing wage of the reviewing Engineer for all submittals requiring over one (1) hour to review that were not originally specified.
- G. It is the Contractor's responsibility to provide submittals in an organized and timely manner so as not to delay the project schedule and hamper the work of other trades.

1.17 OPERATING INSTRUCTIONS

- A. It shall be the Contractor's responsibility to insure that the Owner's representative is given adequate instruction on the operation of all equipment prior to final payment.

1.18 TEMPORARY POWER

- A. The Contractor shall provide all temporary power to all trades throughout all phases of construction throughout the duration of this project. This will include but not be limited to temporary lighting, power outlets, temporary elevator operation, controls for temporary heating, and job trailers. Contractor shall be responsible for providing temporary power via adjacent building(s) and/or a temporary diesel fired generator and associated fuel costs. Contractor shall coordinate temporary power source with project manager prior to demolition. Contractor is responsible for all costs associated with temporary power.

PART 2 PRODUCTS

2.01 MATERIALS

- A. All materials and equipment shall be new and as specified or of equal or better quality.
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- B. Basic hardware and miscellaneous items shall meet existing trade standards of quality and shall carry UL or FM listings where applicable.
- C. All equipment supplied shall be the standard equipment of the manufacturer.
- D. Multiple items such as panelboards, wiring devices, switches, breakers, raceways, etc., shall be from the same manufacturer.
- E. Drawings and specifications are based on specific manufacturer's equipment. Therefore, the Contractor shall assume all responsibility, cost and coordination involved in making any necessary revisions to apply another manufacturer's equipment, even though it may be approved as an "equal" item by the Engineer.

PART 3 EXECUTION

3.01 COORDINATION OF WORK

- A. All work shall be executed in accordance with recognized standards of workmanship. All work shall be installed in a neat and orderly manner.
- B. The Contractor shall exchange information with other Contractors and the Owner in order to insure orderly progress of the work.
- C. The Contractor must contact the Owner's representative and schedule all work ten (10) days prior to start.
- D. The Contractor shall check for possible interference before installing any items. If any work is installed, and later develops interference with other features of the design, the Contractor will be responsible to make such changes to eliminate the interference.

3.02 CEILING REMOVAL

- A. Existing ceilings which must be removed for the installation of new work or demolition of existing conditions shall be done by the Contractor. No ceiling shall be removed without prior approval of the Owner. Ceilings which must be removed shall be restored to their original condition as soon as practical and prior to final payment.
- B. The removed tile of lay-in type ceilings shall be stored either in the ceiling space or at a designated space in the building. No tiles shall be stored in the occupied space.
- C. The Contractor shall take all necessary precautions to prevent damage to the existing ceilings. All damaged ceilings shall be replaced with new ceiling construction to match the existing and to the Owner's satisfaction.

END OF SECTION

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**SECTION 260505
SELECTIVE DEMOLITION FOR ELECTRICAL**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical demolition.

1.02 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that abandoned wiring and equipment serve only abandoned facilities.
- B. Demolition drawings are based on casual field observation and existing record documents.
- C. Report discrepancies to Architect/Engineer before disturbing existing installation.
- D. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Coordinate utility service outages with utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Remove, relocate, and extend existing installations to accommodate new construction.
- B. Remove abandoned wiring to source of supply.
- C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
- E. Repair adjacent construction and finishes damaged during demolition and extension work.
- F. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

END OF SECTION

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SECTION 260519
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Single conductor building wire.
- B. Metal-clad cable.
- C. Wiring connectors.
- D. Electrical tape.
- E. Heat shrink tubing.
- F. Wire pulling lubricant.
- G. Cable ties.
- H. Firestop sleeves.

1.02 RELATED REQUIREMENTS

- A. Section 078400 - Firestopping.
- B. Section 260505 - Selective Demolition for Electrical: Disconnection, removal, and/or extension of existing electrical conductors and cables.
- C. Section 260526 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
- D. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- E. Section 284600 - Fire Detection and Alarm: Fire alarm system conductors and cables.

1.03 REFERENCE STANDARDS

- A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire 2013 (Reapproved 2018).
 - B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft 2011 (Reapproved 2017).
 - C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes 2010, with Editorial Revision (2020).
 - D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation 2004 (Reapproved 2020).
 - E. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape 2017.
 - F. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes 2020.
 - G. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
 - H. NECA 120 - Standard for Installing Armored Cable (AC) and Type Metal-Clad (MC) Cable 2018.
 - I. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy 2021.
 - J. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
 - K. UL 44 - Thermoset-Insulated Wires and Cables Current Edition, Including All Revisions.
 - L. UL 83 - Thermoplastic-Insulated Wires and Cables Current Edition, Including All Revisions.
 - M. UL 183 - Manufactured Wiring Systems Current Edition, Including All Revisions.
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- N. UL 486A-486B - Wire Connectors Current Edition, Including All Revisions.
 - O. UL 486C - Splicing Wire Connectors Current Edition, Including All Revisions.
 - P. UL 486D - Sealed Wire Connector Systems Current Edition, Including All Revisions.
 - Q. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape Current Edition, Including All Revisions.
 - R. UL 1569 - Metal-Clad Cables Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
 - 3. Notify Architect/Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.
- C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 016000 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.08 FIELD CONDITIONS

- A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F, unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect/Engineer and obtain direction before proceeding with work.

PART 2 PRODUCTS

2.01 CONDUCTOR AND CABLE APPLICATIONS

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
 - B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.
 - C. Metal-clad cable is permitted only as follows:
 - 1. Where not otherwise restricted, may be used:
 - a. Where concealed in hollow stud walls and above accessible ceilings for branch circuits up to 20 A.
 - 2. In addition to other applicable restrictions, may not be used:
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- a. Where exposed to view.
- b. Where exposed to damage.
- c. For damp, wet, or corrosive locations.

2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Provide new conductors and cables manufactured not more than one year prior to installation.
- D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- E. Comply with NEMA WC 70.
- F. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- G. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- H. Conductors for Grounding and Bonding: Also comply with Section 260526.
- I. Conductor Material:
 1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
 3. Tinned Copper Conductors: Comply with ASTM B33.
- J. Minimum Conductor Size:
 1. Branch Circuits: 12 AWG.
 - a. Exceptions:
 - 1) 20 A, 120 V circuits longer than 75 feet: 10 AWG, for voltage drop.
 - 2) 20 A, 120 V circuits longer than 150 feet: 8 AWG, for voltage drop.
 2. Control Circuits: 14 AWG.
- K. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- L. Conductor Color Coding:
 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
 2. Color Coding Method: Integrally colored insulation.
 3. Color Code:
 - a. 208Y/120 V, 3 Phase, 4 Wire System:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.
 - 4) Neutral/Grounded: White.
 - b. Equipment Ground, All Systems: Green.

2.03 SINGLE CONDUCTOR BUILDING WIRE

- A. Manufacturers:
 1. Copper Building Wire:
 - a. Cerro Wire LLC: www.cerrowire.com/#sle.
 - b. Encore Wire Corporation: www.encorewire.com/#sle.
 - c. General Cable Technologies Corporation: www.generalcable.com/#sle.
 - d. Service Wire Co: www.servicewire.com/#sle.
 - e. Southwire Company: www.southwire.com/#sle.

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- f. Substitutions: See Section 016000 - Product Requirements.
 - B. Description: Single conductor insulated wire.
 - C. Conductor Stranding:
 - 1. Feeders and Branch Circuits:
 - a. Size 10 AWG and Smaller: Solid.
 - b. Size 8 AWG and Larger: Stranded.
 - D. Insulation Voltage Rating: 600 V.
 - E. Insulation:
 - 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2.

2.04 METAL-CLAD CABLE

- A. Manufacturers:
 - 1. AFC Cable Systems Inc: www.afcweb.com/#sle.
 - 2. Encore Wire Corporation: www.encorewire.com/#sle.
 - 3. Service Wire Co: www.servicewire.com/#sle.
 - 4. Southwire Company: www.southwire.com/#sle.
 - 5. Substitutions: See Section 016000 - Product Requirements.
- B. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.
- C. Conductor Stranding:
 - 1. Size 10 AWG and Smaller: Solid.
 - 2. Size 8 AWG and Larger: Stranded.
- D. Insulation Voltage Rating: 600 V.
- E. Insulation: Type THHN, THHN/THWN, or THHN/THWN-2.
- F. Grounding: Full-size integral equipment grounding conductor.
- G. Armor: Steel, interlocked tape.
- H. Provide PVC jacket applied over cable armor where indicated or required for environment of installed location.

2.05 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.
 - B. Connectors for Grounding and Bonding: Comply with Section 260526.
 - C. Wiring Connectors for Splices and Taps:
 - 1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
 - 2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.
 - D. Wiring Connectors for Terminations:
 - 1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
 - 2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
 - 3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
 - 4. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.
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5. Stranded Conductors Size 10 AWG and Smaller: Use crimped terminals for connections to terminal screws.
 - E. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.
 - F. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.
 - G. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
 1. Manufacturers:
 - a. 3M: www.3m.com/#sle.
 - b. Ideal Industries, Inc: www.idealindustries.com/#sle.
 - c. Substitutions: See Section 016000 - Product Requirements.
 - H. Mechanical Connectors: Provide bolted type or set-screw type.
 1. Manufacturers:
 - a. Burndy LLC: www.burndy.com/#sle.
 - b. IlSCO: www.ilSCO.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
 - d. Substitutions: See Section 016000 - Product Requirements.
 - I. Compression Connectors: Provide circumferential type or hex type crimp configuration.
 1. Manufacturers:
 - a. Burndy LLC: www.burndy.com/#sle.
 - b. IlSCO: www.ilSCO.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
 - d. Substitutions: See Section 016000 - Product Requirements.
 - J. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.
 1. Manufacturers:
 - a. Burndy LLC: www.burndy.com/#sle.
 - b. IlSCO: www.ilSCO.com/#sle.

2.06 ACCESSORIES

- A. Electrical Tape:
 1. Manufacturers:
 - a. 3M: www.3m.com/#sle.
 - b. Plymouth Rubber Europa: www.plymouthrubber.com/#sle.
 - c. Substitutions: See Section 016000 - Product Requirements.
 2. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F.
 3. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.
 4. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil; suitable for continuous temperature environment up to 194 degrees F and short-term 266 degrees F overload service.
 5. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil; suitable for continuous temperature environment up to 176 degrees F.
 - B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.
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- C. Wire Pulling Lubricant: Listed; suitable for use with the conductors or cables to be installed and suitable for use at the installation temperature.
 - 1. Manufacturers:
 - a. 3M: www.3m.com/#sle.
 - b. American Polywater Corporation: www.polywater.com/#sle.
 - c. Ideal Industries, Inc: www.idealindustries.com/#sle.
 - d. Substitutions: See Section 016000 - Product Requirements.
 - D. Cable Ties: Material and tensile strength rating suitable for application.
 - 1. Manufacturers:
 - a. Burndy LLC: www.burndy.com/#sle.
 - E. Firestop Sleeves: Listed; provide as required to preserve fire resistance rating of building elements.
 - 1. Products:
 - a. HoldRite, a brand of Reliance Worldwide Corporation; HydroFlame Pro Series/HydroFlame Custom Built: www.holdrite.com/#sle.
 - b. Substitutions: See Section 016000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that work likely to damage wire and cable has been completed.
- C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- D. Verify that field measurements are as indicated.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.03 INSTALLATION

- A. Circuiting Requirements:
 - 1. Unless dimensioned, circuit routing indicated is diagrammatic.
 - 2. When circuit destination is indicated without specific routing, determine exact routing required.
 - 3. Arrange circuiting to minimize splices.
 - 4. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
 - 5. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
 - B. Install products in accordance with manufacturer's instructions.
 - C. Perform work in accordance with NECA 1 (general workmanship).
 - D. Install metal-clad cable (Type MC) in accordance with NECA 120.
 - E. Installation in Raceway:
 - 1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
 - 2. Pull all conductors and cables together into raceway at same time.
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3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
- F. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
- G. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
- H. Terminate cables using suitable fittings.
1. Metal-Clad Cable (Type MC):
 - a. Use listed fittings.
 - b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.
- I. Install conductors with a minimum of 12 inches of slack at each outlet.
- J. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
- K. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
- L. Make wiring connections using specified wiring connectors.
1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
 3. Do not remove conductor strands to facilitate insertion into connector.
 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminants. Do not use wire brush on plated connector surfaces.
 5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- M. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
1. Dry Locations: Use insulating covers specifically designed for the connectors or electrical tape.
 - a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
- N. Insulate ends of spare conductors using vinyl insulating electrical tape.
- O. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.
- P. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

END OF SECTION

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SECTION 260526
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Connectors for grounding and bonding.

1.02 RELATED REQUIREMENTS

- A. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
- B. Section 260553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- B. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. UL 467 - Grounding and Bonding Equipment Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittals procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS**2.01 GROUNDING AND BONDING REQUIREMENTS**

- A. Do not use products for applications other than as permitted by NFPA 70 and product listing.
 - B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
 - C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
 - D. Bonding and Equipment Grounding:
 - 1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
 - 2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
 - 3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
 - 4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
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5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.

2.02 GROUNDING AND BONDING COMPONENTS

- A. General Requirements:
 1. Provide products listed, classified, and labeled as suitable for the purpose intended.
 2. Provide products listed and labeled as complying with UL 467 where applicable.
- B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 260526:
 1. Use insulated copper conductors unless otherwise indicated.
 - a. Exceptions:
 - 1) Use bare copper conductors where installed underground in direct contact with earth.
 - 2) Use bare copper conductors where directly encased in concrete (not in raceway).
- C. Connectors for Grounding and Bonding:
 1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
 2. Unless otherwise indicated, use compression connectors for underground, concealed and other inaccessible connections.
 3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
 4. Manufacturers - Mechanical and Compression Connectors:
 - a. Advanced Lightning Technology (ALT): www.altfab.com/#sle.
 - b. Burndy LLC: www.burndy.com/#sle.
 - c. Harger Lightning & Grounding: www.harger.com/#sle.
 - d. Thomas & Betts Corporation: www.tnb.com/#sle.
 - e. Substitutions: See Section 016000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that work likely to damage grounding and bonding system components has been completed.
- B. Verify that field measurements are as indicated.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Make grounding and bonding connections using specified connectors.
 1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
 2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
 3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
 4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.

