

ONEIDA COUNTY DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING

VOLUME I
SPECIFICATION BOOK (DIVISIONS 01-14)
FOR
CONSTRUCTION

MOHAWK VALLEY COMMUNITY COLLEGE
SCIENCE AND TECHNOLOGY BUILDING
NEW CONSTRUCTION
1101 SHERMAN DRIVE, UTICA, NY

BID PACKAGES:

GENERAL CONSTRUCTION - CONTRACT NO.	H2455701
SITWORK CONSTRUCTION - CONTRACT NO.	H2455702
ROOFING CONSTRUCTION - CONTRACT NO.	H2455703
FIRE PROTECTION CONSTRUCTION - CONTRACT NO.	H2455704
PLUMBING CONSTRUCTION - CONTRACT NO.	H2455705
MECHANICAL CONSTRUCTION - CONTRACT NO.	H2455706
ELECTRICAL CONSTRUCTION - CONTRACT NO.	H2455707

SEPTEMBER 23, 2025

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR ARCHITECT, TO ALTER ANY ITEM ON THIS DOCUMENT IN ANY WAY.

PREPARED BY
MARCH ASSOCIATES, ARCHITECTS AND PLANNERS, P.C.
258 GENESEE STREET, SUITE 300, UTICA, NY 13502

ANTHONY J. PICENTE, JR.
ONEIDA COUNTY EXECUTIVE

Table of Contents

Advertisement - Invitation to Bid

Instructions to Bidders

Oneida County Resolution

A701-2018, Instructions to Bidders, Modified by Owner

A101-2017, Standard Form of Agreement, Modified by Owner

Protection of Rights – Assumption of Risk, Insurance Requirements, Bonds

A201-2017, General Conditions, Modified by Owner

Addendum - Standard Oneida County Conditions

Compliance with Labor Rates (Example Format)

Guarantee (Example Format)

NYSDOL Prevailing Wage Statement

Table of Contents-Technical Specifications

List of Drawing Sheets

Technical Specifications

ADVERTISEMENT - INVITATION TO BID

Sealed Bids, subject to the conditions contained herein, will be received by the ONEIDA COUNTY DEPARTMENT OF PURCHASING until **2:00PM local time on Thursday, October 16th, 2025** and then publicly opened and read, for furnishing all labor and materials and performing all work for:

Bid Ref. #2361

**REBID - Mohawk Valley Community College
Science and Technology Building
New Construction**

1101 Sherman Drive, Utica, NY 13501

REBID - ROOFING CONSTRUCTION – CONTRACT NO. H2455703

REBID - FIRE PROTECTION CONSTRUCTION – CONTRACT NO. H2455704

The Contract Documents may be viewed and ordered through the **Avalon Plan Room** website at: www.avalonplanroom.com in the “Public Bid” section. If you do not have internet access or have questions on ordering from the site, please contact Avalon Document Services at (315) 471-3333. Drawings can be picked up at any of Avalon Document Services’ locations.

A non-refundable deposit of Forty-Five Dollars (\$45.00) payable to Avalon Document Services will be required to obtain the Proposal Booklet and a USB with an electronic version of the Contract Documents. Cash payments will not be accepted. The payment does not include shipping of the Proposal Booklet and USB. All shipping costs shall be reconciled between the plan holder and Avalon Document Services and paid by the plan holder. **Should potential bidders want expedited shipping they should include their UPS or FedEx account number with their planroom order or be charged additional shipping at their expense.** By submission of the \$45.00 non-refundable payment, bidder will be registered as an official plan holder. **Only official plan holders are eligible to bid on the project.** Subcontractors, suppliers, equipment vendors, etc. will also be required to submit the non-refundable payment in order to receive the Proposal Booklet and USB with electronic version of the Contract Documents.

If bidders wish to purchase printed copies of the Contract Documents (beyond the Proposal Booklet), they may be obtained through Avalon. Only official plan holders will be allowed to obtain printed copies of the Contract documents. The payment does not include shipping of the Proposal Booklet and USB. **All Shipping costs shall be reconciled between the plan holder and Avalon Printing and paid by the plan holder.** Bidders acknowledge that they are responsible for review of all components of the Contract Documents. Including all specification sections and drawings, regardless of how many drawings they print and in which format/size they are printed. Full-size drawings are on 36” x 48” paper. Bidders acknowledge they are responsible for properly scaling drawings if they are printed at any other size.

Bids must be submitted upon the proposal form(s) furnished in the Proposal Booklet and must not be detached from the Proposal Booklet. A deposit in the amount of 5% of the base bid will be required and is subject to the conditions provided in the Instruction to Bidders. This deposit shall consist of a bid bond or certified check payable to the COUNTY OF ONEIDA. Failure to submit a bid bond or certified check with bid will result in automatic disqualification of bid. Failure to submit a bid upon the proposal form(s) furnished by the Oneida County Purchasing Department or submittal of form(s) detached from the Proposal Booklet will result in automatic disqualification of bid

A Performance Bond will be required and for an amount not less than 100% of bid price.

A pre-bid meeting will be held on **Thursday, October 2nd, 2025 at 10:00AM on the MVCC Utica Campus, in Wilcox Hall, Room 225.**

Packages containing bids must be sealed, marked, and addressed to **Oneida County Department of Purchasing, 800**

Park Ave, Utica, NY 13501. Also mark on the envelope or package, the bid reference number and the type of work for which the proposal is submitted.

The Owner reserves the right to revise or amend the bidding documents prior to the date set for opening bids. Such revisions and amendments, if any, will be announced by addenda to the advertisement. Any inquiries regarding details on specifications must be directed in writing to: Oneida County Department of Public Works, Deputy Commissioner of Engineering, 5999 Judd Road, Oriskany, NY 13424. The owner also reserves the right to waive any irregularity and reject any or all bids received.

The County of Oneida, in order to promote its established Affirmative Action Plan, invites sealed bids from minority groups. This Affirmative Action Policy regarding sealed bids and contracts applies to all persons without regard to race, color, national origin, age, sex, or handicap.

This contract is subject to compliance with Article 8 of the New York State Labor Law regarding prevailing rate of wages. On all public work projects of at least \$250,000.00, all laborers, workers and mechanics working on the site, shall be certified as having successfully completed the OSHA 10-hour construction safety and health course.

No Bidder may withdraw his bid within forty-five (45) days after the date set for the opening thereof.

The Bidding Documents may be examined at the following locations:
Dodge Reports, 231 Salina Meadows, Suite 130, Syracuse, NY 13212
Syracuse Builders Exchange, 6563 Ridings Road, Syracuse, NY 13206
Oneida County Department of Public Works, 5999 Judd Road, Oriskany, NY 13424

Alfred A. Barbato
Director of Purchasing
September 23, 2025

INSTRUCTIONS TO BIDDERS

The following documents are referenced herein or shall be referenced in any contract resulting from this Invitation to Bid. Bidders are encouraged to purchase and review copies of these documents.

1. Instructions to Bidders - AIA Document A701-2018, Modified by Owner
2. Owner-Contractor Agreement – A101-2017, Modified by Owner
3. General Conditions of the Contract - AIA Document A201-2017, Modified by Owner
4. Bid Bond - AIA Document A310
5. Performance Bond and Payment Bond - AIA Document A312

The following documents shall be submitted with the successful Bidder's final payment request:

1. Contractor's Affidavit of Payment of Debts and Claims - AIA Document G706
2. Contractor's Affidavit of Release of Liens - AIA Document G706A
3. Consent of Surety to Final Payment - AIA Document G707
4. Compliance With Labor Rates Declaration (Example on page R-1 of the specifications)
5. Guarantee Declaration (Example on page R-2 of the specifications)

All documents listed above are available for inspection only at the Oneida County Department of Public Works, 5999 Judd Road, Oriskany, New York

RESOLVED, That a supplemental appropriation, from 2010 funds, as hereinafter set forth, be and the same is hereby approved:

TO:

AA#A1162.495121, Other Expenses.

\$4,500

APPROVED: Public Safety Committee (March 17, 2010)
Ways & Means Committee (March 24, 2010)

Seconded and adopted, viva voce.
April 14, 2010

No. 143 – FN2010-188 – Messrs. Leach and Porter offered the following resolution and moved its adoption.

RE: APPROVAL OF AN AGREEMENT WITH UTICA NATIONAL INSURANCE COMPANY FOR THE ADMINISTRATION OF THE ONEIDA COUNTY SELF INSURANCE PLAN

WHEREAS, The Workers Compensation Committee has proposed approval of an agreement with Utica National Insurance Company for administration of the Oneida County Self Insurance Plan, and

WHEREAS, Pursuant to Local Law #10 of 1991 said Contract must be approved by the Oneida County Board of Legislators, now, therefore, be it hereby

RESOLVED, That the Oneida County Board of Legislators approves and authorizes acceptance of an agreement with Utica National Insurance Company for administration of the Oneida County Self Insurance Plan commencing March 15, 2010 and ending March 15, 2013, and be it further

RESOLVED, That said Agreement shall contain a County discretionary option to renew the agreement for two additional one year terms or until the year 2015 on the same terms as set forth in Section III of the Agreement, upon the County's 90 day notice to the Service Agent.

APPROVED: Workers' Compensation Committee (March 24, 2010)
Ways & Means Committee (April 14, 2010)

Seconded and adopted, viva voce.
April 14, 2010

No. 144 – FN2010-194 – Mr. Porter offered the following resolution and moved its adoption.

RE: APPROVAL OF A RESOLUTION AUTHORIZING ALLERTON BMS AND PASCO CONTROLS AS STANDARDIZED EQUIPMENT FOR FUTURE RENOVATION, RECONSTRUCTION OR CONSTRUCTION PROJECTS FOR MVCC

WHEREAS, Oneida County Executive Anthony J. Picente, Jr., is in receipt of correspondence from the President of Mohawk Valley Community College and the Deputy Commissioner of Public Works requesting approval of a standardization resolution authorizing Allerton BMS and Pasco controls to be included as standardized equipment for future renovation, reconstruction or construction projects for MVCC, and

WHEREAS, Pursuant to General Municipal Law, Section 103(5), said resolution must be approved by the Oneida County Board of Legislators, now, therefore, be it hereby

RESOLVED, That the Oneida County Board of Legislators, for reasons of efficiency and economy, approves the authorization of Allerton BMS and Pasco controls as standardized proprietary equipment for inclusion in future renovation, reconstruction or construction projects for MVCC.

APPROVED: Ways & Means Committee (April 14, 2010)

Seconded and adopted, viva voce.
April 14, 2010

A motion was duly made, seconded and passed to adjourn the meeting until Wednesday, April 28, 2010.

CERTIFICATION OF THE CLERK

STATE OF NEW YORK, County of Oneida, ss:

I hereby certify that the foregoing is a true report of the proceedings of the Board of Legislators of the County of Oneida at its regular session held on Wednesday, April 14, 2010 at 2:00 P.M., typographical errors excepted.

MIKALE BILLARD, Clerk

 AIA® Document A701® – 2018**Instructions to Bidders**

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

Bid Reference Number 2361
REBID - Mohawk Valley Community College
Science & Technology Building, New Building
1101 Sherman Drive
Utica, New York 13501

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

Oneida County
800 Park Avenue,
Utica, NY 13501

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

MARCH Associates, Architects and Planners, P.C.,
258 Genesee Street, Suite 300
Utica, NY 13502

TABLE OF ARTICLES

1	DEFINITIONS
2	BIDDER'S REPRESENTATIONS
3	BIDDING DOCUMENTS
4	BIDDING PROCEDURES
5	CONSIDERATION OF BIDS
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, as indicated below, 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.)

Bidding Documents may be viewed and ordered through the Avalon Plan Room website at:
<https://www.avalonsyr-planroom.com/projects/public>

in the "Public Bid" section. Refer to the ADVERTISEMENT – INVITATION TO BID for more information.

§ 3.1.2 A non-refundable deposit payable to Avalon Document Services will be required to obtain the Proposal Booklet and a USB with an electronic version of the Contract Documents. Refer to the ADVERTISEMENT – INVITATION TO BID for more information.

§ 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 Owner at least seven days prior to the date for receipt of Bids.
(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)

Commissioner Department of Public Works
Oneida County Department of Public Works
5999 Judd Road
Oriskany, NY 13424
publicworks@ocgov.net

§ 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 a Substitution Request Form if one 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.)

Email

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

§ 3.4.3 Addenda will be issued no later than two 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.

§ 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.

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 Paragraph deleted.

§ 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 the following bid security:

(Insert the form and amount of bid security.)

Bid Bond or Certified Check payable to Oneida County in the amount of five percent (5%) of the base bid.

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, 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. In the event the Owner fails to comply with Section 6.2, the amount of the bid security shall not be forfeited to the Owner.

§ 4.2.3 If a surety bond is required as bid security, it shall be written on AIA Document A310™, Bid Bond, unless otherwise provided in the Bidding Documents. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of an acceptable power of attorney. The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginning days after the opening of Bids, withdraw its Bid and request the return of its bid security.

§ 4.3 Submission of Bids

§ 4.3.1 A Bidder shall submit its Bid as indicated below:

(Indicate how, such as by website, host site/platform, paper copy, or other method Bidders shall submit their Bid.)

Paper copy.

§ 4.3.2 Paper copies of the Bid, the bid security, and any other documents required to be submitted with the Bid shall be attached to the bid documents.

§ 4.3.3 Bids shall be submitted by the date and time and at the place indicated in the invitation to bid. Bids submitted after the date and time for receipt of Bids, or at an incorrect place, will not be accepted.

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

§ 4.3.5 A Bid submitted by any method other than as provided in this Section 4.3 will not be accepted.

§ 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.)

Bid rank.

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

If stipulated in an advertisement or invitation to bid, or when otherwise required by law, Bids properly identified and received within the specified time limits will be publicly opened and read aloud. A summary of the Bids may be made available to Bidders.

§ 5.2 Rejection of Bids

Unless otherwise prohibited by law, the Owner shall have the right to reject any or all Bids.

§ 5.3 Acceptance of Bid (Award)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. Unless otherwise prohibited by law, 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 best interests.

§ 5.3.2 Unless otherwise prohibited by law, the Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible 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 and within the timeframe specified by the Architect, a properly executed AIA Document A305™, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted for this Bid.

§ 6.2 Paragraph Deleted..

§ 6.3 Submittals

§ 6.3.1 After notification of selection for the award of the Contract, the Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, submit in writing to the Owner through the Architect:

- .1 a designation of the Work to be performed with the Bidder's own forces;
- .2 names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and
- .3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

§ 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 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.

§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 7.1.4 Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.

(If Payment or Performance Bonds are to be in an amount other than 100% of the Contract Sum, indicate the dollar amount or percentage of the Contract Sum.)

§ 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 three days following the date of execution of the Contract. If the Work is to commence sooner 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 provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond.

§ 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 to the bond a certified and current copy of the power of attorney.

ARTICLE 8 Paragraph Deleted.

(Table deleted)(Paragraphs deleted)(Paragraphs deleted)

DRAFT AIA® Document A101™ – 2017

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

THIS AGREEMENT, Bid Reference Number 2361 / RC Contract H2455703 / FC Contract H2455704, made as of the « » day of « » in the year «Two Thousand and Twenty Five»

(In words, indicate day, month and year.)

BETWEEN the Owner:

(Name, legal status, address and other information)

Oneida County
800 Park Avenue
Utica, NY 13501

and the Contractor:

(Name, legal status, address and other information)

«TBD»« »

« »

« »

« »

for the following Project:

(Name, location and detailed description)

REBID
Mohawk Valley Community College
Science and Technology Building
New Construction
1101 Sherman Drive, Utica, NY 13501
MARCH No. 23000
Bid Reference Number 2361

The Architect:

(Name, legal status, address and other information)

MARCH Associates, Architects and Planners, P.C.
258 Genesee Street, Suite 300
Utica, 13502

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

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

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

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

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TABLE OF ARTICLES

1	THE CONTRACT DOCUMENTS
2	THE WORK OF THIS CONTRACT
3	DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
4	CONTRACT SUM
5	PAYMENTS
6	DISPUTE RESOLUTION
7	TERMINATION OR SUSPENSION
8	MISCELLANEOUS PROVISIONS
9	ENUMERATION OF CONTRACT DOCUMENTS
10	INDEMNIFICATION
11	INDEPENDENT CONTRACTOR STATUS
12	ADVICE OF COUNSEL
13	AUTHORITY TO ACT/SIGN
14	SEVERABILITY
15	COUNTERPARTS
16	ORDER OF PRECEDENCE
17	SUBCONTRACTS
18	REQUIRED PROVISIONS OF LAW
EXHIBIT A	ADDENDUM – STANDARD ONEIDA COUNTY CONDITIONS
EXHIBIT B	SIGNED PROPOSAL BOOK FOR BID REFERENCE NUMBER 2307

ARTICLE 1 THE CONTRACT DOCUMENTS

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

ARTICLE 2 THE WORK OF THIS CONTRACT

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

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

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

(Check one of the following boxes.)

[☐] The date of this Agreement.

[☒] A date set forth in a notice to proceed issued by the Owner.

[☐] 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

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:
(Check one of the following boxes and complete the necessary information.)

[☐] Not later than « » (« ») calendar days from the date of commencement of the Work.

[☒] By the following date: _____

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

Portion of Work	Substantial Completion Date
_____	_____

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

ARTICLE 4 CONTRACT SUM

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

§ 4.2 Alternates

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

Item	Price
_____	_____

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

Item	Price	Conditions for Acceptance
None	_____	_____

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

Item	Price
Roofing Construction – Contingency	\$30,000
Fire Protection Construction – Contingency	\$30,000

§ 4.4 Unit prices, if any:

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

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

§ 4.5 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any.)

« »

§ 4.6 Other:

(Insert provisions for bonus 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 Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

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

« »

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the «Fifteenth » day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the «Thirtieth » day of the «following » month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than «Ninety » («90 ») days after the Architect receives the Application for Payment.

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

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

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

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

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

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

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

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .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 A201–2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

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

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

«5% »

§ 5.1.7.1.1 The following items are not subject to retainage:

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

« »

§ 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 Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

« »

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

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

« »

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

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

§ 5.2 Final Payment

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

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a final Certificate for Payment has been issued by the Architect.

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

« »

§ 5.3 Interest

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

(Insert rate of interest agreed upon, if any.)

«Statutory» % «per annum»

§ 5.4 Non-Appropriation Clause

§ 5.4.1 The Owner shall have no liability or obligation under the Contract to the Contractor, or to anyone else, beyond the annual funds appropriate and available thereto.