- 5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- D. Identify grounding and bonding system components in accordance with Section 260553.

END OF SECTION

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SECTION 260529
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

1.02 RELATED REQUIREMENTS

- A. Section 260533.16 - Boxes for Electrical Systems: Additional support and attachment requirements for boxes.
- B. Section 265100 - Interior Lighting: Additional support and attachment requirements for interior luminaires.
- C. Section 265600 - Exterior Lighting: Additional support and attachment requirements for exterior luminaires.

1.03 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
 - 2. Coordinate the work with other trades to provide additional framing and materials required for installation.
 - 3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
 - 4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
- B. Sequencing:
 - 1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 033000.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel (strut) framing systems.

1.06 QUALITY ASSURANCE

- A. Comply with NFPA 70.
- B. Comply with applicable building code.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS**2.01 SUPPORT AND ATTACHMENT COMPONENTS**

- A. General Requirements:
 - 1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
 - 2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
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3. Do not use products for applications other than as permitted by NFPA 70 and product listing.
 4. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
 5. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
 - b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel or approved equivalent unless otherwise indicated.
- B. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.
1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
 2. Conduit Clamps: Bolted type unless otherwise indicated.
 3. Manufacturers:
 - a. Cooper Crouse-Hinds, a division of Eaton Corporation: www.cooperindustries.com/#sle.
 - b. Erico International Corporation: www.erico.com/#sle.
 - c. HoldRite, a brand of Reliance Worldwide Corporation: www.holdrite.com/#sle.
 - d. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
 - e. Thomas & Betts Corporation: www.tnb.com/#sle.
 - f. Substitutions: See Section 016000 - Product Requirements.
- C. Outlet Box Supports: Hangers, brackets, etc. suitable for the boxes to be supported.
1. Manufacturers:
 - a. Cooper Crouse-Hinds, a division of Eaton Corporation: www.cooperindustries.com/#sle.
 - b. Erico International Corporation: www.erico.com/#sle.
 - c. HoldRite, a brand of Reliance Worldwide Corporation: www.holdrite.com/#sle.
 - d. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
 - e. Thomas & Betts Corporation: www.tnb.com/#sle.
 - f. Substitutions: See Section 016000 - Product Requirements.
- D. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
1. Minimum Size, Unless Otherwise Indicated or Required:
 - a. Equipment Supports: 1/2 inch diameter.
 - b. Single Conduit up to 1 inch (27 mm) trade size: 1/4 inch diameter.
 - c. Single Conduit larger than 1 inch (27 mm) trade size: 3/8 inch diameter.
 - d. Trapeze Support for Multiple Conduits: 3/8 inch diameter.
 - e. Outlet Boxes: 1/4 inch diameter.
 - f. Luminaires: 1/4 inch diameter.
- E. Anchors and Fasteners:
1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
 2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
 3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
 4. Hollow Masonry: Use toggle bolts.
 5. Hollow Stud Walls: Use toggle bolts.
 6. Steel: Use beam clamps, machine bolts, or welded threaded studs.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
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- B. Verify that mounting surfaces are ready to receive support and attachment components.
 - C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- D. Unless specifically indicated or approved by Architect/Engineer, do not provide support from suspended ceiling support system or ceiling grid.
- E. Unless specifically indicated or approved by Architect/Engineer, do not provide support from roof deck.
- F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- G. Equipment Support and Attachment:
 - 1. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- H. Conduit Support and Attachment: Also comply with Section 260533.13.
- I. Box Support and Attachment: Also comply with Section 260533.16.
- J. Interior Luminaire Support and Attachment: Also comply with Section 265100.
- K. Exterior Luminaire Support and Attachment: Also comply with Section 265600.
- L. Secure fasteners according to manufacturer's recommended torque settings.
- M. Remove temporary supports.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - DO NOT USE BSD Quality Requirements, for additional requirements.
- B. Inspect support and attachment components for damage and defects.
- C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

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**SECTION 260533.13
CONDUIT FOR ELECTRICAL SYSTEMS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Galvanized steel rigid metal conduit (RMC).
- B. Intermediate metal conduit (IMC).
- C. Flexible metal conduit (FMC).
- D. Liquidtight flexible metal conduit (LFMC).
- E. Electrical metallic tubing (EMT).
- F. Conduit fittings.
- G. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 078400 - Firestopping.
- B. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Metal clad cable (Type MC), armored cable (Type AC), and manufactured wiring systems, including uses permitted.
- C. Section 260526 - Grounding and Bonding for Electrical Systems.
- D. Section 260529 - Hangers and Supports for Electrical Systems.
- E. Section 260533.16 - Boxes for Electrical Systems.
- F. Section 260553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC) 2020.
- B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S) 2020.
- C. ANSI C80.6 - American National Standard for Electrical Intermediate Metal Conduit 2018.
- D. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- E. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT) 2020.
- F. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable 2014.
- G. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL 1 - Flexible Metal Conduit Current Edition, Including All Revisions.
- I. UL 6 - Electrical Rigid Metal Conduit-Steel Current Edition, Including All Revisions.
- J. UL 360 - Liquid-Tight Flexible Metal Conduit Current Edition, Including All Revisions.
- K. UL 514B - Conduit, Tubing, and Cable Fittings Current Edition, Including All Revisions.
- L. UL 797 - Electrical Metallic Tubing-Steel Current Edition, Including All Revisions.
- M. UL 1242 - Electrical Intermediate Metal Conduit-Steel Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate minimum sizes of conduits with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate the arrangement of conduits with structural members, ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
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3. Verify exact conduit termination locations required for boxes, enclosures, and equipment installed under other sections or by others.
 4. Coordinate the work with other trades to provide roof penetrations that preserve the integrity of the roofing system and do not void the roof warranty.
 5. Notify Architect/Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
1. Do not begin installation of conductors and cables until installation of conduit is complete between outlet, junction and splicing points.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittals procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.
- C. Shop Drawings:
 1. Include proposed locations of roof penetrations and proposed methods for sealing.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, use galvanized steel rigid metal conduit.
- C. Concealed Within Hollow Stud Walls: Use electrical metallic tubing (EMT).
- D. Concealed Above Accessible Ceilings: Use electrical metallic tubing (EMT).
- E. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit.
- F. Exposed, Interior, Not Subject to Physical Damage: Use electrical metallic tubing (EMT).
- G. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit.
 1. Locations subject to physical damage include, but are not limited to:
 - a. Where exposed below 8 feet, except within electrical and communication rooms or closets.
- H. Exposed, Exterior: Use galvanized steel rigid metal conduit.
- I. Concealed, Exterior, Not Embedded in Concrete or in Contact With Earth: Use galvanized steel rigid metal conduit.
- J. Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit.
 1. Maximum Length: 6 feet.
- K. Connections to Vibrating Equipment:
 1. Dry Locations: Use flexible metal conduit.
 2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit.
 3. Maximum Length: 6 feet unless otherwise indicated.

2.02 CONDUIT REQUIREMENTS

- A. Fittings for Grounding and Bonding: Also comply with Section 260526.
- B. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Minimum Conduit Size, Unless Otherwise Indicated:
 - 1. Branch Circuits: 3/4 inch (21 mm) trade size.
 - 2. Branch Circuit Homeruns: 3/4 inch (21 mm) trade size.
- E. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Manufacturers:
 - 1. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.com/#sle.
 - 2. Nucor Tubular Products: www.nucortubular.com/#sle.
 - 3. Western Tube, a division of Zekelman Industries: www.westerntube.com/#sle.
 - 4. Wheatland Tube, a division of Zekelman Industries: www.wheatland.com/#sle.
 - 5. Substitutions: See Section 016000 - Product Requirements.
- B. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- C. Fittings:
 - 1. Manufacturers:
 - a. Bridgeport Fittings Inc: www.bptfittings.com/#sle.
 - b. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
 - d. Substitutions: See Section 016000 - Product Requirements.
 - 2. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 3. Material: Use steel or malleable iron.
 - 4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.04 INTERMEDIATE METAL CONDUIT (IMC)

- A. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.
- B. Fittings:
 - 1. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Material: Use steel or malleable iron.
 - 3. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.05 FLEXIBLE METAL CONDUIT (FMC)

- A. Manufacturers:
 - 1. AFC Cable Systems, Inc: www.afcweb.com/#sle.
 - 2. Electri-Flex Company: www.electriflex.com/#sle.
 - 3. International Metal Hose: www.metalhose.com/#sle.
 - 4. Substitutions: See Section 016000 - Product Requirements.
 - B. Description: NFPA 70, Type FMC standard wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems to be used.
 - C. Fittings:
 - 1. Manufacturers:
-

- a. Bridgeport Fittings Inc: www.bptfittings.com/#sle.
 - b. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
 - d. Substitutions: See Section 016000 - Product Requirements.
2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 3. Material: Use steel.

2.06 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

- A. Manufacturers:
 1. AFC Cable Systems, Inc; [_____]: www.afcweb.com/#sle.
 2. Electri-Flex Company; [_____]: www.electriflex.com/#sle.
 3. Substitutions: See Section 016000 - Product Requirements.
- B. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.
- C. Fittings:
 1. Manufacturers:
 - a. Bridgeport Fittings Inc: www.bptfittings.com/#sle.
 - b. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
 - d. Substitutions: See Section 016000 - Product Requirements.
 2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 3. Material: Use steel or malleable iron.

2.07 ELECTRICAL METALLIC TUBING (EMT)

- A. Manufacturers:
 1. Allied Tube & Conduit, a division of Atkore International: www.alliedeg.com/#sle.
 2. Nucor Tubular Products: www.nucortubular/#sle.
 3. Western Tube, a division of Zekelman Industries: www.westerntube.com/#sle.
 4. Wheatland Tube, a division of Zekelman Industries: www.wheatland.com/#sle.
 5. Substitutions: See Section 016000 - Product Requirements.
- B. Description: NFPA 70, Type EMT steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
- C. Fittings:
 1. Manufacturers:
 - a. Bridgeport Fittings Inc: www.bptfittings.com/#sle.
 - b. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
 2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 3. Material: Use steel.
 4. Connectors and Couplings: Use compression (gland) type.
 - a. Do not use indenter type connectors and couplings.

2.08 ACCESSORIES

- A. Conduit Joint Compound: Corrosion-resistant, electrically conductive; suitable for use with the conduit to be installed.
 - B. Pull Strings: Use nylon cord with average breaking strength of not less than 200 pound-force.
 - C. Sealing Compound for Sealing Fittings: Listed for use with the particular fittings to be installed.
 - D. Firestop Sleeves: Listed; provide as required to preserve fire resistance rating of building elements.
-

1. Products:
 - a. HoldRite, a brand of Reliance Worldwide Corporation; HydroFlame Pro Series/HydroFlame Custom Built: www.holdrite.com/#sle.
 - b. Substitutions: See Section 016000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
 - B. Perform work in accordance with NECA 1 (general workmanship).
 - C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.
 - D. Install intermediate metal conduit (IMC) in accordance with NECA 101.
 - E. Conduit Routing:
 1. Unless dimensioned, conduit routing indicated is diagrammatic.
 2. When conduit destination is indicated without specific routing, determine exact routing required.
 3. Conduits in the following areas may be exposed, unless otherwise indicated:
 - a. Electrical rooms.
 - b. Mechanical equipment rooms.
 4. Arrange conduit to maintain adequate headroom, clearances, and access.
 5. Arrange conduit to provide no more than 150 feet between pull points.
 6. Route conduits above water and drain piping where possible.
 7. Maintain minimum clearance of 6 inches between conduits and piping for other systems.
 - F. Conduit Support:
 1. Secure and support conduits in accordance with NFPA 70 and Section 260529 using suitable supports and methods approved by the authority having jurisdiction.
 2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
 3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
 4. Use conduit strap to support single surface-mounted conduit.
 - a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
 5. Use metal channel (strut) with accessory conduit clamps to support multiple parallel surface-mounted conduits.
 6. Use conduit clamp to support single conduit from beam clamp or threaded rod.
 7. Use trapeze hangers assembled from threaded rods and metal channel (strut) with accessory conduit clamps to support multiple parallel suspended conduits.
 8. Use non-penetrating rooftop supports to support conduits routed across rooftops (only where approved).
 9. Use of wire for support of conduits is not permitted.
 - G. Connections and Terminations:
 1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
 2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
 3. Use suitable adapters where required to transition from one type of conduit to another.
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4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
 5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
 6. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
 7. Secure joints and connections to provide maximum mechanical strength and electrical continuity.
- H. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
 4. Conceal bends for conduit risers emerging above ground.
 5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
 6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
 7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
 8. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.
- I. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
 2. Where conduits are subject to earth movement by settlement or frost.
- J. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
1. Where conduits pass from outdoors into conditioned interior spaces.
 2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
- K. Provide pull string in all empty conduits and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches at each end.
- L. Provide grounding and bonding in accordance with Section 260526.
- M. Identify conduits in accordance with Section 260553.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - DO NOT USE BSD Quality Requirements, for additional requirements.
- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Correct deficiencies and replace damaged or defective conduits.

3.04 CLEANING

- A. Clean interior of conduits to remove moisture and foreign matter.
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3.05 PROTECTION

- A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

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SECTION 260533.16
BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.
- B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.

1.02 RELATED REQUIREMENTS

- A. Section 083100 - Access Doors and Panels: Panels for maintaining access to concealed boxes.
- B. Section 260529 - Hangers and Supports for Electrical Systems.
- C. Section 260533.13 - Conduit for Electrical Systems:
 - 1. Conduit bodies and other fittings.
 - 2. Additional requirements for locating boxes to limit conduit length and/or number of bends between pulling points.
- D. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- E. Section 262726 - Wiring Devices:
 - 1. Wall plates.
- F. Section 271000 - Structured Cabling: Additional requirements for communications systems outlet boxes.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices 2016.
- C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable 2014.
- D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports 2013 (Reaffirmed 2020).
- E. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 514A - Metallic Outlet Boxes Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
 - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
 - 4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
 - 5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
 - 6. Coordinate the work with other trades to preserve insulation integrity.
 - 7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.

8. Notify Architect/Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for cabinets and enclosures.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 BOXES

- A. General Requirements:
 1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
 2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
 3. Provide products listed, classified, and labeled as suitable for the purpose intended.
 4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
 5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
 1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
 2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
 3. Use suitable concrete type boxes where flush-mounted in concrete.
 4. Use suitable masonry type boxes where flush-mounted in masonry walls.
 5. Use raised covers suitable for the type of wall construction and device configuration where required.
 6. Use shallow boxes where required by the type of wall construction.
 7. Do not use "through-wall" boxes designed for access from both sides of wall.
 8. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
 9. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
 10. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
 11. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes unless specifically indicated or permitted.
 12. Wall Plates: Comply with Section 262726.
 13. Manufacturers:
 - a. Cooper Crouse-Hinds, a division of Eaton Corporation:
www.cooperindustries.com/#sle.
 - b. Hubbell Incorporated; Bell Products: www.hubbell-rtb.com/#sle.
 - c. Hubbell Incorporated; RACO Products: www.hubbell-rtb.com/#sle.

- d. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
 - e. Thomas & Betts Corporation: www.tnb.com/#sle.
 - f. Substitutions: See Section 016000 - Product Requirements.
- C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
- 1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
 - 2. NEMA 250 Environment Type, Unless Otherwise Indicated:
 - a. Indoor Clean, Dry Locations: Type 1, painted steel.
 - b. Outdoor Locations: Type 3R, painted steel.
 - 3. Junction and Pull Boxes Larger Than 100 cubic inches:
 - a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
 - 4. Manufacturers:
 - a. Cooper B-Line, a division of Eaton Corporation: www.cooperindustries.com/#sle.
 - b. Hoffman, a brand of Pentair Technical Products: www.hoffmanonline.com/#sle.
 - c. Hubbell Incorporated; Wiegmann Products: www.hubbell-wiegmann.com/#sle.
 - d. Substitutions: See Section 016000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive boxes.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
 - B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.
 - C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
 - D. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.
 - E. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.
 - F. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.
 - G. Box Locations:
 - 1. Locate boxes to be accessible. Provide access panels in accordance with Section 083100 as required where approved by the Architect.
 - 2. Unless dimensioned, box locations indicated are approximate.
 - 3. Locate boxes as required for devices installed under other sections or by others.
 - a. Communications Systems Outlets: Comply with Section 271000.
 - 4. Locate boxes so that wall plates do not span different building finishes.
 - 5. Locate boxes so that wall plates do not cross masonry joints.
 - 6. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
 - 7. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches horizontal separation unless otherwise indicated.
 - 8. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 260533.13.
 - H. Box Supports:
-

1. Secure and support boxes in accordance with NFPA 70 and Section 260529 using suitable supports and methods approved by the authority having jurisdiction.
 2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
 3. Installation Above Suspended Ceilings: Do not provide support from ceiling grid or ceiling support system.
- I. Install boxes plumb and level.
- J. Flush-Mounted Boxes:
1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
 2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
 3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.
- K. Install boxes as required to preserve insulation integrity.
- L. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- M. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.
- N. Close unused box openings.
- O. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.
- P. Provide grounding and bonding in accordance with Section 260526.
- Q. Identify boxes in accordance with Section 260553.

3.03 CLEANING

- A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.04 PROTECTION

- A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION

SECTION 260533.23
SURFACE RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Surface raceway systems.
- B. Wireways.

1.02 RELATED REQUIREMENTS

- A. Section 260526 - Grounding and Bonding for Electrical Systems.
- B. Section 260529 - Hangers and Supports for Electrical Systems.
- C. Section 260533.13 - Conduit for Electrical Systems.
- D. Section 260533.16 - Boxes for Electrical Systems.
- E. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- F. Section 262726 - Wiring Devices: Receptacles.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- B. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum) 2020.
- D. UL 5 - Surface Metal Raceways and Fittings Current Edition, Including All Revisions.
- E. UL 111 - Outline of Investigation for Multioutlet Assemblies Current Edition, Including All Revisions.
- F. UL 870 - Wireways, Auxiliary Gutters, and Associated Fittings Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the placement of raceways with millwork, furniture, equipment, etc. installed under other sections or by others.
 - 2. Coordinate rough-in locations of outlet boxes provided under Section 260533.16 and conduit provided under Section 260533.13 as required for installation of raceways provided under this section.
 - 3. Verify minimum sizes of raceways with the actual conductors and components to be installed.
 - 4. Notify Architect/Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not install raceways until final surface finishes and painting are complete.
 - 2. Do not begin installation of conductors and cables until installation of raceways is complete between outlet, junction and splicing points.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
 - B. Product Data: Provide manufacturer's standard catalog pages and data sheets including dimensions, knockout sizes and locations, materials, fabrication details, finishes, service condition requirements, and accessories.
 - 1. Surface Raceway Systems: Include information on fill capacities for conductors and cables.
-

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- C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 RACEWAY REQUIREMENTS

- A. Provide all components, fittings, supports, and accessories required for a complete raceway system.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Do not use raceways for applications other than as permitted by NFPA 70 and product listing.

2.02 SURFACE RACEWAY SYSTEMS

- A. Manufacturers:
1. Hubbell Incorporated: www.hubbell.com/#sle.
 2. MonoSystems, Inc: www.monosystems.com/#sle.
 3. Wiremold, a brand of Legrand North America, Inc: www.legrand.us/#sle.
 4. Substitutions: See Section 016000 - Product Requirements.
- B. Surface Metal Raceways: Listed and labeled as complying with UL 5.
- C. Multioutlet Assemblies: Listed and labeled as complying with UL 111.
- D. Surface Raceway System:
1. Raceway Type: Single channel, painted steel.
 2. Size: as required to accommodate wiring.
 3. Color: White.
 4. Accessory Device Boxes: Suitable for the devices to be installed; color to match raceway.
 5. Integrated Device Provisions:
 - a. Receptacles:
 - 1) Comply with Section 262726, except for finishes.
 - 2) Configuration: As indicated on the drawings.
 - 3) Color: Match raceway.
 - 4) Spacing: As indicated on the drawings.
 - b. Communications Outlets:
 - 1) Voice and Data Jacks: As specified in Section 271000.
 - 2) Configuration: As indicated on the drawings.

2.03 WIREWAYS

- A. Manufacturers:
1. Cooper B-Line, a division of Cooper Industries: www.cooperindustries.com/#sle.
 2. Enduro Composites: www.endurocomposites.com/#sle.
 3. Hoffman, a brand of Pentair Technical Products: www.hoffmanonline.com/#sle.
 4. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.
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5. Substitutions: See Section 016000 - Product Requirements.
 - B. Description: Lay-in wireways and wiring troughs with removable covers; listed and labeled as complying with UL 870.
 - C. Wireway Type, Unless Otherwise Indicated:
 1. Indoor Clean, Dry Locations: NEMA 250, Type 1, painted steel with screw-cover.
 2. Outdoor Locations: NEMA 250, Type 3R, painted steel with screw-cover; include provision for padlocking.
 - D. Finish for Painted Steel Wireways: Manufacturer's standard grey unless otherwise indicated.
 - E. Minimum Wireway Size: 4 by 4 inches unless otherwise indicated.
 - F. Where wireway size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.04 SOURCE QUALITY CONTROL

- A. See Section 014000 - DO NOT USE BSD Quality Requirements, for additional requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes and conduit terminations are installed in proper locations and are properly sized in accordance with NFPA 70 to accommodate raceways.
- C. Verify that mounting surfaces are ready to receive raceways and that final surface finishes are complete, including painting.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Install raceways plumb and level.
- D. Arrange wireways and associated raceway connections to comply with NFPA 70, including but not limited to requirements for deflected conductors and wireways used as pullboxes. Increase size of wireway where necessary.
- E. Secure and support raceways in accordance with Section 260529 at intervals complying with NFPA 70 and manufacturer's requirements.
- F. Close unused raceway openings.
- G. Provide grounding and bonding in accordance with Section 260526.
- H. Identify raceways in accordance with Section 260553.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - DO NOT USE BSD Quality Requirements, for additional requirements.
- B. Inspect raceways for damage and defects.
- C. Surface Raceway Systems with Integrated Devices: Test each wiring device to verify operation and proper polarity.
- D. Correct wiring deficiencies and replace damaged or defective raceways.

3.04 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.
-

3.05 PROTECTION

- A. Protect installed raceways from subsequent construction operations.

END OF SECTION

**SECTION 260553
IDENTIFICATION FOR ELECTRICAL SYSTEMS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical identification requirements.
- B. Identification nameplates and labels.
- C. Wire and cable markers.
- D. Voltage markers.

1.02 RELATED REQUIREMENTS

- A. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.
- B. Section 262726 - Wiring Devices - Lutron: Device and wallplate finishes; factory pre-marked wallplates.
- C. Section 271000 - Structured Cabling: Identification for communications cabling and devices.

1.03 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.
- B. Sequencing:
 - 1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
 - 2. Do not install identification products until final surface finishes and painting are complete.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittals procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.07 FIELD CONDITIONS

- A. Do not install adhesive products when ambient temperature is lower than recommended by manufacturer.

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

- A. Identification for Equipment:
 - 1. Use identification nameplate or identification label to identify.
 - a. Enclosed switches:
 - 1) Identify voltage and phase.
 - 2) Identify power source and circuit number. Include location when not within sight of equipment.
 - 2. Use voltage marker to identify highest voltage present for each piece of electrical equipment.

3. Use identification label on inside of door at each fused switch to identify required NEMA fuse class and size.
- B. Identification for Conductors and Cables:
 1. Color Coding for Power Conductors 600 V and Less: Comply with Section 260519.
 2. Identification for Communications Conductors and Cables: Comply with Section 271000.
 3. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment.
 4. Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:
 - a. At each source and load connection.
 - b. Within equipment enclosures when conductors and cables enter or leave the enclosure.
- C. Identification for Raceways:
 1. Use voltage markers to identify highest voltage present for accessible conduits at maximum intervals of 20 feet.
 2. Use identification labels to identify circuits enclosed for accessible conduits at wall penetrations and at equipment terminations when source is not within sight.
- D. Identification for Boxes:
 1. Use identification labels to identify circuits enclosed.
 - a. For exposed boxes in public areas, use only identification labels.
- E. Identification for Devices:
 1. Identification for Communications Devices: Comply with Section 271000.
 2. Wiring Device and Wallplate Finishes: Comply with Section 262726.
 3. Use identification label to identify fire alarm system devices.
 - a. For devices concealed above suspended ceilings, provide additional identification on ceiling tile below device location.
 4. Use identification label to identify serving branch circuit for all receptacles.
 - a. For receptacles in public areas or in areas as directed by Architect, provide identification on inside surface of wallplate.
- F. Identification for Luminaires:
 1. Use permanent red dot on luminaire frame to identify luminaires connected to emergency power system.

2.02 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
 1. Manufacturers:
 - a. Brimar Industries, Inc: www.brimar.com/#sle.
 - b. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
 - c. Seton Identification Products: www.seton.com/#sle.
 - d. Substitutions: See Section 016000 - Product Requirements.
 2. Materials:
 - a. Indoor Clean, Dry Locations: Use plastic nameplates.
 - b. Outdoor Locations: Use plastic nameplates suitable for exterior use.
 3. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.
 4. Stainless Steel Nameplates: Minimum thickness of 1/32 inch; engraved or laser-etched text.
 5. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.
 - B. Identification Labels:
 1. Manufacturers:
-

- a. Brady Corporation: www.bradyid.com/#sle.
 - b. Brother International Corporation: www.brother-usa.com/#sle.
 - c. Panduit Corp: www.panduit.com/#sle.
 - d. Substitutions: See Section 016000 - Product Requirements.
2. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
 - a. Use only for indoor locations.
 3. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.
- C. Format for Equipment Identification:
1. Minimum Size: 1 inch by 2.5 inches.
 2. Legend:
 - a. Equipment designation or other approved description.
 3. Text: All capitalized unless otherwise indicated.
 4. Minimum Text Height:
 - a. Equipment Designation: 1/2 inch.
 5. Color:
 - a. Normal Power System: White text on black background.
- D. Format for Receptacle Identification:
1. Minimum Size: 3/8 inch by 1.5 inches.
 2. Legend: Power source and circuit number or other designation indicated.
 3. Text: All capitalized unless otherwise indicated.
 4. Minimum Text Height: 3/16 inch.
 5. Color: Black text on clear background.
- E. Format for Fire Alarm Device Identification:
1. Minimum Size: 3/8 inch by 1.5 inches.
 2. Legend: Designation indicated and device zone or address.
 3. Text: All capitalized unless otherwise indicated.
 4. Minimum Text Height: 3/16 inch.
 5. Color: Red text on white background.

2.03 WIRE AND CABLE MARKERS

- A. Manufacturers:
1. Brady Corporation: www.bradyid.com/#sle.
 2. HellermannTyton: www.hellermanntyton.com/#sle.
 3. Panduit Corp: www.panduit.com/#sle.
 4. Substitutions: See Section 016000 - Product Requirements.
- B. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.
- C. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.
- D. Legend: Power source and circuit number or other designation indicated.
- E. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.
- F. Minimum Text Height: 1/8 inch.
- G. Color: Black text on white background unless otherwise indicated.

2.04 VOLTAGE MARKERS

- A. Manufacturers:
1. Brady Corporation: www.bradyid.com/#sle.
 2. Brimar Industries, Inc: www.brimar.com/#sle.
-

3. Seton Identification Products: www.seton.com/#sle.
4. Substitutions: See Section 016000 - Product Requirements.
- B. Markers for Conduits: Use factory pre-printed self-adhesive vinyl, self-adhesive vinyl cloth, or vinyl snap-around type markers.
- C. Markers for Boxes and Equipment Enclosures: Use factory pre-printed self-adhesive vinyl or self-adhesive vinyl cloth type markers.
- D. Minimum Size:
 1. Markers for Equipment: 1 1/8 by 4 1/2 inches.
 2. Markers for Conduits: As recommended by manufacturer for conduit size to be identified.
- E. Legend:
 1. Markers for Voltage Identification: Highest voltage present.
- F. Color: Black text on orange background unless otherwise indicated.