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

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

« »

« »

« »

« »

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

[☐] Arbitration pursuant to Section 15.4 of AIA Document A201–2017

[☒] New York State Court of competent jurisdiction sitting in Oneida County, New York or in the United States District Court for the Northern District of New York

[☐] Other *(Specify)*

« »

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

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

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

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 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)

Deputy Commissioner of Engineering
Oneida County Department of Public Works
5999 Judd Road, Oriskany, NY 13424

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

«TBD»

« »
« »
« »
« »
« »

§ 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 Assumption of Risk

§ 8.5.1.1 The Contractor solely assumes the following risks. The risk of unforeseen obstacles and difficulties in the prosecution of the Work covered by the Contract, whether such risks are within or beyond the control of the Contractor and whether such risks involve a legal duty, primary or otherwise, imposed upon the County. The risk of loss or damage, direct or indirect, to any equipment, tools, materials or property furnished, used, installed or received by the County, the Contractor, or any subcontractor, performing services or furnishing materials for the Work covered hereunder.

§ 8.5.1.2 To the fullest extent permitted by law, the Contractor shall indemnify, defend, and hold the County, Architect, and Construction Manager harmless against any and all claims (including but not limited to claims asserted by any employee of the Contractor and/or its subcontractor) and costs and expenses of whatever kind (including but not limited to payment or reimbursement of attorneys' fees and disbursements) allegedly arising out of or in any way related to the risks it assumes under this Section, operations of the Contractor and its subcontractor(s) in the performance of the Contract or from the Contractor's and/or its subcontractor's failure to comply with any of the provisions of the Contract or of the law. Such costs and expenses shall include all those incurred in defending the underlying claim and those incurred in connection with the enforcement of this Article by way of cross-claim, third-party claim, declaratory action, or otherwise.

§ 8.5.1.3 Neither the termination of the Contract nor the making of the final payment shall release the Contractor from its obligations under this Article. The enumeration elsewhere in the Contract of particular risks assumed by the Contractor or of particular claims for which it is responsible shall not be deemed to limit the effect of the provision of this Section or to imply that it assumes or is responsible for only risks or claims of the type enumerated.

§ 8.5.1.4 This assumption of risk by the Contractor is absolute, excepting only reckless or intentional acts of the County, or their officers, agents or employees.

§ 8.5.2 Contractor shall, at its own expense, purchase and maintain insurance of the following types of coverage and limits of liability with an insurance carrier qualified and admitted to do business in the State of New York. The insurance carrier must have at least an A- (excellent) rating by A. M. Best.

§ 8.5.2.1 1.2.1. Commercial General Liability (CGL) coverage with limits of not less than One Million Dollars (\$1,000,000) each occurrence, and Two Million Dollars (\$2,000,000) Annual Aggregate. CGL coverage shall be written on ISO Occurrence form CG 00 01 0413, or a substitute form, providing equivalent coverage and shall cover liability arising from premises, operations, XCU, independent contracts, products, pollution, completed operations, personal and advertising injury. There shall be no exclusions to Contractual Liability for Employee Injuries (i.e. Labor Law Exclusions). The Owner and Architect shall be included as an additional insured, on a on a primary and non-contributing basis before any other insurance or self- insurance, including any deductible or self-insured retention, maintained by, or provided to, the additional insured. The Contractor shall maintain said CGL coverage for itself and the additional insured for the duration of the Contract Period and maintain completed operations coverage for itself and the additional insured for at least three (3) years after completion.

§ 8.5.2.2 Workers' Compensation and Employer's Liability, pursuant to statutory limits.

§ 8.5.2.3 1.2.3. Business Automobile Liability with limits of at least One Million Dollars (\$1,000,000) each accident. Coverage must include liability arising out of all owned, leased, hired, and non-owned automobiles. The Owner and Architect shall be included as an additional insured, on a on a primary and non-contributing basis before any other insurance or self- insurance, including any deductible or self-insured retention, maintained by, or provided to, the additional insured.

§ 8.5.2.4 Excess/Commercial Umbrella coverage with limits of at least Five Million Dollars (\$5,000,000). The Owner and Architect shall be included as an additional insured. Excess/Commercial Umbrella coverage for such additional insured shall apply as primary and non-contributing before any other insurance or self-insurance, including any deductible or self-insured retention, maintained by or provided to the additional insured.

§ 8.5.2.5 Owners and Contractors Protective Liability Insurance in the amount of not less than One Million Dollars (\$1,000,000) per occurrence and One Million Dollars (\$1,000,000) annual aggregate. The Contractor agrees to have this policy in the Owner's name.

§ 8.5.2.6 The Contractor shall purchase and maintain property insurance written on an Installation Floater with "All Risk" or equivalent coverage form in the amount equal or greater than the value of material to be installed included in this contract, plus the value of subsequent contract modifications and cost of materials supplied or installed by others, comprising the total value at the site. Coverage shall be at Replacement Cost and the Contractor will be responsible for any deductibles associated with this coverage. This property insurance shall cover portions of the work stored off the jobsite and also portions of the work in transit

§ 8.5.2.7 The Owner shall not issue a notice to proceed until certificates evidencing the insurance required by this Section has been provided to the Owner. The certificates shall be on forms approved by the Owner, and Contractor where the basis shall contain a provision that coverage afforded under the policies will not be canceled or allowed to expire until at least thirty (30) days prior written notice has been given to the Owner. Acceptance of the certificates shall not relieve the Contractor of any of the insurance requirements, nor decrease the liability of the Contractor. The Owner reserves the right to require the Contractor to provide insurance policies for review by the Owner. The Contractor grants the Owner a limited power of attorney to communicate with the Contractor's insurance provider and/or agent for the express purpose of confirming the coverages required hereunder.

§ 8.5.3 The Contractor waives all rights against the Owner and its agents, officers, and employees for recovery of damages to the extent these damages are covered by a policy of insurance maintained per the requirements stated above.

§ 8.5.4 The insurance provisions of Section 8.5 of this Agreement supersede any provisions regarding the same topic stated in any other Contract Document.

§ 8.5.5 A Performance Bond and a Material and Labor Payment Bond shall be submitted by the Contractor. Each bond shall be in the amount of One Hundred Percent (100%) of the amount of the Contract and shall make reference

to the Contract. The bonds shall be purchased, at the Contractor's expense, from one or more companies licensed to do business in the State of New York. Said bonds shall not be transferable.

§ 8.5.5.1 The bonds shall be on the form supplied by the County or a form approved by the County. The Contractor shall require the attorney-in-fact that executes the required bonds on behalf of the surety, to affix thereto a certified and current copy of the Power of Attorney. The Contractor shall deliver the required bonds to the County no later than three (3) days following the date this Agreement is executed

§ 8.5.5.2 The Contractor shall deliver the required bonds to the Owner before final execution of this Agreement

§ 8.5.5.3 The Contractor shall require the attorney in fact that executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

§ 8.5.5.4 The Contractor shall purchase and maintain insurance and provide bonds as set forth in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

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

« »

§ 8.7 Other provisions:

« »

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor as modified by Owner.
- .2 Deleted.
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction as modified by Owner.
- .4 Deleted.

« »

- .5 Drawings

Number	Title	Date
All Sheets	REBID Mohawk Valley Community College Science and Technology Building New Construction	September 23, 2025

- .6 Specifications

Section	Title	Date	Pages
All	Specification Book for Bid Reference No. 2361 REBID Mohawk Valley Community College Science and Technology Building New Construction	September 23, 2025	

- .7 Addenda, if any:

Number	Date	Pages
TBD		

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

.8 Other Exhibits:

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

[☐] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

« »

[☐] The Sustainability Plan:

Title	Date	Pages

[☒] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
Exhibit A	Addendum – Standard Oneida County Conditions		

.9 Other documents, if any, listed below:

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

«Proposal Booklet for Bid Reference Number 2361 Signed

ARTICLE 10 INDEMNIFICATION

§ 10.1 The obligations of the Contractor under this section shall survive any expiration or termination of the Contract and shall not be limited by any enumeration herein of required insurance coverage.

§ 10.2 To the fullest extent permitted by law, the Contractor shall indemnify, defend, and hold the Owner, the Architect, their officers, agents and employees (the "Indemnitees"), harmless against any and all claims (including but not limited to claims asserted by any employee of the Contractor and/or its Subcontractors) and costs and expenses of whatever kind (including but not limited to payment or reimbursement of attorneys' fees and disbursements) allegedly arising out of or in any way related to the risks it assumes under this Article 10, operations of the Contractor and/or its Subcontractors in the performance of the Contract or from the Contractor's and/or its Subcontractors' failure to comply with any of the provisions of the Contract or of the law. Such costs and expenses shall include all those incurred in defending the underlying claim and those incurred in connection with the enforcement of this paragraph by way of cross-claim, third-party claim, declaratory action or otherwise. The parties expressly agree that the indemnification obligation hereunder contemplates (1) full indemnity in the event of liability imposed against the Indemnitees without negligence and solely by reason of statute, operation of Law or otherwise; and (2) partial indemnity in the event of any actual negligence on the part of the Indemnitees either causing or contributing to the underlying claim (in which case, indemnification will be limited to any liability imposed over and above that percentage attributable to actual fault whether by statute, by operation of Law, or otherwise). Where partial indemnity is provided hereunder, all costs and expenses shall be indemnified on a pro rata basis.

ARTICLE 11 INDEPENDENT CONTRACTOR STATUS

§ 11.1 For the purposes of this paragraph, the term “Contractor” shall be broadly construed to include the Contractor, and any and all of its Subcontractors, agents, servants, officers, and employees. It is expressly agreed that the relationship of the Contractor to the Owner shall be that of an Independent Contractor. The Contractor shall not be deemed an employee of the Owner for any purpose including, but not limited to, claims for unemployment insurance, workers’ compensation, retirement, or health benefits. The Contractor, as an independent contractor, covenants and agrees that it will conduct itself in accordance with such status, that it will neither hold itself out as, nor claim to be, an officer or employee of the Owner by reason thereof and that it shall not make any claim, demand or application to or for any right or privilege applicable to an officer or employee of the Owner. Both the Owner and the Contractor shall have the right to participate in any conference, discussion or negotiation with any governmental agency regarding the Contractor’s status as an independent contractor.

§ 11.2 The Owner shall not make any withholding for taxes or any other obligations. The Contractor shall be solely responsible for all applicable taxes, payroll deductions, workers’ compensation insurance, and provision of health insurance where required. The Contractor shall indemnify and hold the Owner harmless from all loss or liability incurred by the Owner as a result of the Owner not making such payments or withholdings.

ARTICLE 12 ADVICE OF COUNSEL

§ 12.1 Each party acknowledges that, in executing this Agreement, such party has had the opportunity to seek the advice of independent legal counsel, and has read and understood all of the terms and provisions of the Contract.

ARTICLE 13 AUTHORITY TO ACT/SIGN

§ 13.1 The Contractor’s signatory hereby represents, warrants, personally guarantees and certifies that he has the power and authority to execute and deliver this Agreement and to carry out the obligations hereunder. The execution and delivery by Contractor’s signatory of this Agreement and the consummation of the transactions contemplated herein have been duly authorized by the Contractor; no other action on the part of the Contractor or any other person or entity is necessary to authorize the Contractor’s signatory to enter into the Contract, or to consummate the transactions contemplated herein.

ARTICLE 14 SEVERABILITY

§ 14.1 If any provision of the Contract is or becomes void or unenforceable by force or operation of law, the parties agree that the Contract shall be reformed to replace the stricken provision with a valid and enforceable provision that comes as close as possible to expressing the intention of the parties. Further, the parties agree that all other provisions shall remain valid and enforceable.

ARTICLE 15 COUNTERPARTS

§ 15.1 This Agreement may be executed in any number of counterparts, each of which shall be deemed an original, and all of which together shall be deemed one and the same instrument.

ARTICLE 16 ORDER OF PRECEDENCE

§ 16.1 Conflicts among the Contract Documents shall be resolved in the following order of precedence:

- § 16.1.1 Addendum - Standard Oneida County Conditions
- § 16.1.2 Any Contract Amendments, in reverse chronological order
- § 16.1.3 This Agreement
- § 16.1.4 Addenda to the Specifications
- § 16.1.5 Specifications
- § 16.1.6 Addenda to the Drawings
- § 16.1.7 Drawings
- § 16.1.8 AIA Document A201-2017 as modified
- § 16.1.9 Proposal Book for Bid Reference Number 2361

ARTICLE 17 SUBCONTRACTORS

§ 17.1 Subcontracting by the Contractor without the prior consent of the Owner shall be considered null and void from its inception. The Contractor shall have written agreements with each Subcontractor that requires compliance with the insurance and indemnification provisions stated in this Agreement. A Subcontractor shall maintain policies of insurance identical to that required of the Contractor, and shall assume the same duties and risks undertaken by the Contractor in the Contract. The insurance certificates of the Subcontractor must list the Owner as an additional

insured, on a primary, noncontributory basis. No Subcontractor shall perform any portion of the Work until receiving approval by the Owner. The Contractor shall be solely responsible for providing the Work and for complying with the provisions of the Contract, and any Owner- approved subcontracting shall not alter any obligations thereof.

ARTICLE 18 REQUIRED PROVISIONS OF LAW

§ 18.1 In performing the Contract, all applicable governmental laws, regulations, orders, ordinances and other rules of duly constituted authorities will be followed and complied with in all respects by the parties. In particular the Contractor shall fully comply with the following Sections of the Labor Law:

§ 18.1.1 Labor Law Section 220-e relating to Prohibition Against Discrimination and Equal Opportunity.

§ 18.1.2 Prevention of Dust Hazards required by Labor Law Section 222-a.

§ 18.1.3 Labor Law Sections 220 and 220-d, Minimum Wage Rates and Supplements.

§ 18.2 This is a public work contract covered by Article 8 of the Labor Law. Therefore, neither the Contractor's employees nor the employees of its Subcontractors may be required or permitted to work more than the number of hours and days provided in the Labor Law, and as set forth in the prevailing wage and supplement schedules issued by the State Labor Department. Furthermore, the Contractor and its Subcontractors must pay at least the prevailing wage rate and pay or provide the prevailing supplements, including the premium rates for overtime pay, as determined by the State Labor Department in accordance with the Labor Law. Additionally, pursuant to Article 8 of the Labor Law, the Contractor understands and agrees that the filing of payrolls in a manner consistent with Subdivision 3-a of Section 220 of the Labor Law shall be a condition precedent to payment by the Owner of any Owner approved sums due and owing for Work done upon the Project. Contractors and Subcontractors performing Work on this project shall comply with all applicable provisions of Article 8 of the Labor Law as amended, of the State of New York.

§ 18.3 Each and every provision of law and clause required by law to be inserted into this Agreement shall be deemed to have been incorporated herein. If any such provision is not inserted through mistake or otherwise, then upon the application of either party, this Agreement shall be amended in writing, and signed by both parties to make such insertion.

[Remainder of page intentionally left blank]

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

OWNER *(Signature)*

«Anthony J. Picente Jr. »
«County Executive »

(Printed name and title)

CONTRACTOR *(Signature)*

«TBD»
« »

(Printed name and title)

FOR
BID

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

OWNER *(Signature)*

«Anthony J. Picente Jr. »
«County Executive »

(Printed name and title)

CONTRACTOR *(Signature)*

«TBD»
« »

(Printed name and title)

FOR
BY
AIA

Protection of Rights

Assumption of Risk, Insurance Requirements, and Bonds

1. Protection of Rights

1.1. Assumption of Risk

- 1.1.1.** The Contractor solely assumes the following risks. The risk of unforeseen obstacles and difficulties in the prosecution of the Work covered by the Contract, whether such risks are within or beyond the control of the Contractor and whether such risks involve a legal duty, primary or otherwise, imposed upon the County. The risk of loss or damage, direct or indirect, to any equipment, tools, materials or property furnished, used, installed or received by the County, the Contractor or any subcontractor, performing services or furnishing materials for the Work covered hereunder.
- 1.1.2.** To the fullest extent permitted by law, the Contractor shall indemnify, defend, and hold the County harmless against any and all claims (including but not limited to claims asserted by any employee of the Contractor and/or its subcontractor) and costs and expenses of whatever kind (including but not limited to payment or reimbursement of attorneys' fees and disbursements) allegedly arising out of or in any way related to the risks it assumes under this Section, operations of the Contractor and its subcontractor(s) in the performance of the Contract or from the Contractor's and/or its subcontractor's failure to comply with any of the provisions of the Contract or of the law. Such costs and expenses shall include all those incurred in defending the underlying claim and those incurred in connection with the enforcement of this Article IV(1)(b) by way of crossclaim, third-party claim, declaratory action or otherwise.
- 1.1.3.** Neither the termination of the Contract nor the making of the final payment shall release the Contractor from its obligations under this Section, entitled Assumption of Risk. The enumeration elsewhere herein of particular risks assumed by the Contractor or of particular claims for which it is responsible shall not be deemed to limit the effect of the provision of this Section or to imply that it assumes or is responsible for only risks or claims of the type enumerated.
- 1.1.4.** This assumption of risk by the Contractor is absolute, excepting only reckless or intentional acts of the County, its officers, agents, or employees.

1.2. Insurance Requirements

1.2.1. The Contractor shall purchase and maintain insurance of the following types of coverage and limits of liability with an insurance carrier qualified and admitted to do business in the State of New York. The insurance carrier must have at least an A- (excellent) rating by A. M. Best.

1.2.1.1. Commercial General Liability (CGL) coverage with limits of not less than One Million Dollars (\$1,000,000) each occurrence, and Two Million Dollars (\$2,000,000) Annual Aggregate. CGL coverage shall be written on ISO Occurrence form CG 00 01 1001, or a substitute form providing equivalent coverage and shall cover liability arising from premises, operations, XCU, independent contracts, products, pollution, completed operations, personal and advertising injury. The County, the County's consultants and sub-consultants shall be included as an additional insured, on a primary and non-contributing basis before any other insurance or self-insurance, including any deductible or self-insured retention, maintained by, or provided to, the additional insured. The Contractor shall maintain said CGL coverage for itself and the additional insured for the duration of the Contract Period and maintain completed operations coverage for itself and the additional insured for at least three (3) years after completion.

1.2.1.2. Workers' Compensation and Employer's Liability, pursuant to statutory limits.

1.2.1.3. Business Automobile Liability with limits of at least One Million Dollars (\$1,000,000) each accident. Coverage must include liability arising out of all owned, leased, hired and non-owned automobiles. The County shall be included as an additional insured on a primary and non-contributing basis.