PART 3 EXECUTION

3.01 PREPARATION

- A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
 1. Surface-Mounted Equipment: Enclosure front.
 2. Flush-Mounted Equipment: Inside of equipment door.
 3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
 4. Elevated Equipment: Legible from the floor or working platform.
 5. Interior Components: Legible from the point of access.
 6. Conduits: Legible from the floor.
 7. Boxes: Outside face of cover.
 8. Conductors and Cables: Legible from the point of access.
 9. Devices: Outside face of cover.
- C. Install identification products centered, level, and parallel with lines of item being identified.
- D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.
 1. Do not use adhesives on exterior surfaces.
- E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - DO NOT USE BSD Quality Requirements, for additional requirements.
- B. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

END OF SECTION

**SECTION 265100
INTERIOR LIGHTING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Interior luminaires.
- B. LED drivers.
- C. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 260529 - Hangers and Supports for Electrical Systems.
- B. Section 260533.16 - Boxes for Electrical Systems.

1.03 REFERENCE STANDARDS

- A. IES LM-63 - Approved Method: IES Standard File Format for the Electronic Transfer of Photometric Data and Related Information 2019.
- B. IES LM-79 - Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products 2019.
- C. IES LM-80 - Approved Method: Measuring Maintenance of Light Output Characteristics of Solid-State Light Sources 2021.
- D. NECA/IESNA 500 - Standard for Installing Indoor Lighting Systems 2006.
- E. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems 1999 (Reaffirmed 2006).
- F. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility 2012 (Reaffirmed 2018).
- G. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL 924 - Emergency Lighting and Power Equipment Current Edition, Including All Revisions.
- I. UL 1598 - Luminaires Current Edition, Including All Revisions.
- J. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
 - 2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
 - 3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
 - 4. Notify Architect/Engineer of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
 - B. Shop Drawings:
 - 1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
 - 2. Provide photometric calculations where luminaires are proposed for substitution upon request.
-

- C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
 - 1. LED Luminaires:
 - a. Include estimated useful life, calculated based on IES LM-80 test data.
 - 2. Provide electronic files of photometric data certified by a National Voluntary Laboratory Accreditation Program (NVLAP) lab or independent testing agency in IES LM-63 standard format upon request.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- E. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 016000 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.08 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Provide 3-year manufacturer warranty for LED luminaires, including drivers.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.
- B. Substitutions: See Section 016000 - Product Requirements.

2.02 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
 - B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
 - C. Provide products listed, classified, and labeled as suitable for the purpose intended.
 - D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
 - E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
 - F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
-

- G. Recessed Luminaires:
 - 1. Ceiling Compatibility: Comply with NEMA LE 4.
- H. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

2.03 BALLASTS AND DRIVERS

- A. Dimmable LED Drivers:
 - 1. Dimming Range: Continuous dimming from 100 percent to five percent relative light output unless dimming capability to lower level is indicated, without flicker.
 - 2. Emergency battery backup either integral driver within fixture or individual mounted device to sufficiently provide 90 minutes of battery operation at 100% of lumen output.

2.04 ACCESSORIES

- A. Provide accessory plaster frames for luminaires recessed in plaster ceilings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 260533.16 as required for installation of luminaires provided under this section.
 - B. Install products in accordance with manufacturer's instructions.
 - C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).
 - D. Provide required support and attachment in accordance with Section 260529.
 - E. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
 - F. Suspended Ceiling Mounted Luminaires:
 - 1. Do not use ceiling tiles to bear weight of luminaires.
 - 2. Do not use ceiling support system to bear weight of luminaires unless ceiling support system is certified as suitable to do so.
 - 3. Secure lay-in luminaires to ceiling support channels using listed safety clips at four corners.
 - 4. In addition to ceiling support wires, provide two galvanized steel safety wire(s), minimum 12 gauge, connected from opposing corners of each recessed luminaire to building structure.
-

- 5. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.
- G. Recessed Luminaires:
 - 1. Install trims tight to mounting surface with no visible light leakage.
- H. Install accessories furnished with each luminaire.
- I. Bond products and metal accessories to branch circuit equipment grounding conductor.
- J. Install lamps in each luminaire.

3.04 FIELD QUALITY CONTROL

- A. See Section 014000 - DO NOT USE BSD Quality Requirements, for additional requirements.
- B. Inspect each product for damage and defects.
- C. Operate each luminaire after installation and connection to verify proper operation.
- D. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect/Engineer.

3.05 ADJUSTING

- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect/Engineer. Secure locking fittings in place.

3.06 CLEANING

- A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.07 CLOSEOUT ACTIVITIES

- A. See Section 017800 - Closeout Submittals, for closeout submittals.
- B. Demonstration: Demonstrate proper operation of luminaires to Architect/Engineer, and correct deficiencies or make adjustments as directed.
- C. Just prior to Substantial Completion, replace all lamps that have failed.

3.08 PROTECTION

- A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

**SECTION 265600
EXTERIOR LIGHTING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Exterior luminaires.
- B. Ballasts/Drivers.

1.02 RELATED REQUIREMENTS

- A. Section 260529 - Hangers and Supports for Electrical Systems.
- B. Section 260533.16 - Boxes for Electrical Systems.

1.03 REFERENCE STANDARDS

- A. ANSI O5.1 - American National Standard for Wood Poles - Specifications and Dimensions 2017.
- B. IES LM-79 - Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products 2019.
- C. IES LM-80 - Approved Method: Measuring Maintenance of Light Output Characteristics of Solid-State Light Sources 2021.
- D. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- E. NECA/IESNA 501 - Standard for Installing Exterior Lighting Systems 2000 (Reaffirmed 2006).
- F. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 1598 - Luminaires Current Edition, Including All Revisions.
- H. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.
 - 1. LED Luminaires:
 - a. Include estimated useful life, calculated based on IES LM-80 test data.
- C. Operation and Maintenance Data: Instructions for each product including information on replacement parts.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, handle, and store products according to NECA/IESNA 501 and manufacturer's written instructions.
 - B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.
 - C. Receive, handle, and store wood poles in accordance with ANSI O5.1.
-

1.07 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Provide 3-year manufacturer warranty for LED replacement lamps.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.
- B. Substitutions: See Section 016000 - Product Requirements.

2.02 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- G. Provide luminaires listed and labeled as suitable for wet locations unless otherwise indicated.
- H. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

2.03 BALLASTS AND DRIVERS

- A. Ballasts/Drivers - General Requirements:
 - 1. Provide ballasts containing no polychlorinated biphenyls (PCBs).
 - 2. Minimum Efficiency/Efficacy: Provide ballasts complying with all current applicable federal and state ballast efficiency/efficacy standards.
 - 3. Where EM noted on drawings, provide 90 minute, 100 watt, UL924 emergency battery pack installed near fixture in interior spaces.
- B. Dimmable LED Drivers:
 - 1. Dimming Range: Continuous dimming from 100 percent to five percent relative light output unless dimming capability to lower level is indicated, without flicker.
 - 2. Control Compatibility: Fully compatible with the dimming controls to be installed.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
 - B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
 - C. Verify that suitable support frames are installed where required.
 - D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
 - E. Verify that conditions are satisfactory for installation prior to starting work.
-

3.02 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 260533.16 as required for installation of luminaires provided under this section.
- B. Install products in accordance with manufacturer's instructions.
- C. Install luminaires in accordance with NECA/IESNA 501.
- D. Provide required support and attachment in accordance with Section 260529.
- E. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- F. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to bottom of luminaire.
- G. Install accessories furnished with each luminaire.
- H. Bond products and metal accessories to branch circuit equipment grounding conductor.
- I. Install lamps in each luminaire.

3.03 CLEANING

- A. Clean surfaces according to NECA/IESNA 501 and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.04 CLOSEOUT ACTIVITIES

- A. See Section 017800 - Closeout Submittals, for closeout submittals.

3.05 PROTECTION

- A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

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**SECTION 271000
STRUCTURED CABLING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Communications system design requirements.
- B. Communications pathways.
- C. Communications outlets.
- D. Communications identification.

1.02 RELATED REQUIREMENTS

- A. Section 078400 - Firestopping.
- B. Section 260533.16 - Boxes for Electrical Systems.
- C. Section 260553 - Identification for Electrical Systems: Identification products.
- D. Section 262726 - Wiring Devices.

1.03 REFERENCE STANDARDS

- A. BICSI N1 - Installation Practices for Telecommunications and ICT Cabling and Related Cabling Infrastructure, 1st Edition 2019.
- B. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. TIA-568 (SET) - Commercial Building Telecommunications Cabling Standard Set 2020.
- D. TIA-568.2 - Balanced Twisted-Pair Telecommunications Cabling and Components Standards 2009c, with Addendum (2016).
- E. TIA-569 - Telecommunications Pathways and Spaces 2019e.
- F. TIA-606 - Administration Standard for Telecommunications Infrastructure 2021d.
- G. TIA-607 - Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises 2019d.
- H. UL 444 - Communications Cables Current Edition, Including All Revisions.
- I. UL 514C - Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers Current Edition, Including All Revisions.
- J. UL 1863 - Communications-Circuit Accessories Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate requirements for service entrance and entrance facilities with Communications Service Provider.
 - 2. Coordinate the work with other trades to avoid placement of other utilities or obstructions within the spaces dedicated for communications equipment.
 - 3. Coordinate arrangement of communications equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 4. Notify Architect/Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
 - B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.
-

- C. Shop Drawings: Show compliance with requirements on isometric schematic diagram of network layout, showing cable routings, telecommunication closets, rack and enclosure layouts and locations, service entrance, and grounding, prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).
- D. Evidence of qualifications for installer.
- E. Test Plan: Complete and detailed plan, with list of test equipment, procedures for inspection and testing, and intended test date; submit at least 60 days prior to intended test date.
- F. Field Test Reports.
- G. Project Record Documents: Prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).
 - 1. Record actual locations of outlet boxes and distribution frames.
 - 2. Show as-installed color coding, pair assignment, polarization, and cross-connect layout.
 - 3. Identify distribution frames and equipment rooms by room number on drawings.
- H. Operation and Maintenance Data: List of all components with part numbers, sources of supply, and operation and maintenance instructions; include copy of project record documents.

1.06 QUALITY ASSURANCE

- A. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- B. Manufacturer Qualifications: At least 3 years experience manufacturing products of the type specified.
- C. Installer Qualifications: A company having at least 3 years experience in the installation and testing of the type of system specified, and:
 - 1. Employing a BICSI Registered Communications Distribution Designer (RCDD).
 - 2. Supervisors and installers factory certified by manufacturers of products to be installed.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Keep stored products clean and dry.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a 2 year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 SYSTEM DESIGN

- A. Provide a complete permanent system of cabling and pathways for voice and data communications, including cables, conduits and wireways, pull wires, support structures, enclosures and cabinets, and outlets.
 - 1. Comply with TIA-568 (SET) (cabling) and TIA-569 (pathways) (commercial standards).
 - 2. Provide fixed cables and pathways that comply with NFPA 70 and TIA-607 and are UL listed or third party independent testing laboratory certified.
 - 3. Provide connection devices that are rated for operation under conditions of 32 to 140 degrees F at relative humidity of 0 to 95 percent, noncondensing.
 - 4. In this project, the term plenum is defined as return air spaces above ceilings, inside ducts, under raised floors, and other air-handling spaces.
 - B. Main Distribution Frame (MDF): Existing centrally located support structure for terminating horizontal cables that extend to telecommunications outlets, functioning as point of presence to external service provider.
 - C. Cabling to Outlets: Specified horizontal cabling, wired in star topology to distribution frame located at center hub of star; also referred to as "links".
-

2.02 PATHWAYS

- A. Conduit: As specified in Section 260533.13; provide pull cords in all conduit.
- B. Firestop Sleeves: Listed; provide as required to preserve fire resistance rating of building elements.
 - 1. Products:
 - a. HoldRite, a brand of Reliance Worldwide Corporation; HydroFlame Pro Series/HydroFlame Custom Built: www.holdrite.com/#sle.
 - b. Substitutions: See Section 016000 - Product Requirements.

2.03 COPPER CABLE AND TERMINATIONS

- A. Manufacturers:
 - 1. CommScope: www.commscope.com/#sle.
 - 2. General Cable Technologies Corporation: www.generalcable.com/#sle.
 - 3. Siemon Company: www.siemon.com/#sle.
 - 4. Substitutions: See Section 016000 - Product Requirements.
 - B. Copper Horizontal Cable:
 - 1. Description: 100 ohm, balanced twisted pair cable complying with TIA-568.2 and listed and labeled as complying with UL 444.
 - 2. Cable Type - Voice and Data: TIA-568.2 Category 6 UTP (unshielded twisted pair); 23 AWG.
 - 3. Cable Capacity: 4-pair.
 - 4. Cable Applications: Use listed NFPA 70 Type CMP plenum cable unless otherwise indicated.
 - 5. Cable Jacket Color -Data Cable: Blue.
 - 6. Product(s):
 - a. CommScope; SYSTIMAX Twisted Pair Cables; GigaSPEED XL Category 6 U/UTP Cable: www.commscope.com/#sle.
 - b. CommScope; Uniprise Twisted Pair Cables; CS34 Series Category 6 U/UTP Cable: www.commscope.com/#sle.
 - c. General Cable Technologies Corporation; GenSPEED Cables: www.generalcable.com/#sle.
 - C. Jacks and Connectors: Modular RJ-45, non-keyed, terminated with 110-style insulation displacement connectors (IDC); high impact thermoplastic housing; suitable for and complying with same standard as specified horizontal cable; UL 1863 listed.
 - 1. Performance: 500 mating cycles.
 - 2. Voice and Data Jacks: 8-position modular jack, color-coded for both T568A and T568B wiring configurations.
 - 3. Product(s):
 - a. CommScope; SYSTIMAX RJ45 Jacks; MGS400 Series Category 6 U/UTP Modular Jacks: www.commscope.com/#sle.
 - b. CommScope; Uniprise RJ45 Jacks; UNJ600 Series Category 6 U/UTP Modular Jacks: www.commscope.com/#sle.
 - D. Copper Patch Cords:
 - 1. Description: Factory-fabricated 4-pair cable assemblies with 8-position modular connectors terminated at each end.
 - 2. Patch Cords for Patch Panels:
 - a. Quantity: One for each pair of patch panel ports.
 - b. Length: 3 feet.
 - 3. Product(s):
 - a. CommScope; SYSTIMAX Category 6 U/UTP Patch Cords: www.commscope.com/#sle.
 - b. CommScope; Uniprise Category 6 U/UTP Patch Cords: www.commscope.com/#sle.
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2.04 COMMUNICATIONS OUTLETS

- A. Outlet Boxes: Comply with Section 260533.16.
 - 1. Provide depth as required to accommodate cable manufacturer's recommended minimum conductor bend radius.
- B. Wall Plates:
 - 1. Comply with system design standards and UL 514C.
 - 2. Accepts modular jacks/inserts.
 - 3. Capacity:
 - a. Data or Combination Voice/Data Outlets: 2 ports.
 - 4. Wall Plate Material/Finish - Flush-Mounted Outlets: Match wiring device and wall plate finishes specified in Section 262726.

2.05 IDENTIFICATION PRODUCTS

- A. Comply with TIA-606.
- B. Comply with Section 260553.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

- A. Comply with latest editions and addenda of TIA-568 (SET) (cabling), TIA-569 (pathways), TIA-607 (grounding and bonding), BICSI N1, NFPA 70, and SYSTEM DESIGN as specified in PART 2.
- B. Comply with Communication Service Provider requirements.
- C. Grounding and Bonding: Perform in accordance with TIA-607 and NFPA 70.
- D. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.

3.02 INSTALLATION OF PATHWAYS

- A. Install pathways with the following minimum clearances:
 - 1. 48 inches from motors, generators, frequency converters, transformers, x-ray equipment, and uninterruptible power systems.
 - 2. 12 inches from power conduits and cables and panelboards.
 - 3. 5 inches from fluorescent and high frequency lighting fixtures.
 - 4. 6 inches from flues, hot water pipes, and steam pipes.
- B. Outlet Boxes:
 - 1. Coordinate locations of outlet boxes provided under Section 260533.16 as required for installation of telecommunications outlets provided under this section.
 - a. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
 - b. Locate outlet boxes so that wall plate does not span different building finishes.
 - c. Locate outlet boxes so that wall plate does not cross masonry joints.

3.03 INSTALLATION OF EQUIPMENT AND CABLING

- A. Cabling:
 - 1. Do not bend cable at radius less than manufacturer's recommended bend radius; for unshielded twisted pair use bend radius of not less than 4 times cable diameter.
 - 2. Do not over-cinch or crush cables.
 - 3. Do not exceed manufacturer's recommended cable pull tension.
 - 4. When installing in conduit, use only lubricants approved by cable manufacturer and do not chafe or damage outer jacket.
 - B. Service Loops (Slack or Excess Length): Provide the following minimum extra length of cable, looped neatly:
 - 1. At Distribution Frames: 120 inches.
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2. At Outlets - Copper: 12 inches.
- C. Copper Cabling:
 1. Category 5e and Above: Maintain cable geometry; do not untwist more than 1/2 inch from point of termination.
 2. For 4-pair cables in conduit, do not exceed 25 pounds pull tension.
 3. Use T568B wiring configuration.
- D. Identification:
 1. Use wire and cable markers to identify cables at each end.
 2. Use manufacturer-furnished label inserts, identification labels, or engraved wallplate to identify each jack at communications outlets with unique identifier.

3.04 FIELD QUALITY CONTROL

- A. See Section 014000 - DO NOT USE BSD Quality Requirements, for additional requirements.
- B. Comply with inspection and testing requirements of specified installation standards.
- C. Visual Inspection:
 1. Inspect cable jackets for certification markings.
 2. Inspect cable terminations for color coded labels of proper type.
 3. Inspect outlet plates and patch panels for complete labels.
 4. Inspect patch cords for complete labels.
- D. Testing - Copper Cabling and Associated Equipment:
 1. Category 5e and Above Backbone: Perform near end cross talk (NEXT) and attenuation tests.
- E. Final Testing: After all work is complete, including installation of telecommunications outlets, and telephone dial tone service is active, test each voice jack for dial tone.

END OF SECTION

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SECTION 284601
FIRE ALARM SYSTEM (EXISTING SYSTEM)**PART 1 - GENERAL****1.01 SCOPE & RELATED DOCUMENTS**

- A. The work covered by this section of the specifications includes the furnishing of all labor, equipment, materials, and performance of all operations in connection with the modifications and additions to the existing Fire Alarm System(s) as shown on the drawings and as herein specified.
- B. The requirements of the conditions of the Contract, Supplementary Conditions and General Requirements, apply to the work specified in this section.
- C. The complete installation is to conform to the applicable sections of NFPA-72, NFPA-71, Local Code Requirements and National Electrical Code with particular attention to Article 760.
- D. Additionally, the entire installed system and all integrated system operations shall be within the guidelines of the SBCCI Standard Building Code.
- E. The work covered by this section of the specifications is to be coordinated with the related work as specified elsewhere under the project specifications.
- F. The contractor shall provide all required modifications and additions to the existing Fire Alarm System for the removal, relocation of existing devices and addition of new devices. This shall include all additional wiring, devices, modifications to the existing control panel, additional components and modules, addressable cards, testing, troubleshooting and instructions to the owner.

1.02 QUALITY ASSURANCE

- A. Each and all items of the Fire Alarm System shall be listed compatible with the existing system under the appropriate category by Underwriters' Laboratories, Inc. (UL), and shall bear the "U.L." label. All control equipment is to be listed under UL category UOJZ as a single control unit. Partial listing shall NOT be acceptable.
- B. All items shall match and be of the same manufacturer as the existing system.
- C. The equipment and installation supervision furnished under this specification is to be provided by a manufacturer who has been engaged in production of this type (software driven) of equipment for at least ten (10) years, and has a fully-equipped service organization within thirty-five (35) miles of the installation.
- D. All control equipment must have transient protection devices to comply with UL864 requirements.
- E. In addition to the UL-UOJZ requirement mentioned above, the system controls shall be UL listed for Power Limited Applications per NEC 760. All circuits must be marked in accordance with NEC article 760-23.
- F. Supplier shall provide documentation that fire alarm technicians are NICET LEVEL 2 certified (minimum of four).
- G. Suppliers' service organization must have been established in the local area for a minimum of ten (10) years with ten (10) years experience on specific equipment brand supplied.

1.03 SUBMITTALS

- A. Submit shop drawings for each piece of equipment specified including complete wiring and connection diagrams.
 - B. All submittals shall be submitted in a single complete brochure, which shall be in the form of a soft cover binder with each group separated by an identified index tab.
 - C. Submittals that fail to comply with the above requirements will automatically be rejected.
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- D. It is the Contractor's responsibility to provide submittals in an organized and timely manner in order so as not to delay the project schedule and hamper the work of other trades.
 - E. Submit certificate of Fire Alarm System operating tests.

PART 2 PRODUCTS

2.01 PERIPHERAL DEVICES

- A. The Contractor shall furnish and install addressable devices that are compatible with the existing Cerberus Pyrotrincs fire alarm System
- B. Devices Required but not limited to:
 - 1. Smoke Detectors
 - 2. Addressable Relay modules

PART 3 EXECUTION

3.01 INSTALLATION

- A. Provide and install all devices in accordance with the plans and specifications, all applicable codes and the manufacturer's recommendations. All wiring shall be installed in strict compliance with all the provisions of NEC - Article 760 A and C, Power-Limited Fire Protective Signaling Circuits or if required may be reclassified as non-power limited and wired in accordance with NEC-Article 760 A and B. Upon completion, the contractor shall so certify in writing to the owner and general contractor.
 - 1. All junction boxes shall be sprayed red and labeled "Fire Alarm". Wiring color code shall be maintained throughout the installation.
- B. Installation of equipment and devices that pertain to other work in the contract shall be closely coordinated with the appropriate subcontractors.
- C. The contractor shall clean all dirt and debris from the inside and the outside of the fire alarm equipment after completion of the installation.
- D. The manufacturer's authorized representative shall provide on-site supervision of installation.

3.02 TESTING

- A. The completed fire alarm system shall be fully tested in accordance with NFPA-72H by the contractor in the presence of the owner's representative and the Local Fire Marshal. Upon completion of a successful test, the contractor shall so certify in writing to the owner and general contractor.

3.03 WARRANTY

- A. The contractor shall warrant the completed fire alarm system wiring and equipment to be free from inherent mechanical and electrical defects for a period of one (1) year from the date of the completed and certified test or from the date of first beneficial use.
- B. The equipment manufacturer shall make available to the owner a maintenance contract proposal to provide a minimum of two (2) inspections and tests per year in compliance with NFPA-72H guidelines.

END OF SECTION

**SECTION 311000
SITE CLEARING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clearing and protection of vegetation.
- B. Removal of existing debris.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SITE CLEARING

- A. Comply with other requirements specified in Section 017000.
- B. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.02 EXISTING UTILITIES AND BUILT ELEMENTS

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Protect existing structures and other elements that are not to be removed.

3.03 VEGETATION

- A. Scope: Remove trees, shrubs, brush, and stumps in areas to be covered by building structure, paving, playing fields, lawns, and planting beds.
 - B. Do not begin clearing until vegetation to be relocated has been removed.
 - C. Do not remove or damage vegetation beyond the limits indicated on drawings.
 - 1. Exception: Specific trees and vegetation indicated on drawings to be removed.
 - D. Install substantial, highly visible fences at least 3 feet high to prevent inadvertent damage to vegetation to remain:
 - 1. At vegetation removal limits.
 - 2. Around trees to remain within vegetation removal limits; locate no closer to tree than at the drip line.
 - 3. Around other vegetation to remain within vegetation removal limits.
 - E. In areas where vegetation must be removed but no construction will occur other than pervious paving, remove vegetation with minimum disturbance of the subsoil.
 - F. Vegetation Removed: Do not burn, bury, landfill, or leave on site, except as indicated.
 - 1. Chip, grind, crush, or shred vegetation for mulching, composting, or other purposes; preference should be given to on-site uses.
 - 2. Trees: Sell if marketable; if not, treat as specified for other vegetation removed; remove stumps and roots to depth as speci.
 - 3. Sod: Re-use on site if possible; otherwise sell if marketable, and if not, treat as specified for other vegetation removed.
 - G. Dead Wood: Remove all dead trees (standing or down), limbs, and dry brush on entire site; treat as specified for vegetation removed.
 - H. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner or the Owners Representative.
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3.04 DEBRIS

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

**SECTION 312200
GRADING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removal and storage of topsoil.
- B. Rough grading the site.
- C. Finish grading.

1.02 RELATED REQUIREMENTS

- A. Section 312323 - Fill: Filling and compaction.

1.03 SUBMITTALS

- A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil: See Section 312323.
- B. Other Fill Materials: See Section 312323.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.
- B. Verify the absence of standing or ponding water.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- D. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.
- E. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.
- F. Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.
- G. Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.

3.03 ROUGH GRADING

- A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
 - B. Do not remove topsoil when wet.
 - C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.
 - D. Do not remove wet subsoil, unless it is subsequently processed to obtain optimum moisture content.
 - E. When excavating through roots, perform work by hand and cut roots with sharp axe.
 - F. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.
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- G. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

3.04 SOIL REMOVAL

- A. Stockpile topsoil to be re-used on site; remove remainder from site.
- B. Stockpiles: Use areas designated on site; pile depth not to exceed 10 feet; protect from erosion.

3.05 FINISH GRADING

- A. Before Finish Grading:
 - 1. Verify building and trench backfilling have been inspected.
 - 2. Verify subgrade has been contoured and compacted.
- B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.
- C. Where topsoil is to be placed, scarify surface to depth of 3 inches.
- D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 6 inches.
- E. Place topsoil in areas where seeding, sodding, and planting are indicated.
- F. Unless otherwise indicated on the drawings place topsoil to the following compacted thicknesses:
 - 1. Areas to be Seeded with Grass: 6 inches.
 - 2. Areas to be Sodded: 4 inches.
 - 3. Shrub Beds: 18 inches.
 - 4. Flower Beds: 12 inches.
 - 5. Planter Boxes: To within 3 inches of box rim.
- G. Place topsoil during dry weather.
- H. Remove roots, weeds, rocks, and foreign material while spreading.
- I. Near plants spread topsoil manually to prevent damage.
- J. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- K. Lightly compact placed topsoil.
- L. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

3.06 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.
- B. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch).

3.07 REPAIR AND RESTORATION

- A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.
- B. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.08 FIELD QUALITY CONTROL

- A. See Section 312323 for compaction density testing.

3.09 CLEANING

- A. Remove unused stockpiled topsoil. Grade stockpile area to prevent standing water.
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- B. Leave site clean and raked, ready to receive landscaping.

END OF SECTION

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**SECTION 312316
EXCAVATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavating for slabs-on-grade and paving.
- B. Temporary excavation support and protection systems.

1.02 REFERENCE STANDARDS

- A. 29 CFR 1926 - Safety and Health Regulations for Construction Current Edition.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Field Quality Control Submittals: Document visual inspection of load-bearing excavated surfaces.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Bedding and Fill to Correct Over-Excavation:
 - 1. See Section 312323 for bedding and corrective fill materials at general excavations.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the work are as indicated.
- B. Determine the prevailing groundwater level prior to excavation. If the proposed excavation extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by Architect/Engineer. If the proposed excavation extends more than 1 foot into the prevailing groundwater, control groundwater intrusion with a comprehensive dewatering procedures, or as directed by Geotechnical Engineer.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Locate, identify, and protect utilities that remain and protect from damage.
- C. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- D. Protect plants, lawns, rock outcroppings, and other features to remain.
- E. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by Architect/Engineer.

3.03 TEMPORARY EXCAVATION SUPPORT AND PROTECTION

- A. Excavation Safety: Comply with OSHA's Excavation Standard, 29 CFR 1926, Subpart P.

3.04 EXCAVATING

- A. Excavate to accommodate construction operations.
 - 1. Excavate to the specified elevations.
 - 2. Excavate to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work.
 - 3. Cut utility trenches wide enough to allow inspection of installed utilities.
 - B. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time
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will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
 2. Rock excavation includes removal and disposal of rock. Remove rock to lines and subgrade elevations indicated to permit installation of permanent construction.
- C. Do not interfere with 45 degree bearing splay of foundations.
- D. Provide temporary means and methods, as required, to remove all water from excavations. See Section 312319. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.05 SUBGRADE PREPARATION

- A. See Section 312323 for subgrade preparation at general excavations.

3.06 FILLING AND BACKFILLING

- A. Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation.
- B. See Section 312323 for fill, backfill, and compaction requirements at general excavations.
- C. See Section 312200 for rough and final grading and topsoil replacement requirements.