1.2.1.4. Commercial Umbrella coverage with limits of at least Five Million Dollars (\$5,000,000). The County shall be included as an additional insured. Umbrella coverage for such additional insured shall apply as primary and non-contributing before any other insurance or self-insurance, including any deductible or self-insured retention, maintained by or provided to the additional insured.

1.2.1.5. Owners and Contractors Protective Liability Insurance in the amount of not less than One Million Dollars (\$1,000,000) per occurrence. The Contractor agrees to have this policy in the County's name.

1.2.1.6. Waiver of Subrogation: The Contractor waives all rights against the County, and its agents, officers, and employees for recovery of damages to the extent these damages are covered by insurance maintained per requirements stated above.

1.2.1.7. The County shall not issue a notice to proceed until certificates evidencing the insurance required by this Section have been provided to the County. The certificates shall be on forms approved by the County and shall contain a provision that coverage afforded under the policies will not be cancelled or allowed to expire until at least thirty (30) days prior written notice has been given to the County. Acceptance of the certificates shall not relieve the Contractor of any of the insurance requirements, nor decrease the liability of the Contractor. The County reserves the right to require the Contractor to provide insurance policies for review by the County. The Contractor grants the County a limited power of attorney to communicate with the Contractor's insurance provider and/or agent for the express purpose of confirming the coverages required hereunder.

1.3. Bonds

- 1.3.1.** A Performance Bond and a Material and Labor Payment Bond shall be submitted by the Contractor. Each bond shall be in the amount of One Hundred Percent (100%) of the amount of the Contract and shall make reference to the Contract. The bonds shall be purchased, at the Contractor's expense, from one or more companies licensed to do business in the State of New York. Said bonds shall not be transferable.
- 1.3.2.** The bonds shall be on the form supplied by the County, or a form approved by the County. The Contractor shall require the attorney-in-fact that executes the required bonds on behalf of the surety, to affix thereto a certified and current copy of the Power of Attorney. The Contractor shall deliver the required bonds to the County no later than three (3) days following the date this Agreement is executed.
- 1.3.3.** The County shall be named as beneficiaries on all bonds.

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General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Oneida County Department of Public Works
REBID
Mohawk Valley Community College
Science and Technology Building
New Construction
1101 Sherma Drive, Utica, NY 13501
MARCH No. 23000
Bid Reference No. 2361
Roofing Construction Contract H22455703
Fire Protection Construction Contract H2455704

THE OWNER:

(Name, legal status and address)

Oneida County
800 Park Avenue
Utica, NY 13501

THE ARCHITECT:

(Name, legal status and address)

MARCH Associates Architects and Planners, P.C.
258 Genesee Street, Suite 300
Utica, NY 13502

TABLE OF ARTICLES

1	GENERAL PROVISIONS
2	OWNER
3	CONTRACTOR
4	ARCHITECT
5	SUBCONTRACTORS
6	CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
7	CHANGES IN THE WORK
8	TIME
9	PAYMENTS AND COMPLETION
10	PROTECTION OF PERSONS AND PROPERTY
11	INSURANCE AND BONDS

ADDITIONS AND DELETIONS:

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

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

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- 12 UNCOVERING AND CORRECTION OF WORK
- 13 MISCELLANEOUS PROVISIONS
- 14 TERMINATION OR SUSPENSION OF THE CONTRACT
- 15 CLAIMS AND DISPUTES



INDEX

(Topics and numbers in bold are Section headings.)

Acceptance of Nonconforming Work

9.6.6, 9.9.3, **12.3**

Acceptance of Work

9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, 12.3

Access to Work

3.16, 6.2.1, 12.1

Accident Prevention

10

Acts and Omissions

3.2, 3.3.2, 3.12.8, 3.18, 4.2.3, 8.3.1, 9.5.1, 10.2.5,
10.2.8, 13.3.2, 14.1, 15.1.2, 15.2

Addenda

1.1.1

Additional Costs, Claims for

3.7.4, 3.7.5, 10.3.2, 15.1.5

Additional Inspections and Testing

9.4.2, 9.8.3, 12.2.1, **13.4**

Additional Time, Claims for

3.2.4, 3.7.4, 3.7.5, 3.10.2, 8.3.2, **15.1.6**

Administration of the Contract

3.1.3, **4.2**, 9.4, 9.5

Advertisement or Invitation to Bid

1.1.1

Aesthetic Effect

4.2.13

Allowances

3.8

Applications for Payment

4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5.1, 9.5.4, 9.6.3, 9.7, 9.10

Approvals

2.1.1, 2.3.1, 2.5, 3.1.3, 3.10.2, 3.12.8, 3.12.9,
3.12.10.1, 4.2.7, 9.3.2, 13.4.1

Arbitration

8.3.1, 15.3.2, **15.4**

ARCHITECT

4

Architect, Definition of

4.1.1

Architect, Extent of Authority

2.5, 3.12.7, 4.1.2, 4.2, 5.2, 6.3, 7.1.2, 7.3.4, 7.4, 9.2,
9.3.1, 9.4, 9.5, 9.6.3, 9.8, 9.10.1, 9.10.3, 12.1, 12.2.1,
13.4.1, 13.4.2, 14.2.2, 14.2.4, 15.1.4, 15.2.1

Architect, Limitations of Authority and

Responsibility

2.1.1, 3.12.4, 3.12.8, 3.12.10, 4.1.2, 4.2.1, 4.2.2,
4.2.3, 4.2.6, 4.2.7, 4.2.10, 4.2.12, 4.2.13, 5.2.1, 7.4,
9.4.2, 9.5.4, 9.6.4, 15.1.4, 15.2

Architect's Additional Services and Expenses

2.5, 12.2.1, 13.4.2, 13.4.3, 14.2.4

Architect's Administration of the Contract

3.1.3, 3.7.4, 15.2, 9.4.1, 9.5

Architect's Approvals

2.5, 3.1.3, 3.5, 3.10.2, 4.2.7

Architect's Authority to Reject Work

3.5, 4.2.6, 12.1.2, 12.2.1

Architect's Copyright

1.1.7, 1.5

Architect's Decisions

3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.2.14, 6.3,
7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4.1, 9.5, 9.8.4, 9.9.1,
13.4.2, 15.2

Architect's Inspections

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 13.4

Architect's Instructions

3.2.4, 3.3.1, 4.2.6, 4.2.7, 13.4.2

Architect's Interpretations

4.2.11, 4.2.12

Architect's Project Representative

4.2.10

Architect's Relationship with Contractor

1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2,
3.5, 3.7.4, 3.7.5, 3.9.2, 3.9.3, 3.10, 3.11, 3.12, 3.16,
3.18, 4.1.2, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5,
9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.3.2, 13.4, 15.2

Architect's Relationship with Subcontractors

1.1.2, 4.2.3, 4.2.4, 4.2.6, 9.6.3, 9.6.4, 11.3

Architect's Representations

9.4.2, 9.5.1, 9.10.1

Architect's Site Visits

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4

Asbestos

10.3.1

Attorneys' Fees

3.18.1, 9.6.8, 9.10.2, 10.3.3

Award of Separate Contracts

6.1.1, 6.1.2

Award of Subcontracts and Other Contracts for Portions of the Work

5.2

Basic Definitions

1.1

Bidding Requirements

1.1.1

Binding Dispute Resolution

8.3.1, 9.7, 11.5, 13.1, 15.1.2, 15.1.3, 15.2.1, 15.2.5,
15.2.6.1, 15.3.1, 15.3.2, 15.3.3, 15.4.1

Bonds, Lien

7.3.4.4, 9.6.8, 9.10.2, 9.10.3

Bonds, Performance, and Payment

7.3.4.4, 9.6.7, 9.10.3, **11.1.2**, **11.1.3**, **11.5**

Building Information Models Use and Reliance

1.8

Building Permit

3.7.1

Capitalization

1.3

Certificate of Substantial Completion

9.8.3, 9.8.4, 9.8.5

Certificates for Payment

4.2.1, 4.2.5, 4.2.9, 9.3.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7,
9.10.1, 9.10.3, 14.1.1.3, 14.2.4, 15.1.4

Certificates of Inspection, Testing or Approval

13.4.4

Certificates of Insurance

9.10.2

Change Orders

1.1.1, 3.4.2, 3.7.4, 3.8.2.3, 3.11, 3.12.8, 4.2.8, 5.2.3,

7.1.2, 7.1.3, **7.2**, 7.3.2, 7.3.7, 7.3.9, 7.3.10, 8.3.1,

9.3.1.1, 9.10.3, 10.3.2, 11.2, 11.5, 12.1.2

Change Orders, Definition of

7.2.1

CHANGES IN THE WORK

2.2.2, 3.11, 4.2.8, **7**, 7.2.1, 7.3.1, 7.4, 8.3.1, 9.3.1.1,

11.5

Claims, Definition of

15.1.1

Claims, Notice of

1.6.2, 15.1.3

CLAIMS AND DISPUTES

3.2.4, 6.1.1, 6.3, 7.3.9, 9.3.3, 9.10.4, 10.3.3, **15**, 15.4

Claims and Timely Assertion of Claims

15.4.1

Claims for Additional Cost

3.2.4, 3.3.1, 3.7.4, 7.3.9, 9.5.2, 10.2.5, 10.3.2, **15.1.5**

Claims for Additional Time

3.2.4, 3.3.1, 3.7.4, 6.1.1, 8.3.2, 9.5.2, 10.3.2, **15.1.6**

Concealed or Unknown Conditions, Claims for

3.7.4

Claims for Damages

3.2.4, 3.18, 8.3.3, 9.5.1, 9.6.7, 10.2.5, 10.3.3, 11.3,

11.3.2, 14.2.4, 15.1.7

Claims Subject to Arbitration

15.4.1

Cleaning Up

3.15, **6.3**

Commencement of the Work, Conditions Relating to

2.2.1, 3.2.2, 3.4.1, 3.7.1, 3.10.1, 3.12.6, 5.2.1, 5.2.3,

6.2.2, 8.1.2, 8.2.2, 8.3.1, 11.1, 11.2, **15.1.5**

Commencement of the Work, Definition of

8.1.2

Communications

3.9.1, **4.2.4**

Completion, Conditions Relating to

3.4.1, 3.11, 3.15, 4.2.2, 4.2.9, 8.2, 9.4.2, 9.8, 9.9.1,

9.10, 12.2, 14.1.2, 15.1.2

COMPLETION, PAYMENTS AND

9

Completion, Substantial

3.10.1, 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1,

9.10.3, 12.2, 15.1.2

Compliance with Laws

2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 10.2.2,

13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14.1.1, 14.2.1.3,

15.2.8, 15.4.2, 15.4.3

Concealed or Unknown Conditions

3.7.4, 4.2.8, 8.3.1, 10.3

Conditions of the Contract

1.1.1, 6.1.1, 6.1.4

Consent, Written

3.4.2, 3.14.2, 4.1.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 13.2,

15.4.4.2

Consolidation or Joinder

15.4.4

CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

1.1.4, **6**

Construction Change Directive, Definition of

7.3.1

Construction Change Directives

1.1.1, 3.4.2, 3.11, 3.12.8, 4.2.8, 7.1.1, 7.1.2, 7.1.3,

7.3, 9.3.1.1

Construction Schedules, Contractor's

3.10, 3.11, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2

Contingent Assignment of Subcontracts

5.4, 14.2.2.2

Continuing Contract Performance

15.1.4

Contract, Definition of

1.1.2

CONTRACT, TERMINATION OR SUSPENSION OF THE

5.4.1.1, 5.4.2, 11.5, **14**

Contract Administration

3.1.3, 4, 9.4, 9.5

Contract Award and Execution, Conditions Relating to

3.7.1, 3.10, 5.2, 6.1

Contract Documents, Copies Furnished and Use of

1.5.2, 2.3.6, 5.3

Contract Documents, Definition of

1.1.1

Contract Sum

2.2.2, 2.2.4, 3.7.4, 3.7.5, 3.8, 3.10.2, 5.2.3, 7.3, 7.4,

9.1, 9.2, 9.4.2, 9.5.1.4, 9.6.7, 9.7, 10.3.2, 11.5, 12.1.2,

12.3, 14.2.4, 14.3.2, 15.1.4.2, **15.1.5**, **15.2.5**

Contract Sum, Definition of

9.1

Contract Time

1.1.4, 2.2.1, 2.2.2, 3.7.4, 3.7.5, 3.10.2, 5.2.3, 6.1.5,

7.2.1.3, 7.3.1, 7.3.5, 7.3.6, 7, 7.3.10, 7.4, 8.1.1,

8.2.1, 8.2.3, 8.3.1, 9.5.1, 9.7, 10.3.2, 12.1.1, 12.1.2,

14.3.2, 15.1.4.2, 15.1.6.1, 15.2.5

Contract Time, Definition of

8.1.1

CONTRACTOR

3

Contractor, Definition of

3.1, **6.1.2**

Contractor's Construction and Submittal Schedules

3.10, 3.12.1, 3.12.2, 4.2.3, 6.1.3, 15.1.6.2

Contractor's Employees

2.2.4, 3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6,

10.2, 10.3, 11.3, 14.1, 14.2.1.1

Contractor's Liability Insurance

11.1

Contractor's Relationship with Separate Contractors and Owner's Forces
3.12.5, 3.14.2, 4.2.4, 6, 11.3, 12.2.4

Contractor's Relationship with Subcontractors
1.2.2, 2.2.4, 3.3.2, 3.18.1, 3.18.2, 4.2.4, 5, 9.6.2, 9.6.7, 9.10.2, 11.2, 11.3, 11.4

Contractor's Relationship with the Architect
1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5.1, 3.7.4, 3.10, 3.11, 3.12, 3.16, 3.18, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.4, 15.1.3, 15.2.1

Contractor's Representations
3.2.1, 3.2.2, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2

Contractor's Responsibility for Those Performing the Work
3.3.2, 3.18, 5.3, 6.1.3, 6.2, 9.5.1, 10.2.8

Contractor's Review of Contract Documents
3.2

Contractor's Right to Stop the Work
2.2.2, 9.7

Contractor's Right to Terminate the Contract
14.1

Contractor's Submittals
3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 9.2, 9.3, 9.8.2, 9.8.3, 9.9.1, 9.10.2, 9.10.3

Contractor's Superintendent
3.9, 10.2.6

Contractor's Supervision and Construction Procedures
1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.4, 7.3.6, 8.2, 10, 12, 14, 15.1.4

Coordination and Correlation
1.2, 3.2.1, 3.3.1, 3.10, 3.12.6, 6.1.3, 6.2.1

Copies Furnished of Drawings and Specifications
1.5, 2.3.6, 3.11

Copyrights
1.5, **3.17**

Correction of Work
2.5, 3.7.3, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, **12.2**, 12.3, 15.1.3.1, 15.1.3.2, 15.2.1

Correlation and Intent of the Contract Documents
1.2

Cost, Definition of
7.3.4

Costs
2.5, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3, 7.3.3.3, 7.3.4, 7.3.8, 7.3.9, 9.10.2, 10.3.2, 10.3.6, 11.2, 12.1.2, 12.2.1, 12.2.4, 13.4, 14

Cutting and Patching
3.14, 6.2.5

Damage to Construction of Owner or Separate Contractors
3.14.2, 6.2.4, 10.2.1.2, 10.2.5, 10.4, 12.2.4

Damage to the Work
3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.4, 12.2.4

Damages, Claims for
3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.3.2, 11.3, 14.2.4, 15.1.7

Damages for Delay
6.2.3, 8.3.3, 9.5.1.6, 9.7, 10.3.2, 14.3.2

Date of Commencement of the Work, Definition of
8.1.2

Date of Substantial Completion, Definition of
8.1.3

Day, Definition of
8.1.4

Decisions of the Architect
3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 6.3, 7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.4.2, 14.2.2, 14.2.4, 15.1, 15.2

Decisions to Withhold Certification
9.4.1, **9.5**, 9.7, 14.1.1.3

Defective or Nonconforming Work, Acceptance, Rejection and Correction of
2.5, 3.5, 4.2.6, 6.2.3, 9.5.1, 9.5.3, 9.6.6, 9.8.2, 9.9.3, 9.10.4, 12.2.1

Definitions
1.1, 2.1.1, 3.1.1, 3.5, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 5.1, 6.1.2, 7.2.1, 7.3.1, 8.1, 9.1, 9.8.1, 15.1.1

Delays and Extensions of Time
3.2, **3.7.4**, 5.2.3, 7.2.1, 7.3.1, **7.4**, **8.3**, 9.5.1, **9.7**, 10.3.2, **10.4**, 14.3.2, **15.1.6**, 15.2.5

Digital Data Use and Transmission
1.7

Disputes
6.3, 7.3.9, 15.1, 15.2

Documents and Samples at the Site
3.11

Drawings, Definition of
1.1.5

Drawings and Specifications, Use and Ownership of
3.11

Effective Date of Insurance
8.2.2

Emergencies
10.4, 14.1.1.2, **15.1.5**

Employees, Contractor's
3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3.3, 11.3, 14.1, 14.2.1.1

Equipment, Labor, or Materials
1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2

Execution and Progress of the Work
1.1.3, 1.2.1, 1.2.2, 2.3.4, 2.3.6, 3.1, 3.3.1, 3.4.1, 3.7.1, 3.10.1, 3.12, 3.14, 4.2, 6.2.2, 7.1.3, 7.3.6, 8.2, 9.5.1, 9.9.1, 10.2, 10.3, 12.1, 12.2, 14.2, 14.3.1, 15.1.4

Extensions of Time
3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3, 7.4, 9.5.1, 9.7, 10.3.2, 10.4, 14.3, 15.1.6, **15.2.5**

Failure of Payment
9.5.1.3, **9.7**, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2

Faulty Work
(See Defective or Nonconforming Work)

Final Completion and Final Payment
4.2.1, 4.2.9, 9.8.2, **9.10**, 12.3, 14.2.4, 14.4.3

Financial Arrangements, Owner's

2.2.1, 13.2.2, 14.1.1.4

GENERAL PROVISIONS

1

Governing Law

13.1

Guarantees (See Warranty)