3.07 FIELD QUALITY CONTROL

- A. See Section 014000 - DO NOT USE BSD Quality Requirements, for general requirements for field inspection and testing.
- B. Provide for visual inspection of load-bearing excavated surfaces by Architect/Engineer before placement of foundations.

3.08 CLEANING

- A. Stockpile excavated material to be re-used in area designated on site in accordance with Section 312200.
- B. Remove excavated material that is unsuitable for re-use from site.

3.09 PROTECTION

- A. Divert surface flow from rains or water discharges from the excavation.
- B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
- C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.
- D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- E. Keep excavations free of standing water and completely free of water during concrete placement.

END OF SECTION

SECTION 312323
FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Filling, backfilling, and compacting for slabs-on-grade and sidewalks.
- B. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.
- C. Lightweight concrete fill.

1.02 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.

1.04 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. General Fill - Fill Type Satisfactory Soils: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
 - 1. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
 - 2. Complying with ASTM D2487 Group Symbol GW, GP, GM, SW, SP, and SM .
 - B. Structural Fill - Fill Type Select Granular: Complying with State of New York Department of Transportation (Item 203.07 and Section 733-11) standard.
 - C. Concrete for Fill: Lean concrete.
 - D. Granular Fill - Fill Type Bedding Stone: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand, washed stone; free of shale, clay, friable material and debris.
 - 1. Graded in accordance with ASTM C136/C136M, within the following limits:
 - a. 1 inch sieve: 100 percent passing.
 - b. 3/8 inch sieve: 55 to 85 percent passing.
 - c. No. 4 sieve: 35 to 60 percent passing.
 - d. No. 40: 10 to 25 percent passing.
 - e. No. 200: 5 to 10 percent passing.
 - E. Granular Fill - Fill Type Drainage Course: NYS DOT Specification.
 - 1. Material shall meet the requirements of Item 605.0901, Type 1, or a 50-50 mixture of Type I and Type II (605.1001) as defined in the New York State Department of Transportation "Standard Specification".
 - F. Sand: Natural river or bank sand; free of silt, clay, loam, friable or soluble materials, and organic matter.
 - 1. Grade in accordance with ASTM D2487 Group Symbol SW.
 - G. Topsoil: See Section 312200.
 - H. Engineered Fill - Lightweight Concrete:
 - 1. Materials:
 - a. Cement: ASTM C150/C150M.
 - b. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.
 - c. Admixtures: As recommended by lightweight concrete fill manufacturer.
 - d. Expansion Material: Manufacturer's recommended expansion material.
-

- e. Mix Design: By manufacturer.

2.02 ACCESSORIES

- A. Subsurface Drainage Geotextile: As called out on the drawings or: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, complying with AASHTO M 288 . Provide the following or an approved equal: Mirafi S-Series Nonwoven Polypropylene , by Tencate
- B. Separation Geotextile: As called out on the drawing or: Woven geotextile fabric, manufactured for separation applications, ; complying with AASHTO M 288. Provide the following or an approved equal. Mirafi HP 370 or HP 570, by TenCate

2.03 SOURCE QUALITY CONTROL

- A. See Section 014000 - DO NOT USE BSD Quality Requirements, for general requirements for testing and analysis of soil material.
- B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
- C. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

- A. Scarify and proof roll subgrade surface to a depth of 6 inches to identify soft spots.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.
- E. If Owner's Representative determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- F. Authorized additional excavation and replacement material will be paid for per Contract provisions for unit prices / allowances or changes in the Work as applicable.
- G. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Owner's Representative, without additional compensation.

3.03 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
 - B. Fill up to subgrade elevations unless otherwise indicated.
 - C. Employ a placement method that does not disturb or damage other work.
 - D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
 - E. Maintain optimum moisture content of fill materials to attain required compaction density.
 - F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
 - G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
 - H. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
 - I. Correct areas that are over-excavated.
-

1. Load-bearing foundation surfaces: Use structural fill, flush to required elevation, compacted to 100 percent of maximum dry density.
 2. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- J. Compaction Density Unless Otherwise Specified or Indicated:
1. Under paving, slabs-on-grade, and similar construction: 95 percent of maximum dry density.
 2. At other locations turf or unpaved or non- traffic areas : 90 percent of maximum dry density.
- K. Reshape and re-compact fills subjected to vehicular traffic.
- L. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Architect/Engineer. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.04 ENGINEERED FILL - LIGHTWEIGHT CONCRETE

- A. Install lightweight concrete fill according to manufacturer's written instructions.
- B. Use batching, mixing, and placing equipment approved by the manufacturer.
- C. Prevent segregation of material.
- D. Tolerance: Finished surface within 2 inches of elevation indicated on drawings.

3.05 FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.
- B. Structural Fill below slabs, pavements and at locations indicated on the drawings.:
 1. Use structural fill.
 2. Maximum depth per lift: 8 inches, compacted.
 3. Compact to minimum 95 percent of maximum dry density.
- C. Over Buried Utility Piping in Trenches and as indicated on the drawings :
 1. Bedding: If not Indicated on the drawings, use granular fill (Bedding Stone).
 2. Cover with general fill.
 3. Fill up to subgrade elevation.
 4. Compact in maximum 8 inch lifts to 95 percent of maximum dry density 90 percent in non traffic or lawn areas.
- D. At Lawn Areas:
 1. Use general fill.
 2. Compact to 90 percent of maximum dry density.
 3. See Section 312200 for topsoil placement.
- E. At Planting Areas Other Than Lawns :
 1. Use general fill.
 2. Compact to 90 percent of maximum dry density.
 3. See Section 312200 for topsoil placement.
- F. At French Drains:
 1. Use Drainage Fill .

3.06 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.
- B. Top Surface of Filling Under Paved Areas: Plus or minus 1 inch from required elevations.

3.07 FIELD QUALITY CONTROL

- A. See Section 014000 - DO NOT USE BSD Quality Requirements, for general requirements for field inspection and testing.
-

B. Soil Fill Materials:

1. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
2. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.
3. If tests indicate work does not meet specified requirements, remove work, replace and retest.
4. Frequency of Tests:
 - a. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
 - 1) Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2,500 square feet or less of paved area or building slab, but in no case fewer than three tests.
 - 2) Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 50 lineal feet or less of wall length, but no fewer than two tests.
 - 3) Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 50 lineal feet or less of trench length, but no fewer than two tests
5. Proof roll compacted fill at surfaces that will be under slabs-on-grade and paving or gravel roads.
 - a. Proof-roll subgrade below the building slabs and pavements with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 - b. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph.
 - c. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Owner's Representative. Place No. 3/No. 4 size stone to stabilize subgrades as directed by Engineer or onsite geotechnical engineer and approved by Owner's Representative. Replace excavated soil with compacted backfill or fill as directed

END OF SECTION

**SECTION 312500
EROSION AND SEDIMENTATION CONTROL****PART 1 GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.
- B. New York State Standards and Specifications for Erosion and Sediment Control.

1.02 WORK OF THIS SECTION

- A. Work covered in this section includes the control of erosion, siltation, and sedimentation pursuant to Section 402 of the Clean Water Act. All costs associated with the temporary or permanent erosion control measures shall be included in the Contractor's bid.
- B. All Contractors and their subcontractors must agree to implement all applicable provisions of the Erosion Control Plans prior to commencement of any construction activity.

1.03 QUALITY ASSURANCE

- A. Contractor shall comply with the Erosion Control Plans prepared for the site. All workers responsible for site work activities shall be familiar with these Plans.
- B. Contractor shall designate one individual responsible for implementing and maintaining site-wide erosion and sediment control measures who shall be thoroughly familiar with the types of materials being installed and the best methods for their installation. This individual shall conduct daily inspections of erosion and sediment control measures.
- C. Clear only what is required for immediate construction activities. Disturbed areas of the site that will not be re-disturbed for 21 days or more must be stabilized by the 14th day following the last disturbance.
- D. Upstream storm water runoff should be diverted away from disturbed areas. Contractor shall provide and maintain temporary erosion and sediment control measures, such as berms, dikes, slope drains, silt stops, and sedimentation basins, until permanent drainage facilities and erosion control features have been completed and are operative.
- E. The limits of cleared areas shall be physically delineated to protect areas designated as undisturbed.
- F. Take every reasonable precaution and do whatever is necessary to avoid erosion and to prevent silting of rivers, streams, impoundments, and drainage ditches, swales or any off-site water body.
- G. Continue erosion control measures until the permanent measures have been sufficiently established and are capable of controlling erosion on their own.
- H. The control of dust, erosion and sediment originating from construction operations is considered a critical responsibility of the Contractor. The Owner's Representative will be the final judge of the adequacy of the Contractor's dust, erosion and sedimentation control. The Owner's Representative may suspend work until adequate dust, erosion and sedimentation control is attained. The Contractor shall bear the costs of repair work and restoration of damaged items.

PART 2 PRODUCTS**2.01 MULCHING**

- A. Hay and straw mulches shall be air-dried mowings (<15% moisture content) of acceptable herbaceous growth reasonably free from swamp grass, weeds, twigs, debris, and other deleterious material, and free from rot, mold, primary noxious weed seeds, and rough or woody materials. Mulches containing mature seed of species which would volunteer and be detrimental to the permanent seeding, or would result in overseeding, or would produce growth

which is aesthetically unpleasing, are not permitted. Materials may be baled, however, loose or broken bales are not acceptable.

- B. Temporary Type Mulch Nets: Lightweight, extruded photodegradable netting, with approximate openings of 1½" x ¾", with manufacturer recommended staples or anchoring method.
- C. Wood fiber mulch with tackifier (Terra Tack). Apply wood fibers at the rate of 500 lbs./acre and tackifier at the rate of 40-45 gallons/acre.
- D. Hardwood Stakes: Stakes shall be new hardwood, 1½" x 1½", minimum 3 feet long.

2.02 SEED AND SOD FOR EROSION CONTROL

- A. For temporary seeding in spring, summer or early fall, seed the area with ryegrass, (annual or perennial) or approved equal at 30 lbs per acre. For temporary seeding in late fall or early winter, seed the area with Certified winter rye (cereal rye) or approved equal at 100 lbs per acre. Mulch area with hay or straw at 2 tons per acre. Mulch anchoring may be required where wind or areas of concentrated water are a concern.
- B. For permanent seeding on slopes, provide a seed according to the following or as shown on the Contract Drawings
 - 1. Erosion control areas are to be seeded at a rate of: 50 pounds per acre with a mix consisting of 70% Ernst Best Strip Mine Mix (ERNMX-101) and 30% Ernst Shaded Roadside Mix (ERNMX-140), as supplied by Ernst Conservation Seeds, or as approved by Owner.

2.03 SILT FENCES

- A. Prefabricated silt fencing with UV-stabilized geotextile fabric, with hardwood or steel posts, mesh reinforced backing and appropriate fasteners. Fabric shall be 48" minimum width.

2.04 STABILIZED CONSTRUCTION ENTRANCE

- A. Material shall be clean, sound, crushed stone of uniform quality.
- B. Geotextile filter cloth (Mirafi 500X, or equal) designed for heavy-duty haul road use.

2.05 TEMPORARY STRUCTURAL MEASURES

- A. Temporary structural measures for erosion control include, but are not limited to, earth dikes, temporary swales, perimeter swales, rip rap outlet protection, sediment traps, and sediment basins.
- B. Each measure shall be designed in accordance with New York State Guidelines for Urban Erosion and Sediment Control, as well as New York State Standards and Specifications for Erosion and Sediment Control. Materials and construction measures shall be consistent with these measures.

PART 3 EXECUTION

3.01 HAY AND STRAW MULCHING

- A. Install hay or straw mulch immediately after each area has been properly prepared. Place at a rate of 2 tons per acre (approximately 100 to 120 bales per acre). Mulching shall be applied to a uniform thickness of 2 to 3 inches (loose, uncompacted) by hand or broadcast. No clumping, matting, bale fragments, or excessive thickness shall be permitted. The intent is to allow 20% to 40% of the ground surface to be seen in a uniform coverage.
 - B. Place mulch on seeded areas within 24 hours after seeding.
 - C. Where winds may blow the mulch, or when ground slopes exceed 10%, or when otherwise required to maintain the mulch firmly in place. Apply temporary netting, chemical bonding, or other anchoring devices, or use mechanical crimping, punching or rolling, to anchor the mulch. Unless otherwise directed, remove netting or other acceptable anchoring system prior to the acceptance of the work.
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3.02 MATTING/BLANKETS - GENERAL

- A. Prepare surfaces of ditches and slopes to conform to the grades, contours and cross sections as shown on the Drawings and finish to a smooth and even condition with all debris, roots, stone, and lumps raked out and removed. Loosen the soil surface to permit bedding of the matting. Unless otherwise noted, seed prior to the placement of the matting.
- B. The ditches and swales, and on slopes, each upslope and each downslope end of each piece of matting shall be placed in a 6" trench, stapled at 12" on center, backfilled, and tamped. Similarly, bury edges of matting along the edges of catch basins and other structures. Owner's Representative may require that any other edge, exposed to more than normal flow of water, be buried in a similar fashion.
- C. Decrease the specified spacing of staples when varying factors, such as the season of the year or the amount of water encountered or anticipated, requires additional anchoring.

3.03 SEED FOR EROSION CONTROL

- A. Sow seed when soils are moderately dry and when wind does not exceed five miles per hour or as directed by the Owner's Representative.
- B. Areas that will be regraded or otherwise disturbed later during construction may be seeded as directed by the Owner's Representative to obtain temporary control.

3.04 SILT FENCES

- A. Provide silt fences, as required, for the temporary control of erosion and to stop silt and sediment from reaching surface waters, adjacent properties, or entering catch basins, or damaging the work.
- B. Erect silt fences and bury bottom edge in accordance with the manufacturer's recommended installation instructions. Provide a sufficient length of fence to accommodate runoff without causing any flooding and to adequately store any silt, sediment, and debris reaching it. Place silt fences along contours so that low areas are minimized.
- C. Maintain and leave silt fences in place until permanent erosion control measures have been established.

3.05 STABILIZED CONSTRUCTION ENTRANCES

- A. Stabilized pads of aggregate underlain with filter cloth shall be constructed as shown on the Contract Drawings.
- B. Geotextile fabric shall be placed over the entire area to be covered with aggregate prior to placing of the stone.

3.06 TEMPORARY STRUCTURAL MEASURES

- A. Temporary structural measures shall be maintained throughout the duration of the contract or until the drainage area has been properly stabilized as approved by the Owner's Representative.
- B. Temporary sediment traps must provide at least 3,600 cubic feet of storage for every acre of drainage area.
- C. Sediment shall be removed and trap restored to its original dimensions when sediment has accumulated to 1/2 the design depth of the trap.
- D. Removed sediment shall be properly disposed of.
- E. Inspect all erosion control measures following each rainfall event exceeding 1/2 inch in a 24-hour period. Correct all damage immediately.

3.07 MAINTENANCE

- A. If any staples become loosened or raised, or if any matting becomes loose, torn, or undermined, or if any temporary erosion and sediment control measures are disturbed, repair
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them immediately.

- B. If the seed is washed out before germination, repair any damage, refertilize, and reseed.
- C. Maintain mulched and matted areas, silt stops, and other temporary control measures until the permanent control measures are established and no further erosion is likely.
- D. All sediment spilled, dropped, or washed onto the driveway or public right-of-way shall be removed immediately.
- E. Maintain ditches and swales at all times so that they effectively drain. Refill, reshape, and recompact where ruts or erosion occurs.
- F. Maintain areas temporarily seeded including repair of all damages, re-seeding, and refertilizing.
- G. Take special precautions in the use of construction equipment to minimize erosion. Do not leave wheel tracks where erosion might begin. Prevent direct discharge from dewatering pumps and surface runoff from the construction sites to storm sewers, culverts, streams or ditches. Intercept and conduct surface runoff and discharge from dewatering pumps to siltation ponds before discharging to natural drainage channels.

END OF SECTION

SECTION 315000
EXCAVATION SUPPORT AND PROTECTION**PART 1 GENERAL****1.01 SUMMARY**

- A. Section includes temporary excavation support and protection systems.

1.02 ACTION SUBMITTALS

- A. Product Data: For each type of product.
1. Include construction details, material descriptions, performance properties, and dimensions of individual components and profiles, and calculations for excavation support and protection system.

1.03 FIELD CONDITIONS

- A. Interruption of Existing Utilities: Do not interrupt any utility serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility according to requirements indicated:
1. Notify Owner's representative no fewer than two days in advance of proposed interruption of utility.
 2. Do not proceed with interruption of utility without Owner's written permission.
- B. Survey Work: Where necessary to complete the work, engage a qualified land surveyor or professional engineer to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

PART 2 - PRODUCTS**2.01 PERFORMANCE REQUIREMENTS**

- A. Provide, monitor, and maintain excavation support and protection system capable of supporting excavation sidewalls and of resisting earth and hydrostatic pressures and superimposed and construction loads.
1. Contractor Design: Design excavation support and protection system, including comprehensive engineering analysis by a qualified professional engineer.
 2. Prevent surface water from entering excavations by grading, dikes, or other means.
 3. Install excavation support and protection systems without damaging existing buildings, structures, and site improvements adjacent to excavation.
 4. Continuously monitor vibrations, settlements, and movements to ensure stability of excavations and constructed slopes and to ensure that damage to permanent structures is prevented.

2.02 MATERIALS

- A. General: Provide materials that are either new or in serviceable condition.
- B. Structural Steel: ASTM A 36/A 36M, ASTM A 690/A 690M, or ASTM A 992/A 992M.
- C. Cast-in-Place Concrete: ACI 301, of compressive strength required for application.
- D. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- E. Tiebacks: Steel bars, ASTM A 722/A 722M.
- F. Tiebacks: Steel strand, ASTM A 416/A 416M.

PART 3 EXECUTION**3.01 PREPARATION**

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation support and protection system operations.
-

1. Shore, support, and protect utilities encountered.
- B. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- C. Locate excavation support and protection systems clear of permanent construction so that construction and finishing of other work is not impeded.

3.02 TIEBACKS

- A. Drill, install, grout, and tension tiebacks.
- B. Test load-carrying capacity of each tieback and replace and retest deficient tiebacks.
 1. Have test loading observed by a qualified professional engineer responsible for design of excavation support and protection system.
- C. Maintain tiebacks in place until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.03 BRACING

- A. Bracing: Locate bracing to clear columns, floor framing construction, and other permanent work. If necessary to move brace, install new bracing before removing original brace.
 1. Do not place bracing where it will be cast into or included in permanent concrete work unless otherwise approved by Architect.
 2. Install internal bracing if required to prevent spreading or distortion of braced frames.
 3. Maintain bracing until structural elements are supported by other bracing or until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.04 FIELD QUALITY CONTROL

- A. Survey-Work Benchmarks: Resurvey benchmarks regularly during installation of excavation support and protection systems, excavation progress, and for as long as excavation remains open. Maintain an accurate log of surveyed elevations and positions for comparison with original elevations and positions. Promptly notify Architect if changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.
- B. Promptly correct detected bulges, breakage, or other evidence of movement to ensure that excavation support and protection system remains stable.
- C. Promptly repair damages to adjacent facilities caused by installation or faulty performance of excavation support and protection systems.

3.05 REMOVAL AND REPAIRS

- A. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and earth and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils and rock or damaging structures, pavements, facilities, and utilities.
 1. Remove excavation support and protection systems to a minimum depth of 48 inches below overlying construction and abandon remainder.
 2. Fill voids immediately with approved backfill compacted to density specified in Section 312000 "Earth Moving."
 3. Repair or replace, as approved by Architect, adjacent work damaged or displaced by removing excavation support and protection systems.
- B. Leave excavation support and protection systems permanently in place, as required or necessary.

END OF SECTION

**SECTION 321216
ASPHALT PAVING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aggregate base course.
- B. Single course bituminous concrete paving.
- C. Hot-mix asphalt patching.
- D. Hot-mix asphalt paving.
- E. Hot-mix asphalt overlay
- F. Surface sealer.

1.02 REFERENCE STANDARDS

- A. AI MS-2 - Asphalt Mix Design Methods 2015.
- B. AI MS-19 - Basic Asphalt Emulsion Manual 2008.
- C. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction 2009a.

1.03 QUALITY ASSURANCE

- A. Perform Work in accordance with NYS DOT Standards.
- B. Mixing Plant: Complying with NYS DOT Standards.
- C. Obtain materials from same source throughout.

1.04 FIELD CONDITIONS

- A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Asphalt Cement: ASTM D946.
- B. Aggregate for Base Course: In accordance with State of New York Highways standards.
- C. Aggregate for Binder Course: In accordance with State of New York Highways standards.
- D. Aggregate for Wearing Course: In accordance with State of New York Highways standards.

2.02 ASPHALT PAVING MIXES AND MIX DESIGN

- A. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes in compliance with the with NYSDOT specification mix requirements. If not otherwise called out on the drawings (plans), provide the following:
 - B. Provide mixes with a history of satisfactory performance in geographical area where the project is located.
 - 1. Top Course: NYSDOT 12.5 F2 HMA 70 Series.
 - 2. Binder Course: NYSDOT 19 F9 HMA 70 Series
 - 3. Base Course: NYSDOT 37.5 F9 HMA 70 Series.
 - 4. Emulsified-Asphalt Slurry: ASTM D 3910, Type 2.
 - C. Base Course: 3.0 to 6 percent of asphalt cement by weight in mixture in accordance with AI MS-2.
-

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that compacted subgrade, granular base, and asphalt base/binder is dry and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.02 BASE COURSE

- A. Place and compact base course.

3.03 PREPARATION - PRIMER

- A. Apply primer in accordance with manufacturer's instructions.
- B. Apply primer on aggregate base or subbase at uniform rate of 1/3 gal/sq yd.
- C. Use clean sand to blot excess primer.

3.04 PREPARATION - TACK COAT

- A. Apply tack coat in accordance with manufacturer's instructions.
- B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 1/3 gal/sq yd.

3.05 PLACING ASPHALT PAVEMENT - SINGLE COURSE

- A. Install Work in accordance with State of New York Highways standards.
- B. Place asphalt within 24 hours of applying primer or tack coat.
- C. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- D. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

3.06 SEAL COAT

- A. Apply seal coat to surface course and asphalt curbs in accordance with AI MS-19.

3.07 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 16 foot straight edge.
- B. Variation from True Elevation: Within 1/2 inch.
- C. Variations exceeding 1/4 inch will be appropriately corrected or the pavement be removed and replaced at no additional cost to the Owner.

3.08 FIELD QUALITY CONTROL

- A. See Section 014000 - DO NOT USE BSD Quality Requirements, for general requirements for quality control.
- B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- C. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549/D 3549M.
- D. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.
- E. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979/D 979M.
- F. Replace and compact hot-mix asphalt where core tests were taken, if any.
- G. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

END OF SECTION

**SECTION 321313
CONCRETE PAVING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete sidewalks, integral curbs, parking areas, and roads.

PART 2 PRODUCTS

2.01 PAVING ASSEMBLIES

- A. Comply with applicable requirements of ACI 301.

2.02 FORM MATERIALS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
 - 1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. [**Do not use notched and bent forms.**]
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.03 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, Grade 80 (80,000 psi) yield strength; deformed billet steel bars; unfinished.
- B. Steel Welded Wire Reinforcement: Plain type, ASTM A1064/A1064M; in flat sheets; unfinished.
- C. Dowels: ASTM A615/A615M, Grade 40 - 40,000 psi yield strength; deformed billet steel bars; unfinished finish.

2.04 CONCRETE MATERIALS

- A. Concrete Materials: Provide in accordance with State of New York State Highways standards.
- B. Fiber Reinforcement: Synthetic fibers shown to have long-term resistance to deterioration when in contact with alkalis and moisture; 1/4 inch length.

2.05 ACCESSORIES

- A. Curing Compound: ASTM C309, Type 1, Class A.
- B. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
 - 1. Material: ASTM D1751, cellulose fiber.

2.06 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
 - B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
 - 1. For trial mixtures method, employ independent testing agency acceptable to Architect/Engineer for preparing and reporting proposed mix designs.
 - C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.
 - D. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard, or as recommended by manufacturer for specific project conditions.
 - E. Concrete Properties:
 - 1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; as indicated on the drawings or: 4000 psi.
-

2.07 MIXING

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
- B. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.02 SUBBASE

- A. See Section 321123 for construction of base course for work of this Section.

3.03 PREPARATION

- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Coat surfaces of manhole frames with oil to prevent bond with concrete pavement.

3.04 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

3.05 REINFORCEMENT

- A. Place reinforcement as indicated.
- B. Interrupt reinforcement at contraction joints.
- C. Place dowels to achieve pavement and curb alignment as detailed.

3.06 COLD AND HOT WEATHER CONCRETING

- A. Follow recommendations of ACI 305R when concreting during hot weather.
- B. Follow recommendations of ACI 306R when concreting during cold weather.
- C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

3.07 PLACING CONCRETE

- A. Coordinate installation of snow melting components.
- B. Place concrete in accordance with ACI 304R.
- C. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.
- D. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.
- E. Apply surface retarder to all exposed surfaces in accordance with manufacturer's instructions.

3.08 JOINTS

- A. Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.; Align curb, gutter, and sidewalk joints. Joint type and spacing as indicated on the drawings. Maximum spacing shall be 30 times the thickness of the slab.
- B. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.

3.09 FINISHING

- A. Area Paving: Light broom, texture perpendicular to pavement direction.
-

- B. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius.
- C. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.10 TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.
- B. Maximum Variation From True Position: 1/4 inch.

3.11 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 014000 - DO NOT USE BSD Quality Requirements.
 - 1. Provide free access to concrete operations at project site and cooperate with appointed firm.
- B. Compressive Strength Tests: ASTM C39/C39M; for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.
 - 1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

3.12 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian traffic over pavement for 7 days minimum after finishing.

END OF SECTION

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**SECTION 321623
SIDEWALKS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Asphalt sidewalks.
- B. Concrete sidewalks.
- C. Concrete wheelchair ramps.

1.02 RELATED REQUIREMENTS

- A. Section 321123 - Aggregate Base Courses.
- B. Section 321726 - Tactile Warning Surfacing.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data:
 - 1. Asphalt: Provide data on primer.
 - 2. Concrete: Provide data on admixtures.

1.05 FIELD CONDITIONS

- A. Temperature Requirements: Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.
- B. Follow recommendations of ACI 305R and ACI 306R when concreting during hot and cold weather, respectively.
- C. Follow recommendations of polymeric sand manufacturer.

PART 2 PRODUCTS

2.01 ASPHALT SIDEWALKS

- A. Asphalt Cement: ASTM D946/D946M.

2.02 CONCRETE SIDEWALKS AND WHEELCHAIR RAMPS

- A. Gravel Subbase: Thickness as indicated on drawings.
- B. Concrete Forms: wood, or steel.
- C. Concrete Materials: Comply with ASTM C94/C94M.
- D. Aggregate: Pit Run, washed, 3/8 inch (1 cm) stone; free of shale, clay, friable material and debris.
- E. Reinforcement as indicated on drawings :
 - 1. Steel Welded Wire Reinforcement: ASTM A1064/A1064M, plain type, flat sheets, unfinished.
 - 2. Fiber Reinforcement: 1 percent, steel fibers, according to ASTM C1116/C1116M.
- F. Joint Filler: Preformed expansion, with a thickness of 1/2 inch.
- G. Curing Compound: Synthetic, Type 1, Class A, according to ASTM C309.
- H. Surface Sealer: Topical, Type 1, Class A, according to ASTM C1315.
- I. Tactile Warning Surfaces: See Section 321726.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify gradients and elevations of the subgrade are correct as shown on drawings. Where poor subgrade material is encountered, remove and replace with suitable material.
-

- B. Verify compacted subgrade is acceptable, ready to support imposed loads and paving, and ready to receive work.

3.02 SUBBASE PREPARATION

- A. Maintain subgrade in a smooth, compacted condition with required section and established grade until concrete is placed.
- B. See Section 321123 for aggregate subbase.