Hazardous Materials and Substances

10.2.4, **10.3**

Identification of Subcontractors and Suppliers

5.2.1

Indemnification

3.17, **3.18**, 9.6.8, 9.10.2, 10.3.3, 11.3

Information and Services Required of the Owner

2.1.2, **2.2**, 2.3, 3.2.2, 3.12.10.1, 6.1.3, 6.1.4, 6.2.5,

9.6.1, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2,

14.1.1.4, 14.1.4, 15.1.4

Initial Decision

15.2

Initial Decision Maker, Definition of

1.1.8

Initial Decision Maker, Decisions

14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5

Initial Decision Maker, Extent of Authority

14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5

Injury or Damage to Person or Property

10.2.8, 10.4

Inspections

3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3,

9.9.2, 9.10.1, 12.2.1, 13.4

Instructions to Bidders

1.1.1

Instructions to the Contractor

3.2.4, 3.3.1, 3.8.1, 5.2.1, 7, 8.2.2, 12, 13.4.2

Instruments of Service, Definition of

1.1.7

Insurance

6.1.1, 7.3.4, 8.2.2, 9.3.2, 9.8.4, 9.9.1, 9.10.2, 10.2.5,

11

Insurance, Notice of Cancellation or Expiration

11.1.4, 11.2.3

Insurance, Contractor's Liability

11.1

Insurance, Effective Date of

8.2.2, 14.4.2

Insurance, Owner's Liability

11.2

Insurance, Property

10.2.5, 11.2, 11.4, 11.5

Insurance, Stored Materials

9.3.2

INSURANCE AND BONDS

11

Insurance Companies, Consent to Partial Occupancy

9.9.1

Insured loss, Adjustment and Settlement of

11.5

Intent of the Contract Documents

1.2.1, 4.2.7, 4.2.12, 4.2.13

Interest

13.5

Interpretation

1.1.8, 1.2.3, **1.4**, 4.1.1, 5.1, 6.1.2, 15.1.1

Interpretations, Written

4.2.11, 4.2.12

Judgment on Final Award

15.4.2

Labor and Materials, Equipment

1.1.3, 1.1.6, **3.4**, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,

5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1,

10.2.4, 14.2.1.1, 14.2.1.2

Labor Disputes

8.3.1

Laws and Regulations

1.5, 2.3.2, 3.2.3, 3.2.4, 3.6, 3.7, 3.12.10, 3.13, 9.6.4,

9.9.1, 10.2.2, 13.1, 13.3.1, 13.4.2, 13.5, 14, 15.2.8,

15.4

Liens

2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, **9.10.4**, 15.2.8

Limitations, Statutes of

12.2.5, 15.1.2, 15.4.1.1

Limitations of Liability

3.2.2, 3.5, 3.12.10, 3.12.10.1, 3.17, 3.18.1, 4.2.6,

4.2.7, 6.2.2, 9.4.2, 9.6.4, 9.6.7, **9.6.8**, 10.2.5, 10.3.3,

11.3, 12.2.5, 13.3.1

Limitations of Time

2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7,

5.2, 5.3, 5.4.1, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3,

9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15,

15.1.2, 15.1.3, 15.1.5

Materials, Hazardous

10.2.4, **10.3**

Materials, Labor, Equipment and

1.1.3, 1.1.6, 3.4.1, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,

5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2,

10.2.1.2, 10.2.4, 14.2.1.1, 14.2.1.2

Means, Methods, Techniques, Sequences and

Procedures of Construction

3.3.1, 3.12.10, 4.2.2, 4.2.7, 9.4.2

Mechanic's Lien

2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, **9.10.4**, 15.2.8

Mediation

8.3.1, 15.1.3.2, 15.2.1, 15.2.5, 15.2.6, **15.3**, 15.4.1,

15.4.1.1

Minor Changes in the Work

1.1.1, 3.4.2, 3.12.8, 4.2.8, 7.1, **7.4**

MISCELLANEOUS PROVISIONS

13

Modifications, Definition of

1.1.1

Modifications to the Contract

1.1.1, 1.1.2, 2.5, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7,

10.3.2

Mutual Responsibility

6.2

Nonconforming Work, Acceptance of

9.6.6, 9.9.3, **12.3**

Nonconforming Work, Rejection and Correction of
2.4, 2.5, 3.5, 4.2.6, 6.2.4, 9.5.1, 9.8.2, 9.9.3, 9.10.4,
12.2

Notice

1.6, 1.6.1, 1.6.2, 2.1.2, 2.2.2., 2.2.3, 2.2.4, 2.5, 3.2.4,
3.3.1, 3.7.4, 3.7.5, 3.9.2, 3.12.9, 3.12.10, 5.2.1, 7.4,
8.2.2 9.6.8, 9.7, 9.10.1, 10.2.8, 10.3.2, 11.5, 12.2.2.1,
13.4.1, 13.4.2, 14.1, 14.2.2, 14.4.2, 15.1.3, 15.1.5,
15.1.6, 15.4.1

Notice of Cancellation or Expiration of Insurance
11.1.4, 11.2.3

Notice of Claims

1.6.2, 2.1.2, 3.7.4, 9.6.8, 10.2.8, **15.1.3**, 15.1.5,
15.1.6, 15.2.8, 15.3.2, 15.4.1

Notice of Testing and Inspections
13.4.1, 13.4.2

Observations, Contractor's
3.2, 3.7.4

Occupancy

2.3.1, 9.6.6, 9.8

Orders, Written

1.1.1, 2.4, 3.9.2, 7, 8.2.2, 11.5, 12.1, 12.2.2.1, 13.4.2,
14.3.1

OWNER

2

Owner, Definition of

2.1.1

Owner, Evidence of Financial Arrangements

2.2, 13.2.2, 14.1.1.4

Owner, Information and Services Required of the

2.1.2, **2.2**, 2.3, 3.2.2, 3.12.10, 6.1.3, 6.1.4, 6.2.5,
9.3.2, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1,
13.4.2, 14.1.1.4, 14.1.4, 15.1.4

Owner's Authority

1.5, 2.1.1, 2.3.32.4, 2.5, 3.4.2, 3.8.1, 3.12.10, 3.14.2,
4.1.2, 4.2.4, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1,
7.3.1, 8.2.2, 8.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1, 9.10.2,
10.3.2, 11.4, 11.5, 12.2.2, 12.3, 13.2.2, 14.3, 14.4,
15.2.7

Owner's Insurance

11.2

Owner's Relationship with Subcontractors

1.1.2, 5.2, 5.3, 5.4, 9.6.4, 9.10.2, 14.2.2

Owner's Right to Carry Out the Work

2.5, 14.2.2

Owner's Right to Clean Up

6.3

**Owner's Right to Perform Construction and to
Award Separate Contracts**

6.1

Owner's Right to Stop the Work

2.4

Owner's Right to Suspend the Work

14.3

Owner's Right to Terminate the Contract

14.2, 14.4

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

1.1.1, 1.1.6, 1.1.7, **1.5**, 2.3.6, 3.2.2, 3.11, 3.17, 4.2.12,
5.3

Partial Occupancy or Use

9.6.6, **9.9**

Patching, Cutting and

3.14, 6.2.5

Patents

3.17

Payment, Applications for

4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5, 9.6.3, 9.7, 9.8.5, 9.10.1,
14.2.3, 14.2.4, 14.4.3

Payment, Certificates for

4.2.5, 4.2.9, 9.3.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1,
9.10.3, 14.1.1.3, 14.2.4

Payment, Failure of

9.5.1.3, **9.7**, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2

Payment, Final

4.2.1, 4.2.9, **9.10**, 12.3, 14.2.4, 14.4.3

Payment Bond, Performance Bond and

7.3.4.4, 9.6.7, 9.10.3, **11.1.2**

Payments, Progress

9.3, **9.6**, 9.8.5, 9.10.3, 14.2.3, 15.1.4

PAYMENTS AND COMPLETION

9

Payments to Subcontractors

5.4.2, 9.5.1.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7, 14.2.1.2

PCB

10.3.1

Performance Bond and Payment Bond

7.3.4.4, 9.6.7, 9.10.3, **11.1.2**

Permits, Fees, Notices and Compliance with Laws

2.3.1, **3.7**, 3.13, 7.3.4.4, 10.2.2

PERSONS AND PROPERTY, PROTECTION

OF

10

Polychlorinated Biphenyl

10.3.1

Product Data, Definition of

3.12.2

Product Data and Samples, Shop Drawings

3.11, **3.12**, 4.2.7

Progress and Completion

4.2.2, **8.2**, 9.8, 9.9.1, 14.1.4, 15.1.4

Progress Payments

9.3, **9.6**, 9.8.5, 9.10.3, 14.2.3, 15.1.4

Project, Definition of

1.1.4

Project Representatives

4.2.10

Property Insurance

10.2.5, **11.2**

Proposal Requirements

1.1.1

PROTECTION OF PERSONS AND PROPERTY

10

Regulations and Laws

1.5, 2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 9.9.1, 10.2.2, 13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14, 15.2.8, 15.4

Rejection of Work

4.2.6, 12.2.1

Releases and Waivers of Liens

9.3.1, 9.10.2

Representations

3.2.1, 3.5, 3.12.6, 8.2.1, 9.3.3, 9.4.2, 9.5.1, 9.10.1

Representatives

2.1.1, 3.1.1, 3.9, 4.1.1, 4.2.10, 13.2.1

Responsibility for Those Performing the Work

3.3.2, 3.18, 4.2.2, 4.2.3, 5.3, 6.1.3, 6.2, 6.3, 9.5.1, 10

Retainage

9.3.1, 9.6.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3

Review of Contract Documents and Field Conditions by Contractor

3.2, 3.12.7, 6.1.3

Review of Contractor's Submittals by Owner and Architect

3.10.1, 3.10.2, 3.11, 3.12, 4.2, 5.2, 6.1.3, 9.2, 9.8.2

Review of Shop Drawings, Product Data and Samples by Contractor

3.12

Rights and Remedies

1.1.2, 2.4, 2.5, 3.5, 3.7.4, 3.15.2, 4.2.6, 5.3, 5.4, 6.1, 6.3, 7.3.1, 8.3, 9.5.1, 9.7, 10.2.5, 10.3, 12.2.1, 12.2.2, 12.2.4, 13.3, 14, 15.4

Royalties, Patents and Copyrights

3.17

Rules and Notices for Arbitration

15.4.1

Safety of Persons and Property

10.2, 10.4

Safety Precautions and Programs

3.3.1, 4.2.2, 4.2.7, 5.3, 10.1, 10.2, 10.4

Samples, Definition of

3.12.3

Samples, Shop Drawings, Product Data and

3.11, 3.12, 4.2.7

Samples at the Site, Documents and

3.11

Schedule of Values

9.2, 9.3.1

Schedules, Construction

3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2

Separate Contracts and Contractors

1.1.4, 3.12.5, 3.14.2, 4.2.4, 4.2.7, 6, 8.3.1, 12.1.2

Separate Contractors, Definition of

6.1.1

Shop Drawings, Definition of

3.12.1

Shop Drawings, Product Data and Samples

3.11, 3.12, 4.2.7

Site, Use of

3.13, 6.1.1, 6.2.1

Site Inspections

3.2.2, 3.3.3, 3.7.1, 3.7.4, 4.2, 9.9.2, 9.4.2, 9.10.1, 13.4

Site Visits, Architect's

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4

Special Inspections and Testing

4.2.6, 12.2.1, 13.4

Specifications, Definition of

1.1.6

Specifications

1.1.1, 1.1.6, 1.2.2, 1.5, 3.12.10, 3.17, 4.2.14

Statute of Limitations

15.1.2, 15.4.1.1

Stopping the Work

2.2.2, 2.4, 9.7, 10.3, 14.1

Stored Materials

6.2.1, 9.3.2, 10.2.1.2, 10.2.4

Subcontractor, Definition of

5.1.1

SUBCONTRACTORS

5

Subcontractors, Work by

1.2.2, 3.3.2, 3.12.1, 3.18, 4.2.3, 5.2.3, 5.3, 5.4, 9.3.1.2, 9.6.7

Subcontractual Relations

5.3, 5.4, 9.3.1.2, 9.6, 9.10, 10.2.1, 14.1, 14.2.1

Submittals

3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.4, 9.2, 9.3, 9.8, 9.9.1, 9.10.2, 9.10.3

Submittal Schedule

3.10.2, 3.12.5, 4.2.7

Subrogation, Waivers of

6.1.1, 11.3

Substances, Hazardous

10.3

Substantial Completion

4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3, 12.2, 15.1.2

Substantial Completion, Definition of

9.8.1

Substitution of Subcontractors

5.2.3, 5.2.4

Substitution of Architect

2.3.3

Substitutions of Materials

3.4.2, 3.5, 7.3.8

Sub-subcontractor, Definition of

5.1.2

Subsurface Conditions

3.7.4

Successors and Assigns

13.2

Superintendent

3.9, 10.2.6

Supervision and Construction Procedures

1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.4, 8.2, 8.3.1, 9.4.2, 10, 12, 14, 15.1.4

Suppliers

1.5, 3.12.1, 4.2.4, 4.2.6, 5.2.1, 9.3, 9.4.2, 9.5.4, 9.6, 9.10.5, 14.2.1

Surety

5.4.1.2, 9.6.8, 9.8.5, 9.10.2, 9.10.3, 11.1.2, 14.2.2, 15.2.7

Surety, Consent of

9.8.5, 9.10.2, 9.10.3

Surveys

1.1.7, 2.3.4

Suspension by the Owner for Convenience

14.3

Suspension of the Work

3.7.5, 5.4.2, 14.3

Suspension or Termination of the Contract

5.4.1.1, 14

Taxes

3.6, 3.8.2.1, 7.3.4.4

Termination by the Contractor

14.1, 15.1.7

Termination by the Owner for Cause

5.4.1.1, 14.2, 15.1.7

Termination by the Owner for Convenience

14.4

Termination of the Architect

2.3.3

Termination of the Contractor Employment

14.2.2

TERMINATION OR SUSPENSION OF THE CONTRACT

14

Tests and Inspections

3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 10.3.2, 12.2.1, 13.4

TIME

8

Time, Delays and Extensions of

3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, 8.3, 9.5.1, 9.7, 10.3.2, 10.4, 14.3.2, 15.1.6, 15.2.5

Time Limits

2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2, 5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15.1.2, 15.1.3, 15.4

Time Limits on Claims

3.7.4, 10.2.8, 15.1.2, 15.1.3

Title to Work

9.3.2, 9.3.3

UNCOVERING AND CORRECTION OF WORK

12

Uncovering of Work

12.1

Unforeseen Conditions, Concealed or Unknown

3.7.4, 8.3.1, 10.3

Unit Prices

7.3.3.2, 9.1.2

Use of Documents

1.1.1, 1.5, 2.3.6, 3.12.6, 5.3

Use of Site

3.13, 6.1.1, 6.2.1

Values, Schedule of

9.2, 9.3.1

Waiver of Claims by the Architect

13.3.2

Waiver of Claims by the Contractor

9.10.5, 13.3.2, 15.1.7

Waiver of Claims by the Owner

9.9.3, 9.10.3, 9.10.4, 12.2.2.1, 13.3.2, 14.2.4, 15.1.7

Waiver of Consequential Damages

14.2.4, 15.1.7

Waiver of Liens

9.3, 9.10.2, 9.10.4

Waivers of Subrogation

6.1.1, 11.3

Warranty

3.5, 4.2.9, 9.3.3, 9.8.4, 9.9.1, 9.10.2, 9.10.4, 12.2.2, 15.1.2

Weather Delays

8.3, 15.1.6.2

Work, Definition of

1.1.3

Written Consent

1.5.2, 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.10.3, 13.2, 13.3.2, 15.4.4.2

Written Interpretations

4.2.11, 4.2.12

Written Orders

1.1.1, 2.4, 3.9, 7, 8.2.2, 12.1, 12.2, 13.4.2, 14.3.1

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 a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's 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 the Owner and by Separate Contractors.

§ 1.1.5 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.

§ 1.1.6 The Specifications

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

§ 1.1.7 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.

§ 1.1.8 Initial Decision Maker

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

§ 1.2 Correlation and Intent of the Contract Documents

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

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

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

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

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

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

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

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

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

§ 1.6 Notice

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

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

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

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or

relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does 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.

§ 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 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 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.

§ 2.3.5 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.

§ 2.3.6 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.

§ 2.4 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.

§ 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 prior approval of the Architect and the 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 Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

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

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

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's 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 2.3.4, 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 Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 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 Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 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 and 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. Unless the Architect 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 Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

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

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner 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 Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

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

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.6.1 The Owner is exempt from the payment of Sales and Compensation Use Taxes of the State of New York and of cities and counties within the State of New York under existing laws. Sales taxes on all materials to be incorporated into the project which are sold to the Owner pursuant to the provisions of the Contract are not to be included in bids. The exemption does not, however, apply to tools, machinery, equipment, or other property leased by or to the Contractor or a Subcontractor and the Contractor and his Subcontractor shall be responsible for and pay any and all applicable taxes, including Sales and Compensating Use Taxes, on such leased tools, machinery, equipment, or other property, and for materials not incorporated into the project.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for all 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. The Owner shall secure and pay for the building permit.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 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 and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect 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 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 and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that 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 and Architect. Upon receipt of such

notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2** 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.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect 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 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 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.

§ 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 Architect's approval. The Architect'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 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 perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 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 Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

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

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

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

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is 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 Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner 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 approved by the Architect.

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

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

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

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

§ 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 Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

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

§ 3.13.1 Submit written report to the Owner of existing damage to roads, walks, lawns, buildings, other property to be affected by the Contract prior to starting work; failure to do so will make the Contractor responsible for all existing damage. The Contractor may request and schedule inspection with the Owner prior to submittal of report. Obtain consent of adjoining property owners regarding temporary easements or any other manner of physical encroachment. At the Owners request, the Contractor shall be required to provide photographs and/or video footage of existing conditions.

§ 3.13.2 No signs or advertising material will be permitted on the job 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 or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner 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 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 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 or Architect. 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.

§ 3.18 Section Deleted.

§ 3.19 Substitutions

§ 3.19.1 After the Contract has been executed, the Owner will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in the General Requirements.

§ 3.19.2 By making requests for substitutions based on Subparagraph 3.4.4, the Contractor:

§ 3.19.2.1 Represents that the Contractor has personally investigated the proposed substitute product and determined that is equal or superior in all respects to that specified.

§ 3.19.2.2 Represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified.

§ 3.19.2.3 Certifies that the cost data presented is complete and includes all related costs under the Contract but excludes costs under separate contracts, and excludes redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent.

§ 3.19.2.4 Will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

§ 3.19.3 The Contractor shall be responsible for all additional costs incurred by the Owner as a result of substitution of products whether such costs become apparent at the time of substitution or at a later date. Such costs shall include but not be limited to additional Architectural and/or Consultant fees

ARTICLE 4 ARCHITECT

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

§ 4.2 Administration of the Contract

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

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 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.

§ 4.2.4 Communications

The Owner and Contractor 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 Contractor 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 Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals 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 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 Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; 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; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 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 Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

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

§ 4.2.12 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 rendered in good faith.

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

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

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

§ 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 or bidding requirements, the Contractor shall within 14 days of Contract execution, furnish in writing to the Owner and Architect the names of persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review or (3) Contractor must provide additional information and that action shall be deferred until the Contractor provides further information. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection. Failure to object to a subcontractor or other contract for portions of the work shall not constitute a waiver of any of the requirements of the Contract Documents and all products furnished and services provided must conform to such requirements.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner 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 or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner 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 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 and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

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

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

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

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

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

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

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

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate 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 or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify 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 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 Contractor that are not apparent.

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

§ 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 or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor 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, 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 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, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner 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.

§ 7.2 Change Orders

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

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

§ 7.2.2 The allowance for the combined overhead and profit included in the total cost to the Owner shall be based on the following schedule:

§ 7.2.2.1 For the Contractor, for Work performed by the Contractor's own forces, 15 percent of the cost.

§ 7.2.2.2 For the Contractor, for Work performed by the Contractor's Subcontractor, 5 percent of the amount due the Subcontractor.

§ 7.2.2.3 For the Subcontractor, for Work performed by the Subcontractor's own forces, 15 percent of the cost.

§ 7.2.3 In order to facilitate checking of quotations for extras or credits, all proposals (except those so minor that their propriety can be seen by inspection) shall be accompanied by a complete itemization of costs including labor, materials, and Subcontracts. In no case will a change involving over \$500.00 be approved without itemization.

§ 7.3 Construction Change Directives

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

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

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

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

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect 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 Architect 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 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 Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

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

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

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's 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 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 Architect will 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 Architect 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 Architect 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 or Architect, of an employee of either, or of a Separate Contractor; (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 determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

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 Architect 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 Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect 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 or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the 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.

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

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

§ 9.3.4 The form of Application for Payment shall be a notarized AIA Document G702, Application and Certification for Payment, supported by AIA Document G703, Continuation Sheet.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor 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 Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, 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 entitled to payment in the amount certified. The foregoing representations 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 Architect. However, the issuance of a Certificate for Payment will not be a representation that the 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 Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The 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 previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from 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;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

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

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

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, 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 Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

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

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

§ 9.6.3 The Architect 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 Architect and Owner 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 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.

§ 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 Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within forty-five days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

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

§ 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 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 Contractor's list, the Architect 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 Contractor's 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 to determine Substantial Completion.

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

§ 9.8.5 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 shall 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.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, 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 receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's 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 Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (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 Architect so confirms, the Owner shall, upon application by the Contractor and certification by the 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 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.

§ 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; and
- .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.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

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

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

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 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 and 10.2.1.3. 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 or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either 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 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 and Substances

§ 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 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 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 and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor 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 Paragraph Deleted.

§ 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 indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance 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 sole fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

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

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice 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.

§ 11.2 Section Deleted.

§ 11.3 Section Deleted.

§ 11.4 Section Deleted.

§ 11.5 Section Deleted.

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 Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's 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 Architect has not specifically requested to examine prior to its being covered, the 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 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 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 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 or Separate 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, 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 Architect timely notice of when and where tests and inspections are to be made so that the 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 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 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 Architect of when and where tests and inspections are to be made so that the 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 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 Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the 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 Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, 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 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 or entities 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 and the 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, 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 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 be certified by the Initial Decision Maker, upon application, 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 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 the 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.

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 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 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 after 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 Section Deleted.

ADDENDUM – STANDARD ONEIDA COUNTY CONDITIONS

The following addendum modifies, changes, or adds to the contract for construction between the County of Oneida, hereinafter known as County, and a Contractor, subcontractor, vendor, vendee, licensor, licensee, lessor, lessee or any third party, hereinafter known as Contractor.

WHEREAS, County and Contractor intend to enter into a contract, license, lease, amendment or other agreement of any kind (hereinafter referred to as the “Contract”), and

WHEREAS, the Oneida County Attorney and the Oneida County Director of Purchasing have recommended the inclusion of the standard clauses set forth in this Addendum to be included in every Contract for which County is a party, now, thereafter,

The parties to any Contract, for good consideration, agree to be bound by the following clauses which will be made a part of the Contract.

1. EXECUTORY OR NON-APPROPRIATION CLAUSE.

a. The County shall have no liability or obligation under this Contract to the Contractor or to anyone else beyond the annual funds being appropriated and available for this Contract.

2. ONEIDA COUNTY BOARD OF LEGISLATORS: RESOLUTION #249 SOLID WASTE DISPOSAL REQUIREMENTS.

a. Pursuant to Oneida County Board of Legislator Resolution No. 249 of May 26, 1999, the Contractor agrees to deliver exclusively to the facilities of the Oneida-Herkimer Solid Waste Authority, all waste and recyclables generated within the Authority’s service area by performance of this Contract by the Contractor and any subcontractors. Upon awarding of this Contract, and before work commences, the Contractor will be required to provide Oneida County with proof that Resolution No. 249 of 1999 has been complied with, and that all wastes and recyclables in the Oneida-Herkimer Solid Waste Authority’s service area which are generated by the Contractor and any subcontractors in performance of this Contract will be delivered exclusively to Oneida-Herkimer Solid Waste Authority facilities.

3. CERTIFICATIONS REGARDING LOBBYING, DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS, AND DRUG-FREE WORKPLACE REQUIREMENTS.

a. Lobbying. As required by Section 1352, Title 31 of the U.S. Code and implemented at 34 CFR Part 82 for persons entering into a grant or cooperative agreement over \$100,000, as defined at 34 CFR Part 82, Section 82.105 and 82.110, the Contractor certifies that:

i. No federal appropriated funds have been paid or will be paid, by or on behalf of the Contractor, to any persons for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of

Congress in connection with the making of any federal grant, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal grant or cooperative agreement.

ii. If any funds other than federally appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal grant or cooperative agreement, the Contractor shall complete and submit Standard Form 111 "Disclosure Form to Report Lobbying," in accordance with its instructions.

iii. The Contractor shall require that the language of this certification be included in the award documents for all subcontracts and that all subcontractors shall certify and disclose accordingly.

b. Debarment, Suspension and other Responsibility Matters. As required by Executive Order 12549, Debarments and Suspension, and implemented at 34 CFR Part 85, for prospective participants in primary covered transactions, as defined at 34 CFR Part 85, Sections 83.105 and 85.110,

i. The Contractor certifies that it and its principals:

A. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;

B. Have not within a three-year period preceding this Contract been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction, violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

C. Are not presently indicted or otherwise criminally or civilly charged by a Government entity (federal, state or local) with commission of any of the offenses enumerated in subparagraph (B), above, of this certification; and

D. Have not within a three-year period preceding this Contract had one or more public transactions (federal, state, or local) for cause or default;

ii. Where the Contractor is unable to certify to any of the statements in this certification, he or she shall attach an explanation to this Contract.

c. Drug-Free Workplace (Contractors other than individuals). As required by the Drug-Free Workplace Act of 1988, and implemented at 34 CFR Part 85, Subpart F, for Contractors, as defined at 34 CFR Part 85, Sections 85.605 and 85.610:

i. The Contractor will or will continue to provide a drug-free workplace by:

A. Publishing a statement notifying employees that the manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the Contractor's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

B. Establishing an ongoing drug-free awareness program to inform employees about:

1) The dangers of drug abuse in the workplace;

2) The Contractor's policy of maintaining a drug-free workplace;

3) Any available drug counseling, rehabilitation, and employee assistance program; and

4) The penalties that may be imposed upon an employee for drug abuse violation occurring in the workplace;

C. Making it a requirement that each employee to be engaged in the performance of the Contract be given a copy of the statement required by paragraph (A), above;

D. Notifying the employee in the statement required by paragraph (A), above, that as a condition of employment under the Contract, the employee will:

1) Abide by the terms of the statement; and

2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five (5) calendar days after such conviction;

E. Notifying the County, in writing within ten (10) calendar days after having received notice under subparagraph (D)(2), above, from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position and title, to:

1) Director, Grants Management Bureau, State Office Building Campus, Albany, New York 12240. Notice shall include the identification number(s) of each affected contract.

F. Taking one of the following actions, within thirty (30) calendar days of receiving notice under paragraph (D)(2), above, with respect to any employee who is so convicted;

1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or

- 2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a federal, state or local health, law enforcement, or other appropriate agency;
- G. Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (A),(B),(C),(D),(E) and (F), above.
- ii. The Contractor may insert in the space provided below the site(s) for the performance of work done in connection with the specific contract.
Place of Performance (street, address, city, county, state, zip code)

d. Drug-Free Workplace (Contractors who are individuals). As required by the Drug-Free Workplace act of 1988, and implemented at 34 CFR Part 85, Subpart F, for Contractors that are individuals, as defined at 34 CFR Part 85, Sections 85.605 and 85.610:’

- i. As a condition of the contract, the Contractor certifies that he or she will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in conducting any activity with the Contract; and
- ii. If convicted of a criminal drug offense resulting from a violation occurring during the conduct of any contract activity, the Contractor will report the conviction, in writing, within ten (10) calendar days of the conviction, to:

A. Director, Grants Management Bureau, State Office Building Campus, Albany, NY 12240.

Notice shall include the identification number(s) of each affected Contract.

4. HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT (HIPAA). When applicable to the services provided pursuant to the Contract:

a. The Contractor, as a Business Associate of the County, shall comply with the Health Insurance Portability and Accountability Act of 1996, hereinafter referred to as “HIPAA,” as well as all regulations promulgated by the Federal Government in furtherance thereof, to assure the privacy and security of all protected health information exchanged between the Contractor and the County. In order to assure such privacy and security, the Contractor agrees to enact the following safeguards for protected health information:

- i. Establish policies and procedures, in written or electronic form, that are reasonably designed, taking into consideration the size of, and the type of activities undertaken by, the Contractor,

to comply with the Standards for Privacy of Individual Identifiable Health Information, commonly referred to as the Privacy Rule;

ii. Utilize a combination of electronic hardware and computer software in order to securely store, maintain, transmit, and access, protected health information electronically; and

iii. Utilize an adequate amount of physical hardware, including but not limited to, locking filing cabinets, locks on drawers, other cabinets and office doors, in order to prevent unwarranted and illegal access to computers and paper files that contain protected health information of the County's clients.

b. This agreement does not authorize the Contractor to use or further disclose the protected health information that the Contractor handles in treating patients of the County in any manner that would violate the requirements of 45 CFR § 164.504(e), if that same use or disclosure were done by the County, except that:

i. The Contractor may use and disclose protected health information for the Contractor's own proper management and administration; and

ii. The Contractor may provide data aggregation services relating to the health care operations of the County.

c. The Contractor shall:

i. Not use or further disclose protected health information other than as permitted or required by this contract or as required by law;

ii. Use appropriate safeguards to prevent the use or disclosure of protected health information other than as provided for in this Contract;

iii. Report to the County any use or disclosure of the information not provided for by this Contract of which the Contractor becomes aware;

iv. Ensure that any agents, including a subcontractor, to whom the Contractor provides protected health information received from, or created or received by the Contractor on behalf of the County, agrees to the same restrictions and conditions that apply to the Contractor with respect to such protected health information;

v. Make available protected health information in accordance with 45 CFR §164.524;

vi. Make available protected health information for amendment and incorporate any amendments to protected health information in accordance with 45 CFR §164.528;

vii. Make available the information required to provide an accounting of disclosures in accordance with 45 CFR § 164.528;

viii. Make its internal practices, books, and records relating to the use and disclosure of protected health information received from, or created or received by, the Contractor on behalf of the County available to the Secretary of Health and Human Services for purposes of determining the County's compliance with 45 CFR § 164.504(e)(2)(ii); and

ix. At the termination of this Contract, if feasible, return or destroy all protected health information received from, or created or received by, the Contractor on behalf of the County that the Contractor still maintains, in any form, and retain no copies of such information; or, if such return or destruction is not feasible, extend the protections of this Contract permanently to such information and limit further uses and disclosures to those purposes that make the return or destruction of the information infeasible.

d. The Contractor agrees that this contract may be amended if any of the following events occurs:

i. HIPAA, or any of the regulations promulgated in furtherance thereof, is modified by Congress or the Department of Health and Human Services;

ii. HIPAA, or any of the regulations promulgated in furtherance thereof, is interpreted by a court in a manner impacting the County's HIPAA compliance; or

iii. There is a material change in the business practices and procedures of the County.

e. Pursuant to 45 CFR § 164.504(e)(2)(iii), the County is authorized to unilaterally terminate this Contract if the County determines that the Contractor has violated a material term of this Contract.

5. NON-ASSIGNMENT CLAUSE. In accordance with Section 109 of the General Municipal Law, this Contract may not be assigned by the Contractor or its right, title or interest therein assigned, transferred, conveyed, sublet or otherwise disposed of without the County's previous written consent, and any attempts to do so are null and void. The Contractor may, however, assign its right to receive payments without the County's prior written consent unless this Contract concerns Certificates of Participation pursuant to Section 109-b of the General Municipal Law.

6. WORKER'S COMPENSATION BENEFITS In accordance with Section 108 of the General Municipal Law, this Contract shall be void and of no force and effect unless the Contractor shall provide and maintain coverage during the life of this Contract for the benefit of such employees as are required to be covered by the provisions of the Workers' Compensation Law.

7. NON-DISCRIMINATION REQUIREMENTS. To the extent required by Article 15 of the Executive Law (also known as the Human Rights Law) and all other state and federal statutory and constitutional non-discrimination provisions, the Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex, national origin, sexual orientation, age, disability, genetic predisposition or carrier status, or marital status. Furthermore, in accordance with Section 220-e of the Labor Law, if this is a Contract for the construction, alteration or repair of any public building or public work or for the manufacture, sale or distribution of materials, equipment or supplies, and to the extent that this Contract shall be performed within the State of New York, the Contractor agrees that neither it nor its subcontractors shall, by reason of race, creed, color, disability, sex, or national origin: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this Contract. If this is a building service contract as defined in Section 230 of the Labor Law, then, in accordance with Section 239 of the Labor Law, the Contractor agrees that neither it nor its subcontractors shall by reason of race, creed, color, national origin, age, sex or disability: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this Contract. The Contractor is subject to fines of \$50.00 per person per day for any violation of Section 220-e or Section 239 as well as possible termination of this Contract and forfeiture of all monies due hereunder for a second or subsequent violation.

8. WAGE AND HOURS PROVISIONS. If this is a public work contract covered by Article 8 of the Labor Law or a building service contract covered by Article 9 of the Labor Law, neither the Contractor's employees nor the employees of its subcontractors may be required or permitted to work more than the number of hours or days stated in said Articles, except as otherwise provided in the Labor Law and as set forth in prevailing wage and supplement schedules issued by the State Labor Department. Furthermore, the Contractor and its subcontractors must pay at least the prevailing wage rate and pay or provide the prevailing supplements, including the premium rates for overtime pay, as determined by the State Labor Department in accordance with the Labor Law. Additionally, effective April 28, 2008, if this is a public work contract covered by Article 8 of the Labor Law, the Contractor understands and agrees that the filing of payrolls in a manner consistent with Subdivision 3-a of Section 220 of the Labor Law shall be a condition precedent to payment by the County of any County-approved sums due and owing for work done upon the project.

9. NON-COLLUSIVE BIDDING CERTIFICATION. In accordance with Section 103-d of the General Municipal Law, if this Contract is awarded based upon the submission of bids, the Contractor certifies and affirms, under penalty of perjury, as to its own organization, under penalty of perjury, that to the best of its knowledge and belief: (1) the prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; and (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. The Contractor further affirms that, at the time the Contractor submitted its bid, an authorized and responsible person executed and delivered to the County a non-collusive bidding certification on the Contractor's behalf.

10. RECORDS. The Contractor shall establish and maintain complete and accurate books, records, documents, accounts and other evidence directly pertaining to performance under this Contract (hereinafter, collectively, "the Records"). The Records shall include, but not be limited to, reports, statements, examinations, letters, memoranda, opinions, folders, files, books, manuals, pamphlets, forms, papers, designs, drawings, maps, photos, letters, microfilms, computer tapes or discs, electronic files, e-mails (and all attachments thereto), rules, regulations and codes. The Records must be kept for the balance of the calendar year in which they were made and for six (6) additional years thereafter. The County Comptroller, the County Attorney and any other person or entity authorized to conduct an audit or examination, as well as the agency or agencies involved in this Contract, shall have access to the Records during normal business hours at an office of the Contractor within the County or, if no such office is available, at a mutually agreeable and reasonable venue within the County, for the term specified above, for the purposes of inspection, auditing and copying. The County shall take reasonable steps to protect from public disclosure any of the Records which are exempt from disclosure under Section 87 of the Public Officers Law (the "Statute"), provided that: (a) the Contractor shall timely inform an appropriate County official, in writing, that said records should not be disclosed; (b) said records shall be sufficiently identified; and (c) in the sole discretion of the County, designation of said records as exempt under the Statute is reasonable. Nothing contained herein shall diminish, or in any way adversely affect, the County's right to discovery in any pending or future litigation. Notwithstanding any other language, the Records may be

subject to disclosure under the New York Freedom of Information Law, for other applicable state or federal law, rule or regulation.

11. IDENTIFYING INFORMATION AND PRIVACY NOTIFICATION.

a. Identification Number(s). Every invoice or claim for payment submitted to a County agency by a payee, for payment for the sale of goods or service or for transactions (e.g., leases, easements, licenses, etc.) related to real or personal property must include the payee's identification number. This number includes any or all of the following: (i) the payee's Federal employer identification number, (ii) the payee's Federal social security number, and/or (iii) the payee's Vendor Identification Number assigned by the Statewide Financial System. Where the payee does not have such number or numbers, the payee, on its invoice or claim for payment, must state with specificity the reason or reasons why the payee does not have such number or numbers.

b. Privacy Notification. (i) The authority to request the above personal information from a seller of goods or services or a lessor of real or personal property, and the authority to maintain such information, is found in Section 5 of the State Tax Law. Disclosure of this information by the seller or lessor to the County is mandatory. The principle purpose for which the information is collected is to enable the State to identify individuals, businesses and others who have been delinquent in filing tax returns or may have understated their liabilities and to generally identify persons affected by the taxes administered by the New York State Commissioner of Taxation and Finance. The information will be used for tax administration purposes and for any other purpose authorized by law. (ii) The personal information is requested by the County's purchasing unit contracting to purchase goods or services or lease the real or personal property covered by this Contract.

12. CONFLICTING TERMS. In the event of a conflict between the terms of the Contract (including any and all attachments thereto and amendments thereof) and the terms of this Addendum, the terms of this Addendum shall control.