3.03 ASPHALT SIDEWALK INSTALLATION

- A. Place asphalt within 24 hours of applying primer or tack coat.
- B. Compact to specified density. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.04 CONCRETE SIDEWALK AND WHEELCHAIR RAMP INSTALLATION

- A. Forming:
 - 1. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
 - 2. Sidewalk Forms: Place and secure forms to location, dimension, profile, and gradient shown on drawings. Height equal to the full depth of the finished sidewalk.
 - 3. Wheelchair Ramps: Place and secure forms to location, dimension, profile, and gradient shown on drawings. Comply with ADA Standards.
- B. Reinforcement:
 - 1. Place wire-mesh reinforcement mid-height of forms.
 - 2. Uniformly add fiber reinforcement to concrete mix according to manufacturer's recommendations.
- C. Placement:
 - 1. Place concrete in a single lift.
 - 2. Consolidate concrete by tamping and spading.
- D. Joints:
 - 1. Spacing: As indicated on the drawings or provide scored joints every 5 feet (1.5 m).
 - 2. Filler height equal to the full depth of the finished concrete.
- E. Finishing:
 - 1. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge, 1/4 inch radius.
 - 2. Wheelchair Ramps: Broomed perpendicular to slope.
 - 3. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.
 - 4. Place surface sealer on exposed concrete surfaces after hardening. Apply in accordance with manufacturer's instructions.

3.05 TOLERANCES

- A. Surface Flatness: 1/4 inch, maximum, measured with 10 foot straight edge.

3.06 PROTECTION

- A. Immediately after placement, protect sidewalk from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian traffic over sidewalk for 5 days minimum after finishing.

END OF SECTION

**SECTION 329219
SEEDING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Placing topsoil.
- B. Hydroseeding, seeding, mulching and fertilizer.
- C. Maintenance.

1.02 RELATED REQUIREMENTS

1.03 DEFINITIONS

- A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable. Deliver seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.
- B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

PART 2 PRODUCTS

2.01 SEED MIXTURE

- A. Seed Mixture:
 - 1. Kentucky Blue Grass: 50 percent.
 - 2. Creeping Red Fescue Grass: 30 percent.
 - 3. Red Top: 10 percent.
 - 4. Norlea Perennial Rye: 10 percent.

2.02 SOIL MATERIALS

- A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots; pH value of minimum 5.4 and maximum 7.0.

2.03 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.
 - B. Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen,; recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, as indicated by analysis. Fertilizer shall be selected and applied in accordance with all local and New York State laws. Fertilizer shall be phosphorus free unless soil tests indicate phosphorus levels are insufficient. Fertilizer shall not be applied between December 1 and April 1.
 - C. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.
 - D. Erosion Fabric: Jute matting, open weave.
 - E. Herbicide: provided in conformance with NYS and Local laws..
 - 1. Registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides or herbicides unless authorized in writing by authorities having jurisdiction.
-

- a. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
 - b. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.
- F. Stakes: Softwood lumber, chisel pointed.
- G. String: Inorganic fiber.

2.04 TESTS

- A. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.
- B. Submit minimum 10 oz sample of topsoil proposed. Forward sample to approved testing laboratory in sealed containers to prevent contamination.
- C. Testing is not required if recent tests are available for imported topsoil. Submit these test results to the testing laboratory for approval. Indicate, by test results, information necessary to determine suitability.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that prepared soil base is ready to receive the work of this Section.

3.02 PREPARATION

- A. Place topsoil in accordance with Section 312200.

3.03 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's instructions and all local laws.
- B. Apply after smooth raking of topsoil and prior to roller compaction.
- C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.
- D. Mix thoroughly into upper 2 inches of topsoil.
- E. Lightly water to aid the dissipation of fertilizer.

3.04 SEEDING

- A. Apply seed at a rate of 2 lbs per 1000 sq ft evenly in two intersecting directions. Rake in lightly.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Do not sow immediately following rain, when ground is too dry, or during windy periods.
- D. Immediately following seeding and compacting, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.
- E. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.
- F. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches.

3.05 HYDROSEEDING

- A. Apply seeded slurry with a hydraulic seeder at a rate of 1500-lb/acre dry weight evenly in two intersecting directions.
 - B. Do not hydroseed area in excess of that which can be mulched on same day.
 - C. Immediately following seeding, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.
 - D. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.
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- E. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches.

3.06 MAINTENANCE

- A. Provide maintenance at no extra cost to Owner; Owner will pay for water.
- B. See Section 017000 - Execution Requirements, for additional requirements relating to maintenance service.
- C. Mow grass at regular intervals to maintain at a maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.
- D. Neatly trim edges and hand clip where necessary.
- E. Immediately remove clippings after mowing and trimming.
- F. Water to prevent grass and soil from drying out.
- G. Roll surface to remove minor depressions or irregularities.
- H. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- I. Immediately reseed areas that show bare spots.
- J. Protect seeded areas with warning signs during maintenance period.

END OF SECTION

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**SECTION 329223
SODDING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fertilizing.
- B. Sod installation.
- C. Maintenance.

1.02 DEFINITIONS

- A. Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.03 REFERENCE STANDARDS

- A. TPI (SPEC) - Guideline Specifications to Turfgrass Sodding 2006.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Certificate: Certify grass species and location of sod source.
- C. Certificate: Certify fertilizer and herbicide mixture approval by authority having jurisdiction.

1.05 QUALITY ASSURANCE

- A. Sod Producer: Company specializing in sod production and harvesting with minimum five years experience, and certified by the State of New York.
- B. Installer Qualifications: Company approved by the sod producer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver sod on pallets. Protect exposed roots from dehydration.
- B. Do not deliver more sod than can be laid within 24 hours.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Comply with regulatory agencies for fertilizer and herbicide composition.
- B. Provide certificate of compliance from authority having jurisdiction indicating approval of fertilizer and herbicide mixture.

2.02 MATERIALS

- A. Sod: TPI (SPEC), Certified Turfgrass Sod quality; cultivated grass sod; type indicated in plant schedule on Drawings; with strong fibrous root system, free of stones, burned or bare spots; containing no more than 5 weeds per 1000 sq ft. Minimum age of 18 months, with root development that will support its own weight without tearing, when suspended vertically by holding the upper two corners.
 - 1. Thickness: "Thick" sod, minimum 1 inch and maximum 1-3/8 inch topsoil base.
 - B. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay, or impurities, plants, weeds and roots; pH value of minimum 5.4 and maximum 7.0.
 - C. Fertilizer: commercial-grade complete fertilizer of neutral character; recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, as indicated by analysis.
 - D. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.
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2.03 ACCESSORIES

- A. Wood Pegs: Softwood, sufficient size and length to ensure anchorage of sod on slope.
- B. Wire Mesh: Interwoven hexagonal metal wire mesh of 2 inch size.
- C. Edging: Galvanized steel.

2.04 SOURCE QUALITY CONTROL

- A. Testing is not required if recent tests are available for imported topsoil. Submit these test results to the testing laboratory for approval. Indicate, by test results, information necessary to determine suitability.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that prepared soil base is ready to receive the work of this section.

3.02 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's instructions.
- B. Apply after smooth raking of topsoil and prior to installation of sod.
- C. Apply fertilizer no more than 48 hours before laying sod.
- D. Mix thoroughly into upper 2 inches of topsoil.
- E. Lightly water to aid the dissipation of fertilizer.

3.03 LAYING SOD

- A. Moisten prepared surface immediately prior to laying sod.
- B. Lay sod immediately after delivery to site to prevent deterioration.
- C. Lay sod smooth and tight with no open joints visible, and no overlapping; stagger end joints 12 inches minimum. Do not stretch or overlap sod pieces.
- D. Where new sod adjoins existing grass areas, align top surfaces.
- E. Where sod is placed adjacent to hard surfaces, such as curbs, pavements, etc., place top elevation of sod 1/2 inch below top of hard surface.
- F. On slopes 6 inches per foot and steeper, lay sod perpendicular to slope and secure every row with wooden pegs at maximum 2 feet on center. Drive pegs flush with soil portion of sod.
- G. Prior to placing sod, on slopes exceeding 8 inches per foot or where indicated, place wire mesh over topsoil. Securely anchor in place with wood pegs sunk firmly into the ground.
- H. Water sodded areas immediately after installation. Saturate sod to 4 inches of soil.
- I. After sod and soil have dried, roll sodded areas to ensure good bond between sod and soil and to remove minor depressions and irregularities.

3.04 MAINTENANCE

- A. Provide maintenance at no extra cost to Owner; Owner will pay for water.
 - B. Provide maintenance of sodded areas for 12 months from Date of Substantial Completion.
 - C. Mow grass at regular intervals to maintain at a maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.
 - D. Neatly trim edges and hand clip where necessary.
 - E. Immediately remove clippings after mowing and trimming.
 - F. Water to prevent grass and soil from drying out.
 - G. Roll surface to remove irregularities.
 - H. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
-

- I. Immediately replace sod to areas that show deterioration or bare spots.
- J. Protect sodded areas with warning signs during maintenance period.

END OF SECTION

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**SECTION 329300
PLANTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preparation of subsoil.
- B. Topsoil bedding.
- C. New trees, plants, and ground cover.
- D. Mulch and Fertilizer.
- E. Maintenance.

1.02 DEFINITIONS

- A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.
- B. Plants: Living trees, plants, and ground cover specified in this Section , and described in ANSI Z60.1.

1.03 REFERENCE STANDARDS

- A. ANSI/AHIA Z60.1 - American National Standard for Nursery Stock 2014.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Certificate: Certify fertilizer and herbicide mixture approval by authority having jurisdiction.
- C. Certificate: Submit certificate for plants free of disease or hazardous insects; certified by federal department of agriculture; free of disease or hazardous insects.
- D. Submit list of plant life sources.

1.05 QUALITY ASSURANCE

- A. Nursery Qualifications: Company specializing in growing and cultivating the plants with three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
- B. Protect and maintain plant life until planted.
- C. Deliver plant life materials immediately prior to placement. Keep plants moist.

1.07 FIELD CONDITIONS

- A. Do not install plant life when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F.
- B. Do not install plant life when wind velocity exceeds 30 mph.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Provide one year warranty.
- C. Replacements: Plants of same size and species as specified, planted in the next growing season, with a new warranty commencing on date of replacement.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Comply with regulatory agencies for fertilizer and herbicide composition.
- B. Provide certificate of compliance from authority having jurisdiction indicating approval of plants, fertilizer and herbicide mixture.

2.02 PLANTS

- A. Plants: Species and size identified in plant schedule, grown in climatic conditions similar to those in locality of the work.

2.03 SOIL MATERIALS

- A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots; minimum pH value of 5.4 and maximum 7.0.

2.04 SOIL AMENDMENT MATERIALS

- A. Fertilizer: Containing fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, as indicated in analysis.
- B. Peat Moss: Shredded, loose, sphagnum moss; free of lumps, roots, inorganic material or acidic materials; minimum of 85 percent organic material measured by oven dry weight, pH range of 4 to 5; moisture content of 30 percent.
- C. Bone Meal: Raw, finely ground, commercial grade, minimum of 3 percent nitrogen and 20 percent phosphorous.
- D. Lime: Ground limestone, dolomite type, minimum 95 percent carbonates.
- E. Water: Clean, fresh, and free of substances or matter that could inhibit vigorous growth of plants.

2.05 MULCH MATERIALS

- A. Mulching Material: Shredded hardwood bark, free of growth or germination inhibiting ingredients.

2.06 ACCESSORIES

- A. Wrapping Materials: Burlap.
- B. Stakes: Softwood lumber, pointed end.
- C. Cable, Wire, Eye Bolts and Turnbuckles: Non-corrosive, of sufficient strength to withstand wind pressure and resulting movement of plant life.
- D. Plant Protectors: Rubber sleeves over cable to protect plant stems, trunks, and branches.

2.07 TOP SOIL MIX

- A. A uniform mixture of 1 part peat and 3 parts topsoil by volume.

2.08 SOURCE QUALITY CONTROL

- A. Testing is not required if recent tests are available for imported topsoil. Submit these test results to the testing laboratory for approval. Indicate, by test results, information necessary to determine suitability.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that prepared subsoil and planters are ready to receive work.
 - B. Saturate soil with water to test drainage.
-

3.02 PREPARATION OF SUBSOIL

- A. Prepare subsoil to eliminate uneven areas. Maintain profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated subsoil.
- C. Scarify subsoil to a depth of 3 inches where plants are to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.
- D. Dig pits and beds 6 inches larger than plant root system.

3.03 PLACING TOPSOIL

- A. Spread topsoil to a minimum depth of 4 inches over area to be planted. Rake smooth.
- B. Place topsoil during dry weather and on dry unfrozen subgrade.
- C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.
- D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.
- E. Install topsoil into pits and beds intended for plant root balls, to a minimum thickness of 6 inches.

3.04 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's instructions.
- B. Apply after initial raking of topsoil.
- C. Mix thoroughly into upper 2 inches of topsoil.
- D. Lightly water to aid the dissipation of fertilizer.

3.05 PLANTING

- A. Place plants for best appearance.
- B. Set plants vertical.
- C. Remove non-biodegradable root containers.
- D. Set plants in pits or beds, partly filled with prepared plant mix, at a minimum depth of 6 inches under each plant. Remove burlap, ropes, and wires, from the root ball.
- E. Place bare root plant materials so roots lie in a natural position. Backfill soil mixture in 6 inch layers. Maintain plant life in vertical position.
- F. Saturate soil with water when the pit or bed is half full of topsoil and again when full.

3.06 INSTALLATION OF ACCESSORIES

- A. Wrap deciduous shade and flowering tree trunks and place tree protectors.

3.07 PLANT SUPPORT

- A. Brace plants vertically with plant protector wrapped guy wires and stakes to the following:
 - 1. Tree Caliper: 2 to 4 inches; Tree Support Method: 3 guy wires with eye bolts and turn buckles

3.08 MAINTENANCE

- A. Provide maintenance at no extra cost to Owner; Owner will pay for water.
 - B. Maintain plant life for 12 months after Date of Substantial Completion.
 - C. Irrigate sufficiently to saturate root system and prevent soil from drying out.
 - D. Remove dead or broken branches and treat pruned areas or other wounds.
 - E. Neatly trim plants where necessary.
 - F. Immediately remove clippings after trimming.
-

- G. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions.
- H. Control insect damage and disease. Apply pesticides in accordance with manufacturers instructions.
- I. Remedy damage from use of herbicides and pesticides.
- J. Replace mulch when deteriorated.
- K. Maintain wrappings, guys, turnbuckles, and stakes. Adjust turnbuckles to keep guy wires tight. Repair or replace accessories when required.

END OF SECTION