13. GOVERNING LAW. This Contract shall be governed by the laws of the State of New York except where the Federal Supremacy Clause requires otherwise.

14. PROHIBITION ON PURCHASE OF TROPICAL HARDWOODS.

a. The Contractor certifies and warrants that all wood products to be used under this Contract award will be acquired in accordance with, but not limited to, the specifications and provisions of Section 165 of the State Finance Law (Use of Tropical Hardwoods), which prohibits purchase and use of tropical hardwoods, unless specifically exempted by the State or any governmental agency or political

subdivision or public benefit corporation. Qualification for an exemption under this law will be the sole responsibility of the Contractor to establish to meet with the approval of the County.

b. In addition, when any portion of this Contract involving the use of woods, whether for supply or installation, is to be performed by any subcontractor, the prime Contractor will indicate and certify in the submitted bid proposal that the subcontractor has been informed and is in compliance with specifications and provisions regarding use of tropical hardwoods as detailed in Section 165 of the State Finance Law. Any such use must meet with approval of the County; otherwise, the bid may not be considered responsive. Under bidder certifications, proof of qualification for exemption will be the sole responsibility of the Contractor to establish to meet with the approval of the County.

15. COMPLIANCE WITH NEW YORK STATE INFORMATION SECURITY BREACH AND NOTIFICATION ACT. The Contractor shall comply with the provisions of the New York State Information Security Breach and Notification Act (General Business Law Section 899-aa).

16. GRATUITIES AND KICKBACKS.

a. Gratuities. It shall be unethical for any person to offer, give, or agree to give any County employee or former County employee, or for any County employee or former County employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, or preparation of any part of a program requirement or a purchase request; influencing the content of any specification or procurement standard; rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application; request for ruling, determination, claim, or controversy, or other particular matter, pertaining to any program requirement or a contract or subcontract, or to any solicitation or proposal therefor.

b. Kickbacks. It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime Contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

17. AUDIT.

a. The County, the State of New York, and the United States shall have the right at any time during the term of this agreement and for the period limited by the applicable statute of limitations to audit the payment of monies hereunder. The Contractor shall comply with any demands made by the County to provide information with respect to the payment of monies made hereunder during the period covered by this paragraph. The Contractor shall maintain its books and records in accordance with

generally accepted accounting principles or such other method of account which is approved in writing by the County prior to the date of this agreement. The revenues and expenditures of the Contractor in connection with this agreement shall be separately identifiable. Each expenditure or claim for payment shall be fully documented. Expenditures or claims for payment which are not fully documented may be disallowed. The Contractor agrees to provide to, or permit the County to examine or obtain copies of, any documents relating to the payment of money to the Contractor or expenditures made by the Contractor for which reimbursement is requested to be made or has been made to the Contractor by the County. The Contractor shall maintain all records required by this paragraph for 7 years after the date this agreement is terminated or ends.

b. If the Contractor has expended, in any fiscal year, \$300,000.00 or more in funds provided by a federal financial assistance program from a federal agency pursuant to this agreement and all other contracts with the County, the Contractor shall provide the County with an audit prepared by an independent auditor in accordance with the Single Audit Act of 1984, 31 U.S.C. §§ 7501, et seq., as amended, and the regulations adopted pursuant to such Act.

18. CERTIFICATION OF COMPLIANCE WITH THE IRAN DIVESTMENT ACT.

a. Pursuant to Section 103-g of the General Municipal Law, by submitting a bid in response to this solicitation or by assuming the responsibility of a Contract awarded hereunder, each bidder or Contractor, or any person signing on behalf of any bidder or Contractor, and any assignee or subcontractor and, in the case of a joint bid, each party thereto, certifies, under penalty of perjury, that once the Prohibited Entities List is posted on the Office of General Services (hereinafter "OGS") website, that to the best of its knowledge and belief, that each bidder or Contractor and any subcontractor or assignee is not identified on the Prohibited Entities List created pursuant to State Finance Law § 165-a(3)(b).

b. Additionally, the bidder or Contractor is advised that once the Prohibited Entities List is posted on the OGS website, any bidder or Contractor seeking to renew or extend a Contract or assume the responsibility of a Contract awarded in response to this solicitation must certify at the time the Contract is renewed, extended or assigned that it is not included on the Prohibited Entities List.

c. During the term of the Contract, should the County receive information that a bidder or Contractor is in violation of the above-referenced certification, the County will offer the person or entity an opportunity to respond. If the person or entity fails to demonstrate that he, she or it has ceased engagement in the investment which is in violation of the Iran Divestment Act of 2012 within ninety

(90) days after the determination of such violation, then the County shall take such action as may be appropriate, including, but not limited to, imposing sanctions, seeking compliance, recovering damages or declaring the bidder or Contractor in default,

d. The County reserves the right to reject any bid or request for assignment for a bidder or Contractor that appears on the Prohibited Entities List prior to the award of a Contract and to pursue a responsibility review with respect to any bidder or Contractor that is awarded a Contract and subsequently appears on the Prohibited Entities List.

19. PROHIBITION ON TOBACCO AND E-CIGARETTE USE ON COUNTY PROPERTY

a. Pursuant to Local Law No. 3 of 2016, the use of tobacco and e-cigarettes are prohibited on Oneida County property, as follows:

i. For the purposes of this provision, the “use of tobacco” shall include:

A. The burning of a lighted cigarette, pipe, cigar or other lighted instrument for the purpose of smoking tobacco or a tobacco substitute;

B. The use of tobacco and/or a substance containing tobacco or a tobacco substitute by means other than smoking, including: chewing; holding in the mouth; or expectoration of chewing tobacco.

ii. For the purposes of this provision, “e-cigarette” shall mean an electronic device composed of a mouthpiece, heating element, battery and electronic circuit that delivers vapor which is inhaled by an individual user as he or she simulates smoking.

iii. For the purposes of this provision, “on Oneida County property” shall be defined as:

A. Upon all real property owned or leased by the County of Oneida; and

B. Within all County of Oneida-owned vehicles or within private vehicles when being used for a County of Oneida purpose, except that a driver may smoke in a privately-owned vehicle being used for a County of Oneida Purpose if the driver is the sole occupant of the vehicle.

iv. Each violation of this Local Law No. 3 of 2016 shall constitute a separate and distinct offense and may be punishable by a fine of up to \$200.00 for a first offense and up to \$1,000.00 for subsequent offenses.

20. COMPLIANCE WITH NEW YORK STATE LABOR LAW § 201-G

a. The Contractor shall comply with the provisions of New York State Labor Law § 201-g.

(EXAMPLE FORMAT - Submit on contractor's letterhead.)

COMPLIANCE WITH LABOR RATES

State of New York)

County of Oneida)

(NAME) , being duly sworn, deposed and says that I am the (TITLE) of (COMPANY NAME), and I make this affidavit in order to induce Oneida County to make final payment to (COMPANY NAME) under the contract between (COMPANY NAME) and Oneida County for (DESCRIPTION OF WORK) work performed for County Contract No. (HXXXXXXXX), (PROJECT NAME), County of Oneida, State of New York.

That all men employed by (COMPANY NAME), have been fully paid, and that all labor, tax assessments and levies applicable to the labor performed by (COMPANY NAME), have been fully paid, and there are no outstanding bills or claims of any nature whatsoever against (COMPANY NAME), arising out of labor performed under the aforesaid contract with Oneida County.

That the same Company has complied with or exceeded the minimum hourly rates as determined by the Department of Labor for persons employed on the aforesaid contract with Oneida County.

That the final payment in the sum of \$(FINAL PAYMENT AMOUNT) from Oneida County hereby releases and forever discharges Oneida County from any claim of any nature whatsoever arising out of the aforesaid contract.

(S)

(Name)

(Title)

Sworn to before me this ____ day of _____, 20____.

Notary Public

(EXAMPLE FORMAT - Submit on contractor's letterhead.)

GUARANTEE

(Date)

Oneida County Department of Public Works
Division of Engineering
5999 Judd Road
Oriskany, New York 13424

Re: County Contract No. (HXXXXXXXX)
(DESCRIPTION OF CONTRACT)

Gentlemen:

In accordance with your request, we quote our guarantee:

(COMPANY NAME) GUARANTEES that the material and workmanship of the apparatus, and all the items installed by them in the above project, are first class in every respect and in accordance with the drawings and specifications and (COMPANY NAME) WILL make good any defects not due to ordinary wear and tear and improper use which may develop within one (1) year from (DATE AGREED UPON BY COUNTY AND COMPANY).

(S)

(Name)

(Title)

NEW YORK STATE WAGE RATES

The Contractor shall ensure that workers are paid the appropriate wages and supplemental (fringe) benefits. Throughout the contract, the Contractor shall obtain and pay workers in accordance with periodic wage rate schedule updates from the NYS Department of Labor (NYSDOL). Wage rate amendments and supplements are available on the NYSDOL web site at <https://labor.ny.gov/workerprotection/publicwork/OWSaccess.shtm>. All changes or clarification of labor classification(s) and applicability of prevailing wage rates shall be obtained in writing from the Office of the Director, NYSDOL Bureau of Public Work.

The NYSDOL prevailing wage rate schedule for this contract has been determined and is available on the internet. The prevailing wage rate schedule is accessed by visiting the NYSDOL website, navigating to the appropriate web page, and entering the Prevailing Rate Case No. (PRC#) **2025000478**.

SECTION 00 01 07

SEALS PAGE

REBID
ONEIDA COUNTY DEPARTMENT OF PUBLIC WORKS
MOHAWK VALLEY COMMUNITY COLLEGE
SCIENCE AND TECHNOLOGY BUILDING
NEW CONSTRUCTION

Roofing Construction: Contract No. H2455703
Fire Protection Construction: Contract No. H2455704

UTICA, NY

I hereby certify that the plan, specification, or report was prepared by me or under my direct supervision, and that I am a duly Licensed Architect or Licensed Professional Engineer under the Laws of the State of New York.

ARCHITECT:	
MARCH Associates Architects & Planners, PC Matthew E. Lacey NYS License No.: 039779 Valid through: 05/31/2028	
Mitchell Giurgola Architects LLP James R. Braddock NYS License No.: 015807 Valid through: 05/31/2026	

STRUCTURAL ENGINEER:

Interactive Engineering Solutions
Douglas R. Cahill
NYS License No.: 061675
Valid through: 03/31/2026
Certificate No.: 0022543, exp. 11/30/2027

**M/E/P ENGINEER:**

Towne Engineering
William H. Towne
NYS License No.: 045860
Valid through: 08/31/2027
Certificate No.: 101084



Towne Engineering
Christopher D. Krecidlo, PE
NYS License No.: 087784
Valid through: 11/30/27
Certificate No.: 101084, exp. 01/31/2028

**LANDSCAPE ARCHITECT:**

Appel Osborne Landscape Architecture
Vincent P. Pietrzak
NYS License No.: 001287-1
Valid through: 08/31/2026



SECTION 00 01 10

TABLE OF CONTENTS

VOLUME 1

SECTION 00 01 07	SEALS PAGE
SECTION 00 01 10	TABLE OF CONTENTS
SECTION 00 01 15	LIST OF DRAWING SHEETS
SECTION 00 31 32	GEOTECHNICAL DATA

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01 00 40	MILESTONE SCHEDULE
SECTION 01 11 00	SUMMARY OF WORK
SECTION 01 11 11	UNIFORM SAFETY STANDARDS
SECTION 01 21 00	ALLOWANCES
SECTION 01 22 00	UNIT PRICES
SECTION 01 29 00	SCHEDULE OF VALUES – PAYMENT PROCEDURES
SECTION 01 30 00	ADMINISTRATIVE REQUIREMENTS – with Submittal Cover Sheet
SECTION 01 31 19	PROJECT MEETINGS
SECTION 01 32 00	MATERIAL AND EQUIPMENT
SECTION 01 32 16	CONSTRUCTION SCHEDULES
SECTION 01 32 17	USE OF PREMISES
SECTION 01 45 33	CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES – with Schedule
SECTION 01 50 00	TEMPORARY FACILITIES
SECTION 01 51 13	TEMPORARY ELECTRICITY
SECTION 01 51 23	TEMPORARY HEATING, COOLING, AND VENTILATING
SECTION 01 60 00	PRODUCT REQUIREMENTS – with Substitution Request Form
SECTION 01 73 29	CUTTING AND PATCHING
SECTION 01 74 00	CLEANING UP
SECTION 01 77 00	PROJECT CLOSEOUT
SECTION 01 78 23	OPERATING AND MAINTENANCE DATA
SECTION 01 78 33	WARRANTIES AND BONDS
SECTION 01 78 39	PROJECT RECORD DOCUMENTS
SECTION 01 91 13	GENERAL COMMISSIONING REQUIREMENTS

DIVISION 2 – EXISTING CONDITIONS

SECTION 02 84 00	REMOVAL AND DISPOSAL OF PCB WASTE – with Hazardous Materials Survey Report and Sketch AR1

DIVISION 3 – CONCRETE

SECTION 03 30 00	CAST-IN-PLACE CONCRETE
SECTION 03 35 11	CONCRETE FLOOR FINISHES
SECTION 03 54 13	GYPSUM CEMENT UNDERLAYMENT

DIVISION 4 – MASONRY

SECTION 04 05 11	MASONRY MORTARING AND GROUTING
SECTION 04 20 00	UNIT MASONRY

DIVISION 5 – METALS

SECTION 05 12 00	STRUCTURAL STEEL FRAMING
SECTION 05 31 00	STEEL DECKING
SECTION 05 40 00	COLD-FORMED METAL FRAMING
SECTION 05 50 00	METAL FABRICATIONS
SECTION 05 51 00	METAL STAIRS
SECTION 05 51 17	ALUMINUM SLOTTED FRAMING SYSTEMS
SECTION 05 51 33	METAL LADDERS
SECTION 05 52 13	PIPE AND TUBE RAILINGS
SECTION 05 73 00	DECORATIVE METAL RAILINGS

DIVISION 6 – WOOD, PLASTICS, AND COMPOSITES

SECTION 06 10 00	ROUGH CARPENTRY
SECTION 06 18 00	STRUCTURAL GLUED-LAMINATED TIMBER & CROSS-LAMINATED TIMBER (CLT) PANEL CONSTRUCTION
SECTION 06 40 23	ARCHITECTURAL WOODWORK
SECTION 06 40 24	LABORATORY CASEWORK

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

SECTION 07 05 53	FIRE AND SMOKE ASSEMBLY IDENTIFICATION
SECTION 07 13 00	SHEET WATERPROOFING
SECTION 07 21 00	THERMAL INSULATION
SECTION 07 27 00	AIR BARRIERS
SECTION 07 42 10	COMPOSITE FRAMING SUPPORT SYSTEM (CFS)
SECTION 07 42 13	METAL WALL PANELS
SECTION 07 42 13.19	INSULATED METAL WALL PANELS
SECTION 07 44 17	ULTRA-HIGH-PERFORMANCE CONCRETE (UHPC) PANEL SYSTEM
SECTION 07 54 23	THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE ROOFING
SECTION 07 71 00	ROOF SPECIALTIES
SECTION 07 72 00	ROOF ACCESSORIES
SECTION 07 84 00	FIRESTOPPING
SECTION 07 92 00	JOINT SEALERS

DIVISION 8 – OPENINGS

SECTION 08 11 13	HOLLOW METAL DOORS AND FRAMES
SECTION 08 16 13	FRP – ALUMINUM FLUSH DOORS
SECTION 08 31 00	ACCESS DOORS AND PANELS
SECTION 08 35 00	OPERABLE PARTITIONS
SECTION 08 36 13	SECTIONAL DOORS
SECTION 08 43 13	ALUMINUM-FRAMED STOREFRONTS
SECTION 08 44 13	GLAZED ALUMINUM CURTAIN WALLS
SECTION 08 71 00	DOOR HARDWARE – with Door Hardware Schedule
SECTION 08 71 13	POWER DOOR OPERATORS
SECTION 08 80 00	GLAZING
SECTION 08 88 13	FIRE-RATED GLAZING

DIVISION 9 – FINISHES

SECTION 09 05 61	COMMON WORK RESULTS FOR FLOORING PREPARATION
SECTION 09 29 00	GYPSUM DRYWALL
SECTION 09 30 13	CERAMIC TILING
SECTION 09 51 13	ACOUSTICAL PANEL CEILINGS

SECTION 09 54 26	LINEAR WOOD CEILING PANELS
SECTION 09 54 34	SUSPENDED ACOUSTIC BAFFLES
SECTION 09 54 36	SUSPENDED CURVED WOOD CLOUD CEILING
SECTION 09 65 00	METAL WALL PANELS
SECTION 09 65 13	RESILIENT BASE AND ACCESSORIES
SECTION 09 65 19	RESILIENT FLOORING
SECTION 09 69 00	ACCESS FLOORING
SECTION 09 83 16	ACOUSTICAL SPRAY-ON SYSTEM
SECTION 09 90 00	PAINTING AND FINISHING

DIVISION 10 – SPECIALTIES

SECTION 10 11 00	VISUAL DISPLAY SURFACES
SECTION 10 14 40	INTERIOR SIGNAGE
SECTION 10 21 13	SOLID PHENOLIC TOILET COMPARTMENTS
SECTION 10 22 13	WIRE MESH PARTITIONS
SECTION 10 22 19	DEMOUNTABLE WALL SYSTEM
SECTION 10 28 00	TOILET, BATH, AND LAUNDRY ACCESSORIES
SECTION 10 44 00	FIRE PROTECTION SPECIALTIES
SECTION 10 51 13	METAL LOCKERS
SECTION 10 56 00	HIGH-DENSITY MOBILE STORAGE SYSTEM

DIVISION 11 – EQUIPMENT

SECTION 11 52 13	PROJECTION SCREENS AND PROJECTOR MOUNTS
SECTION 11 53 13	HIGH PERFORMANCE LABORATORY FUME HOODS

DIVISION 12 – FURNISHINGS

SECTION 12 24 13	WINDOW SHADES
SECTION 12 48 13	FLOOR MATS AND FRAMES
SECTION 12 57 00	WELDING BOOTHS AND CURTAINS

DIVISION 14 – CONVEYING EQUIPMENT

SECTION 14 21 00	ELECTRIC TRACTION ELEVATORS

VOLUME 2

SECTION 00 01 10	TABLE OF CONTENTS

DIVISION 21 – FIRE PROTECTION

SECTION 21 59 01	GENERAL PROVISIONS – with Submittal Cover Sheet
SECTION 21 59 05	GENERAL PROVISIONS, PIPING SYSTEMS
SECTION 21 59 06	PIPING SYSTEMS, ABOVE GRADE
SECTION 21 59 09	PIPING SYSTEMS HANGERS AND SUPPORTS
SECTION 21 59 20	RISERS, WET PIPE SYSTEM
SECTION 21 59 30	SPRINKLERS
SECTION 21 59 50	HOSE STATIONS
SECTION 21 59 60	FIRE DEPARTMENT CONNECTIONS
SECTION 21 59 62	ALARM DEVICES
SECTION 21 59 64	BACKFLOW PREVENTER ASSEMBLIES
SECTION 21 59 90	GAUGES
SECTION 21 59 91	IDENTIFICATION

DIVISION 22 – PLUMBING

SECTION 22 56 01	GENERAL PROVISIONS – with Submittal Cover Sheet
SECTION 22 56 05	GENERAL PROVISIONS, PIPING SYSTEMS
SECTION 22 56 07	DOMESTIC WATER PIPING SYSTEMS, ABOVE GRADE
SECTION 22 56 10	DOMESTIC WATER PIPING SYSTEMS, BELOW GRADE
SECTION 22 56 15	SANITARY WASTE AND VENT PIPING SYSTEMS, ABOVE AND BELOW GRADE
SECTION 22 56 18	STORM DRAINAGE PIPING SYSTEMS, ABOVE AND BELOW GRADE
SECTION 22 56 28	NATURAL GAS PIPING SYSTEMS
SECTION 22 56 29	NATURAL GAS PIPING SYSTEMS, BELOW GRADE
SECTION 22 56 32	COMPRESSED AIR PIPING SYSTEMS
SECTION 22 56 36	ACID WASTE AND VENT PIPING SYSTEMS
SECTION 22 56 49	PIPING SYSTEM HANGERS AND SUPPORTS
SECTION 22 56 50	FLASHING
SECTION 22 56 51	CLEANOUTS
SECTION 22 56 52	SHOCK ABSORBERS
SECTION 22 56 60	FIXTURES
SECTION 22 56 70	FLOOR DRAINS
SECTION 22 56 71	ROOF DRAINS
SECTION 22 56 90	WALL HYDRANTS
SECTION 22 57 00	DOMESTIC HOT WATER CIRCULATORS
SECTION 22 57 03	SUMP PUMPS, SUBMERSIBLE
SECTION 22 57 36	DOMESTIC WATER STORAGE HEATERS
SECTION 22 57 55	ELECTRIC WATER COOLERS
SECTION 22 57 60	INSULATION
SECTION 22 58 10	AIR COMPRESSORS
SECTION 22 58 23	BACKFLOW PREVENTER ASSEMBLIES
SECTION 22 58 29	EMERGENCY EQUIPMENT TAMPERING VALVES
SECTION 22 58 60	GAS VENT SYSTEMS
SECTION 22 58 90	GAUGES, THERMOMETERS AND TEMPORARY PRESSURE/TEMPERATURE WELLS
SECTION 22 58 91	IDENTIFICATION
SECTION 22 58 94	MOTORS
SECTION 22 58 95	MOTOR STARTERS

DIVISION 23 – HEATING, VENTILATING AND AIR CONDITIONING

SECTION 23 50 01	GENERAL PROVISIONS – with Submittal Cover Sheet
SECTION 23 50 05	GENERAL PROVISIONS, PIPING SYSTEMS
SECTION 23 50 13	HYDRONIC PIPING SYSTEMS
SECTION 23 50 16	CONDENSER WATER PIPING SYSTEMS, BELOW GRADE
SECTION 23 50 18	NATURAL GAS PIPING SYSTEMS, BELOW GRADE
SECTION 23 50 19	NATURAL GAS PIPING SYSTEMS, ABOVE GRADE
SECTION 23 50 32	CONDENSATE DRAINAGE PIPING SYSTEMS, ABOVE GRADE
SECTION 23 50 44	PIPING SYSTEMS HANGERS AND SUPPORTS
SECTION 23 50 57	BOILERS/BURNERS, HOT WATER
SECTION 23 50 78	DRAFT CONTROL SYSTEMS
SECTION 23 51 10	CHILLERS, HELICAL, AIR COOLED
SECTION 23 51 28	CIRCULATING PUMPS, BASE MOUNTED, END SUCTION
SECTION 23 51 30	CIRCULATING PUMPS, LINE MOUNTED
SECTION 23 51 45	HYDRONIC SYSTEMS ACCESSORIES
SECTION 23 51 46	HYDRONIC SYSTEMS FLOW METERS
SECTION 23 51 48	EXPANSION COMPENSATORS AND FLEXIBLE CONNECTORS, HYDRONIC SYSTEMS
SECTION 23 51 66	COILS, HOT GLYCOL

SECTION 23 51 75	CABINET UNIT HEATERS
SECTION 23 51 77	CONVECTORS
SECTION 23 51 79	UNIT HEATERS
SECTION 23 51 82	PANEL RADIATORS
SECTION 23 53 00	GENERAL PROVISIONS, AIR DISTRIBUTION SYSTEMS
SECTION 23 52 46	GAS PRESSURE REGULATORS
SECTION 23 52 69	HUMIDIFIERS
SECTION 23 52 86	GLYCOL SOLUTION, MAKE-UP SYSTEMS
SECTION 23 53 01	AIR DISTRIBUTION SYSTEMS, LOW PRESSURE, LOW VELOCITY, SHEET METAL
SECTION 23 53 03	AIR DISTRIBUTION SYSTEMS, HIGH VELOCITY, MEDIUM PRESSURE, SHEET METAL
SECTION 23 53 04	AIR DISTRIBUTION SYSTEMS, THERMAL ACOUSTICAL LINING
SECTION 23 53 06	FLEXIBLE DUCTWORK
SECTION 23 53 20	FIRE DAMPERS
SECTION 23 53 30	CENTRAL STATION AIR HANDLING UNITS
SECTION 23 53 70	POWER ROOF VENTILATORS, CENTRIFUGAL
SECTION 23 53 82	LABORATORY EXHAUST FANS
SECTION 23 53 85	UTILITY FAN SETS
SECTION 23 54 00	DIFFUSERS AND GRILLES
SECTION 23 54 11	VARIABLE AIR VOLUME TERMINALS
SECTION 23 54 30	LOUVERS, STATIONARY
SECTION 23 54 40	EXHAUST AND INTAKE VENTILATORS
SECTION 23 54 52	GAS VENT SYSTEMS
SECTION 23 55 60	INSULATION
SECTION 23 55 70	AUTOMATIC TEMPERATURE CONTROLS
SECTION 23 55 80	AIR SYSTEMS AND HYDRONIC SYSTEMS TEST AND BALANCE
SECTION 23 55 90	GAUGES, THERMOMETERS AND TEMPORARY PRESSURE/TEMPERATURE WELLS
SECTION 23 55 91	IDENTIFICATION
SECTION 23 55 92	ADJUSTABLE FREQUENCY CONTROLLERS
SECTION 23 55 94	MOTORS
SECTION 23 55 95	MOTOR STARTERS

VOLUME 3

SECTION 00 01 10	TABLE OF CONTENTS

DIVISION 26 – ELECTRICAL

SECTION 26 60 10	GENERAL PROVISIONS – with Submittal Cover Sheet
SECTION 26 60 30	TESTS
SECTION 26 60 40	OVERCURRENT PROTECTIVE DEVICE AND COORDINATION STUDY
SECTION 26 61 11	CONDUIT SYSTEMS
SECTION 26 61 12	BUSWAY – LOW VOLTAGE
SECTION 26 61 14	CABLE TRAY (BASKET)
SECTION 26 61 20	600 VOLT WIRE AND CABLE
SECTION 26 61 23	15 KV MEDIUM VOLTAGE CABLE
SECTION 26 61 30	RECEPTACLE, DEVICE, PULL AND JUNCTION BOXES
SECTION 26 61 33	ALUMINUM SURFACE RACEWAY
SECTION 26 61 40	RECEPTACLES AND SWITCHES
SECTION 26 61 42	HEAVY DUTY RETRACTABLE INDUSTRIAL CORD REELS
SECTION 26 61 70	SAFETY SWITCHES
SECTION 26 61 90	SUPPORTING SYSTEMS
SECTION 26 62 04	EMERGENCY/STANDBY POWER SYSTEMS

SECTION 26 62 64	3-WAY MANUAL TRANSFER SWITCH
SECTION 26 64 60	DRY TYPE TRANSFORMERS, 600 VOLTS MAXIMUM
SECTION 26 64 62	PAD MOUNTED DISTRIBUTION TRANSFORMERS
SECTION 26 64 70	DISTRIBUTION SWITCHBOARDS
SECTION 26 64 71	PANELBOARDS
SECTION 26 65 11	INTERIOR LIGHTING FIXTURES (LED) – with Schedule
SECTION 26 65 30	EXTERIOR LIGHTING FIXTURES
SECTION 26 65 71	EXTERIOR LIGHTING POLES
SECTION 26 67 26	ADDRESSABLE FIRE ALARM AND DETECTION SYSTEM
SECTION 26 67 40	SECURITY SYSTEMS
SECTION 26 67 41	ACCESS CONTROL SYSTEM
SECTION 26 67 44	COMMUNICATIONS CABINETS, RACKS, FRAMES AND ENCLOSURES
SECTION 26 67 45	COMMUNICATIONS TERMINAL BLOCKS, PATCH PANELS AND PATCH CORDS/JUMPERS
SECTION 26 67 46	COMMUNICATIONS CABLE MANAGEMENT
SECTION 26 67 47	GROUNDING AND BONDING FOR COMMUNICATIONS SYSTEMS
SECTION 26 67 48 A	COMMUNICATIONS CABLE - COPPER (CAT 6)
SECTION 26 67 48 B	COMMUNICATIONS CABLE - COPPER (CAT 5E)
SECTION 26 67 48 C	COMMUNICATIONS CABLE – FIBER OPTIC
SECTION 26 67 49	STRUT MOUNT CONTINUOUS CABLE SUPPORT SYSTEM
SECTION 26 67 92	EMERGENCY PHONE TOWER SYSTEM
SECTION 26 69 40	DISTRIBUTED DIGITAL LIGHTING CONTROL SYSTEM
SECTION 26 69 70	IDENTIFICATION

DIVISION 31 – EARTHWORK

SECTION 31 12 01	SITE PREPARATION
SECTION 31 20 00	BUILDING EARTH MOVING
SECTION 31 22 01	SITE EARTHWORK
SECTION 31 25 01	EROSION, SEDIMENT AND POLLUTION CONTROL
SECTION 31 66 13	AGGREGATE PIERS

DIVISION 32 – EXTERIOR IMPROVEMENTS

SECTION 32 12 01	ASPHALT PAVING
SECTION 32 13 01	SITE CONCRETE WORK
SECTION 32 30 01	TEMPORARY FENCE AND GATES
SECTION 32 30 02	METAL BOLLARDS
SECTION 32 30 03	ALUMINUM HAND RAILS & SAFETY RAILINGS
SECTION 32 30 04	TRAFFIC SIGNS
SECTION 32 30 05	SITE FURNISHINGS
SECTION 32 30 06	FLAGPOLE
SECTION 32 30 07	PANEL BOX BASE MOUNTED SIGNAGE
SECTION 32 31 01	VINYL COATED CHAIN LINK FENCE AND GATES
SECTION 32 90 01	PLANTING
SECTION 32 92 01	LAWNS

DIVISION 33 – UTILITIES

SECTION 33 30 00	SITE SANITARY
SECTION 33 40 01	STORM DRAINAGE

DIVISION 41 – MATERIAL PROCESSING AND HANDLING EQUIPMENT

SECTION 41 22 00	HOISTS AND CRANES

* * * * *

SECTION 00 01 15

LIST OF DRAWING SHEETS

THE FOLLOWING DRAWINGS ACCOMPANY THIS PROJECT MANUAL AND ARE A PART THEREOF. DRAWINGS ARE THE PROPERTY OF THE ARCHITECT OR ENGINEER AND SHALL NOT BE USED FOR ANY OTHER PURPOSE OTHER THAN CONTEMPLATED BY THE DRAWINGS AND PROJECT MANUAL.

<u>DRAWING NO.</u>	<u>TITLE</u>

VOLUME I

CODE COMPLIANCE

CC-101	CODE COMPLIANCE - BASE BID
CC-102	GLAZING PERCENTAGES AND MAPS
EN-101	COMCHECK COMPLIANCE CERTIFICATES & INSPECTION CHECKLIST
EN-102	COMCHECK INSPECTION CHECKLISTS

SITEWORK

C-100	SITE SURVEY
C-101	STORM WATER POLLUTION PREVENTION PLAN
C-102	SWPPP NOTES
C-103	SITE PREPARATION PLAN
C-104	SITE GRADING PLAN
C-105	SITE UTILITY PLAN
C-106	SITE LAYOUT PLAN
C-107	SITE PLANTING PLAN
C-109	SITE DETAILS
C-110	SITE DETAILS
C-111	PARTIAL UTILITY PLAN

STRUCTURAL

S-100	FOUNDATION PLAN - OVERALL
S-101	HEAD BUILDING - FOUNDATION PLAN
S-102	SHED BUILDING - FOUNDATION PLAN
S-200	LOW ROOF / SECOND FLOOR / PENTHOUSE FRAMING PLAN - OVERALL
S-201	HEAD BUILDING - LOW ROOF / SECOND FLOOR FRAMING PLAN
S-202	SHED BUILDING - LOW ROOF / PENTHOUSE FLOOR FRAMING PLAN
S-300	HIGH ROOF FRAMING PLAN – OVERALL
S-301	HEAD BUILDING - HIGH ROOF FRAMING PLAN
S-302	SHED BUILDING - HIGH ROOF FRAMING PLAN
S-401	HEAD AND SHED BUILDINGS - TYPICAL FOUNDATION DETAILS AND NOTES
S-402	HEAD BLDG - FOUNDATION SECTIONS
S-403	SHED BLDG - FOUNDATION SECTIONS
S-501	MASONRY DETAILS, LINTEL SCHEDULE AND NOTES
S-601	SHED AND HEAD BUILDING - TYPICAL FRAMING DETAILS, DESIGN PARAMETERS AND NOTES
S-602	SHED BUILDING - TYPICAL MOMENT CONNECTION SECTIONS AND DETAILS
S-603	SHED BUILDING - LOW ROOF, CONNECTING LINK ROOF & PENTHOUSE FRAMING SECTIONS
S-604	SHED BUILDING - HIGH ROOF FRAMING SECTIONS

S-605	HEAD BLDG - CANOPY SECTIONS AND DETAILS
S-606	HEAD BLDG - MAIN LOBBY STAIR SECTIONS AND DETAILS
S-701	SHED BUILDING - STEEL COLUMN SCHEDULE AND DETAILS
S-801	HEAD BUILDING - CFMF DETAILS AND NOTES
S-802	HEAD BUILDING - CFMF SHEAR WALL ELEVATIONS
S-803	HEAD BUILDING - CFMF SHEAR WALL ELEVATIONS
S-804	HEAD BUILDING - CFMF SHEAR WALL ELEVATIONS
S-901	HEAD BUILDING - WOOD FRAMING COLUMN SCHEDULE AND DETAILS
S-901.1	HEAD BUILDING - WOOD FRAMING COLUMN BASE PLATE DETAILS AT X-BRACES
S-902	HEAD BUILDING - WOOD FRAMING SECTIONS AND DETAILS
S-903	HEAD BUILDING - WOOD FRAMING SECTIONS
S-904	HEAD BUILDING - WOOD FRAMING SECTIONS, DESIGN PARAMETERS AND NOTES
S-905	HEAD BUILDING - EXTERIOR WALL X-BRACE ELEVATIONS
S-1001A	COOLING TOWER - ENCLOSURE AND SUPPORT STRUCTURE PLANS
S-1002A	COOLING TOWER - ENCLOSURE AND SUPPORT STRUCTURE SECTIONS AND DETAILS

VOLUME II

ARCHITECTURAL

G-001	GENERAL NOTES, SYMBOLS & ABBREVIATIONS
A-200	OVERALL FLOOR PLANS
A-210	HEAD - FIRST FLOOR PLAN
A-211	HEAD - SECOND FLOOR PLAN
A-250	SHED - FIRST FLOOR PLAN
A-300	OVERALL BUILDING ELEVATIONS
A-301	LARGE SCALE BUILDING ELEVATIONS - HEAD
A-302	LARGE SCALE BUILDING ELEVATIONS - SHED
A-303	CURTAIN WALL ELEVATIONS
A-304	CURTAIN WALL DETAILS
A-400	BUILDING SECTIONS
A-401	HEAD - WALL SECTIONS
A-402	HEAD - WALL SECTIONS
A-403	HEAD - WALL SECTIONS
A-404	LINK - WALL SECTIONS
A-405	SHED - WALL SECTIONS
A-406	SHED - WALL SECTIONS
A-407	ELEVATOR PLAN AND SECTIONS
A-500	STAIR SECTIONS
A-501	CONNECTOR RAMP SECTIONS
A-502	LOBBY STAIR ENLARGED PLAN & SECTIONS
A-503	ENLARGED STAIR PLANS
A-601	ROOF PLAN & DETAILS
A-602	ROOF DETAILS
A-700	HEAD - CORRIDOR ELEVATIONS
A-701	HEAD - CORRIDOR ELEVATIONS
A-702	HEAD - SECOND FLOOR CORRIDOR ELEVATIONS
A-710	TYP. CLASSROOM - ENLARGED PLAN & ELEVATIONS
A-711	AUTOMATION TRAINING CENTER - ENLARGED PLAN & ELEVATIONS
A-712	MECHATRONICS, PNEUMATICS & HYDRAULICS - ENLARGED PLAN & ELEVATIONS
A-713	FAB LAB - ENLARGED PLAN & ELEVATIONS

A-714	CHEMISTRY - ENLARGED PLAN & ELEVATIONS
A-715	CHEMISTRY 2 - ENLARGED PLAN & ELEVATIONS
A-720	RESTROOM - ENLARGED PLAN AND ELEVATIONS
A-721	MEETING ROOM ENLARGED PLAN AND ELEVATIONS
A-722	COLLABORATION SPACE - ENLARGED PLAN & ELEVATIONS
A-740	CONNECTOR LOUNGE - ENLARGED PLANS & ELEVATIONS
A-750	SHED - CORRIDOR ELEVATIONS
A-760	INDUSTRIAL CONTROLS - ENLARGED PLAN & ELEVATIONS
A-761	ELEC CODES - ENLARGED PLAN & ELEVATIONS
A-762	MATERIAL TESTING & PROCESS - ENLARGED PLAN & ELEVATIONS
A-763	CIVIL, CAD & COLLAB LAB - ENLARGED PLAN & ELEVATIONS
A-764	MACHINE & CNC LAB - ENLARGED PLANS & ELEVATIONS
A-765	MACHINE & CNC LAB EQUIPMENT LIST
A-766	WELDING LAB - ENLARGED PLAN & ELEVATIONS
A-767	WELDING LAB RCP & EQUIPMENT LIST
A-768	HVAC LAB - ENLARGED PLAN & ELEVATIONS
A-769	HVAC LAB - EQUIPMENT LIST
A-770	SHED - RESTROOM - ENLARGED PLAN & ELEVATIONS
A-810	HEAD - FIRST FLOOR REFLECTED CEILING PLAN
A-811	HEAD - SECOND FLOOR REFLECTED CEILING PLAN
A-850	SHED - FIRST FLOOR REFLECTED CEILING PLAN
A-860	CEILING DETAILS
A-861	CEILING DETAILS
A-870	BEAM PENETRATIONS
A-900	WALL TYPES
A-901	INTERIOR DOOR TYPES AND FRAMES
A-902	INTERIOR DOOR SCHEDULES
A-903	EXTERIOR DOOR SCHEDULE & DETAILS
A-904	INTERIOR DETAILS
A-905	INTERIOR DETAILS
A-906	INTERIOR DETAILS - GMPS
A-907	INTERIOR DETAILS - LOBBY
A-908	INTERIOR DETAILS - DISPLAYS
A-909	INTERIOR DETAILS - FIRESTOPPING
A-910	MISC DETAILS
A-911	PENTHOUSE SCREEN ENCLOSURE
A-912	FINISH SCHEDULE
A-913	SIGNAGE
A-920	CASEWORK TYPES
A-921	CASEWORK DETAILS
A-922	CASEWORK DETAILS
A-923	CASEWORK DETAILS
A-1010	HEAD - FIRST FLOOR FINISH PLAN
A-1011	HEAD - SECOND FLOOR FINISH PLAN
A-1012	SHED - FIRST FLOOR FINISH PLAN
A-1110	HEAD - FIRST FLOOR FURNITURE PLAN
A-1111	HEAD - SECOND FLOOR FURNITURE PLAN
A-1112	SHED - FIRST FLOOR FURNITURE PLAN
A-1202	COOLING TOWER
A-1301	ACADEMIC BUILDING

VOLUME III

FIRE PROTECTION

FP-101	FIRST FLOOR PLAN (HEAD)
FP-102	FIRST FLOOR PLAN (SHED)
FP-103	SECOND FLOOR PLAN (HEAD)
FP-104	PENTHOUSE FLOOR PLAN (SHED), DETAILS & SCHEDULES

PLUMBING

P-101	FOUNDATION PLAN (HEAD)
P-102	FOUNDATION PLAN (SHED)
P-103	FIRST FLOOR PLAN (HEAD)
P-104	FIRST FLOOR PLAN (SHED)
P-105	SECOND FLOOR PLAN (HEAD)
P-106	PENTHOUSE FLOOR PLAN (SHED)
P-401	ENLARGED CHEMISTRY FLOOR PLANS (HEAD)
P-501	PARTIAL SITE PLAN
P-601	DETAILS
P-602	DETAILS
P-603	DETAILS & SCHEDULES

MECHANICAL

M-001	PROPOSED MECHANICAL SYSTEMS SCHEMATIC
M-101	FIRST FLOOR PLAN (HEAD) DUCTWORK
M-102	FIRST FLOOR PLAN (SHED) DUCTWORK
M-103	SECOND FLOOR PLAN (HEAD) DUCTWORK
M-104	PENTHOUSE FLOOR PLAN (SHED) DUCTWORK
M-105	HIGH ROOF PLAN (HEAD)
M-201	FIRST FLOOR PLAN (HEAD) PIPING
M-202	FIRST FLOOR PLAN (SHED)
M-203	SECOND FLOOR PLAN (HEAD) PIPING
M-204	PENTHOUSE FLOOR PLAN (SHED) PIPING
M-501	PARTIAL SITE PLAN
M-601	DETAILS
M-602	DETAILS
M-603	SCHEDULES
M-604	DETAILS & SCHEDULES

ELECTRICAL

ME-101	MOTOR STARTER SCHEDULE
ME-102	MOTOR STARTER SCHEDULE
E-001	GENERAL
E-010	SITE PLAN - REMOVALS
E-011	SITE PLAN
E-012	SITE PLAN (ACADEMIC BUILDING)
E-101	FIRST FLOOR PLAN - HEAD (LIGHTING)
E-102	SECOND FLOOR PLAN - HEAD (LIGHTING)
E-103	FIRST FLOOR PLAN - SHED (LIGHTING)
E-104	PENTHOUSE FLOOR PLAN - SHED (LIGHTING)

E-201	FIRST FLOOR PLAN - HEAD (POWER)
E-202	SECOND FLOOR PLAN - HEAD (POWER)
E-203	FIRST FLOOR PLAN - SHED (POWER)
E-204	PENTHOUSE FLOOR PLAN - SHED (POWER)
E-301	FIRST FLOOR PLAN - HEAD (MISC.)
E-302	SECOND FLOOR PLAN - HEAD (MISC.)
E-303	FIRST FLOOR PLAN - SHED (MISC.)
E-304	PENTHOUSE FLOOR PLAN - SHED (MISC.)
E-305	ROOF PLAN - HEAD
E-500	ENLARGED PLAN - MECHATRONICS ROBOTICS, PNEUMATICS & HYDRAULICS
E-501	ENLARGED PLAN - CHEMISTRY & LAB SUPPORT
E-502	ENLARGED PLAN - AUTOMATION TRAINING CENTER
E-503	ENLARGED PLAN - FAB LAB
E-504	ENLARGED PLANS - CLASSROOMS - HEAD (FIRST FLOOR)
E-505	ENLARGED PLAN - HVAC LAB
E-506	ENLARGED PLAN - WELDING LAB
E-507	ENLARGED PLAN - MACHINE & CNC LAB
E-508	ENLARGED PLAN - CIVIL LAB, CAD LAB & COLLAB LAB
E-509	ENLARGED PLAN - INDUSTRIAL CONTROLS
E-510	ENLARGED PLAN - ELECTRICAL CODES
E-511	ENLARGED PLAN - MATERIAL TESTING & MATERIAL PROCESS
E-512	COOLING TOWER PLANS (PAYNE HALL)
E-513	BASEMENT AND FIRST FLOOR PLANS (ACADEMIC BUILDING)
E-601	ONE LINE POWER DIAGRAM
E-602	PANELBOARD NOTES
E-603	TEMPORARY ELECTRIC ONE LINE POWER DIAGRAM
E-701	DETAILS
E-702	DETAILS
E-703	DETAILS
E-704	DETAILS
E-705	DETAILS
E-706	DETAILS
E-801	PHOTOMETRIC CALCULATION SITE PLAN & SCHEDULES
E-802	PHOTOMETRIC CALCULATIONS FIRST FLOOR PLANS
E-803	PHOTOMETRIC CALCULATIONS SECOND FLOOR PLANS AND PENTHOUSE PLANS

* * * * *

DOCUMENT 00 31 32

GEOTECHNICAL DATA

PART 1 - GENERAL

1.01 INVESTIGATION

- A. The geotechnical investigation was performed under the supervision of CME Associates, Inc.
- B. Subsurface Investigation Results are attached for Mohawk Valley Community College the at following location:
 - 1. Mohawk Valley Community College Science and Technology Building, Utica, NY.
- C. Bidders are urged to examine the test data and to make their own investigation of the site before bidding.

1.02 INTERPRETATION

- A. Geotechnical test data is provided only for information and the convenience of bidders. The Owner, Architect, Engineer and Construction Manager disclaim any responsibility for the accuracy, true location, and extent of the investigation that has been prepared by others. They further disclaim responsibility for interpretation of the bidders.
- B. Geotechnical Test Results are not part of the Contract Documents.

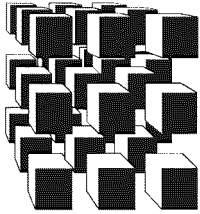
PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

* * * * *

ATTACHMENTS: CME Associates, Inc. Subsurface Exploration and Foundation Recommendations Report, dated February 23, 2024

CME Associates, Inc. Subsurface Exploration and Foundation Recommendation Report – Addendum 1, dated August 5, 2024



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Transmittal

February 23, 2024

Appel Osborne Landscape Architecture (Client)
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Phone: 315.476.1022

Attn: Vincent P. Pietrzak, RLA, ASLA, Partner
vpietrzak@appelosborne.com

Re: Mohawk Valley Community College Science and Technology Building
Utica, New York
CME Project No.: 28107-05

Gentlepeople:

Enclosed you will find....

<u>Number of Copies</u>	<u>Report Number</u>	<u>Description</u>
1	28107B-01-0224	Subsurface Exploration and Foundation Recommendations Report

The above report was emailed to Vincent P. Pietrzak at vpietrzak@appelosborne.com on 02/23/2024.

Respectfully submitted,
CME Associates, Inc.

Chen Liu, Ph.D., EIT
Geotechnical Engineer

CL.js

Subsurface Exploration and Foundation Recommendation Report

Mohawk Valley Community College Science and Technology Building Utica, New York

Prepared For: (Client)

Appel Osborne Landscape Architecture

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**CME Report No.: 28107B-01-0224
February 23, 2024**

Table of Contents
Report No. 28107B-01-0224

	Page
1.0 INTRODUCTION.....	1
2.0 PROPOSED DEVELOPMENT	1
3.0 EXPLORATION METHODOLOGY.....	1
3.1 Exploration Layout and Utility Clearance	1
3.2 Test Borings.....	2
3.3 Infiltration Testing.....	2
3.4 Test Pits.....	2
4.0 SUBSURFACE CONDITIONS	2
4.1 Subsurface Profile	2
4.2 Groundwater Observations.....	3
4.3 Expansive Soils	4
4.4 Site Class	4
5.0 FOUNDATION RECOMMENDATIONS	4
5.1 Site Characterization and Foundation Considerations	4
5.2 Foundation Recommendations	6
5.2.1 Aggregate Piers	6
5.2.2 Delegated Design	6
5.2.3 Load Testing.....	7
5.2.4 Special Inspection of Aggregate Piers	7
5.3 Alternate Ground Improvement Option	7
5.4 Precondition Surveys and Vibration Monitoring	7
6.0 FILL & BACKFILL	8
6.1 Fill & Backfill Materials.....	8
6.2 Filling & Backfilling Execution	9
7.0 SOIL SPECIAL INSPECTION.....	10
7.1 Accredited Testing Agency Required.....	10
7.2 Required Inspections & Tests of Soils.....	10
8.0 OTHER IMPORTANT CONSIDERATIONS.....	10
8.1 Changes to the Project.....	11
8.2 Review of Plans & Specs.....	11
8.3 Construction Phase Geotechnical Services	11
9.0 STANDARD OF CARE AND WARRANTY	12
10.0 CLOSING COMMENTS	12

Attachment Listing:

Site Grading Plan (1 of 1)
Soil Boring Plan (1 of 1)
CME Exploration Location Plan (1 of 1)
GPS Coordinates and Elevations Table (1 of 1)
CME Subsurface Exploration – Test Boring Logs (15 of 15)
Infiltration Test Reports (2 of 2)
CME Subsurface Exploration – Test Pit Logs (3 of 3)
Test Pit Photographs (3 of 3)
ASCE 7 Hazards Report (3 of 3)
General Information & Key to Test Boring Logs (4 of 4)

Subsurface Exploration and Foundation Recommendation Report Mohawk Valley Community College Science and Technology Building Utica, New York

1.0 INTRODUCTION

CME Associates, Inc. (CME) was retained by Appel Osborne Landscape Architecture (Client) to provide subsurface exploration and geotechnical recommendation services for the subject project. The Scope of Basic Services for this project was provided pursuant to CME Proposal/Agreement Number: 05.7243R(1), dated 07/13/2023, executed by Client on 09/06/2023, and a subsequent Change Order No. 1, dated 01/08/2024, executed on 01/08/2024.

This report provides a summary of subsurface conditions identified in the explorations and provides geotechnical recommendations related to the proposed building, as required by the agreement. Providing geotechnical recommendations for all other sitework features are outside of CME's Scope of Basic Services contracted in the Agreement and are expressly excluded from this report.

2.0 PROPOSED DEVELOPMENT

The proposed improvement will consist of two buildings (a Head Building and a Shed Building) with a connector addition in between. Please refer to the attached *Site Grading Plan*, labeled L-001, dated 09/13/2023, provided by Client, for location of the proposed buildings and grading information.

CME understands that the proposed buildings will be mostly two stories without a basement. The buildings will be steel framed with non-load bearing masonry walls and concrete slabs-on-grade. According to Client, the finish first floor of the proposed Head Building is planned at elevation 583.5 feet and the finish first floor of the proposed Shed Building is planned at elevation 578.5 feet.

According to the Project Structural Engineer, the maximum unfactored column load will be 300 kips. It is anticipated that the first floor live load will be 100 psf.

If any of the above information is incorrect, please let CME know in writing, so that we can revisit our recommendations, and determine if additional geotechnical investigation and/or evaluation are warranted.

3.0 EXPLORATION METHODOLOGY

3.1 Exploration Layout and Utility Clearance

The Test Boring locations were selected by Client and marked in the field by CME using the attached *Soil Boring Plan*, labeled B-100, dated 01/15/2024. Prior to advancing the Test Borings, CME contacted UDig NY to clear public utilities at the exploration locations. Private utilities at exploration locations were cleared by others.

The attached *CME Exploration Location Plan*, labeled ELP-1, depicts the approximate as-drilled exploration locations. GPS coordinates and elevation at grade for the exploration locations were obtained using hand-held GPS survey equipment. Please refer to the attached *GPS Coordinates and Elevations Table* for GPS coordinates, elevation at grade and benchmark used.

3.2 Test Borings

Fifteen Test Borings, labeled DSB-1, SB-1 through SB-12, IT-1 and IT-2, were advanced between 12/18/2023 and 12/21/2023 using a Central Mine Equipment Model 550X ATV mounted rotary drill rig, equipped with 3-1/4" I.D. hollow stem augers and drive sampling tools. Soil sampling was conducted using a 140-pound automatic hammer dropping through a distance of 30 inches to drive a 2" O.D. split barrel sampler in general conformance with ASTM Standard Practice D1586. All boreholes were backfilled with auger cuttings to closely match existing grade and topped with asphalt cold patch in the paved areas.

Samples were logged and visually classified in the field by CME's drillers, and a portion of each soil sample was placed and sealed in a glass jar. The soil classifications were later reviewed by the undersigned Engineer in CME's AASHTO re:source¹ accredited East Syracuse Laboratory. The visual soil classifications were made using a modified Burmister Classification System, as practiced by CME, and as generally described in the attached document, entitled *General Information & Key to the Test Boring Logs*. Please refer to the attached *CME Subsurface Exploration - Test Boring Logs*.

3.3 Infiltration Testing

Two Infiltration Tests, labeled IT-1 and IT-2, were performed on 12/28/2023 at locations shown on the attached *CME Exploration Location Plan*. The test location and depth were selected by Client. The tests were performed in general conformance with the requirements of the New York State Stormwater Management Design Manual, Appendix D: Infiltration Testing. The test details and results are given in the attached *Infiltration Test Reports*.

3.4 Test Pits

Three Test Pits, labeled TP-1 to TP-3, were excavated on 01/25/2024. The Test Pits were excavated using an excavator (Link Belt Model LNK 27 excavator), equipped with a 24-inch-wide general-purpose bucket with teeth. The Test Pits were excavated and backfilled by a Subcontractor to CME. The undersigned Engineer and CME Engineer Kyle Shepherd, EIT, were on-site to observe the Test Pit excavation, to take photographs and to prepare Test Pit Logs. The *Test Pit Logs* and *Test Pit Photographs* are attached.

4.0 SUBSURFACE CONDITIONS

The subsurface conditions presented herein have been generalized for simplicity and brevity by CME from the actual data obtained from the Subsurface Exploration conducted at the subject project site. It is possible for the subsurface conditions between sampling intervals and between exploration locations to vary from that inferred and/or given in this section or on the Exploration Logs. Please refer to the attached *CME Subsurface Exploration - Test Boring Logs* and *Test Pit Logs* for actual conditions encountered at the time, location and elevation of each sampling.

4.1 Subsurface Profile

The explorations identified Topsoil or Asphalt Pavement at grade. Below surfacings, the explorations identified a subsurface profile consisting of Existing Fill, underlain by a Buried Organic Layer, underlain by Silt, underlain by Weathered Shale Bedrock. A brief description of each stratum is given below, in the approximate order of encounter.

¹AASHTO re:source – American Association of State Highway & Transportation Officials (AASHTO) Materials Reference Laboratory, a Federal Agency having jurisdiction to assess laboratory competency according to the Standards of the United States of America. CME East Syracuse accreditation includes testing of Portland Cement Concrete, Aggregate and Soil Materials. www.AASHTOresource.org.

Surfacings: Test Boring IT-2 identified about 12 inches of Topsoil and Organic Material at grade. All other explorations identified about 4 to 12 inches of Asphalt Pavement at grade.

Existing Fill: Below Surfacings, Existing Fill was identified in all explorations to about 3 to 13 feet below grade. The Existing Fill contained a variable mixture of soils (silt, sand, gravel, clay) with miscellaneous debris, such as cinders, ash, wood pieces, organic matter, etc. Based on the erratic and relatively low SPT² Blow Counts noted, the Existing Fill is judged to have been placed in a random, unprepared manner (i.e., not placed in controlled, compacted lifts). The Existing Fill meets the Building Code³ definition of Unprepared Fill, which is assigned a zero bearing capacity.

Buried Organic Layer: Below Existing Fill in Boring SB-11 and Test Pit TP-2, a Buried Organic Layer, consisting predominately of Organic-rich Silt soils mixed with Peat and woody Organic Material. This stratum was penetrated in said explorations to about 11 and 8 feet below grade, respectively. Based on SPT blow counts, the consistency of this stratum is medium stiff to stiff, in general.

The Organic-rich Silt soils at this site are dark grey/brown in color and contain significant woody and fibrous organic material in various stages of decomposition. This stratum is moderately compressible under new loads imposed, as it is susceptible to compression, consolidation, and creep over time. Further, the organic matter in this stratum will likely decay over time, causing volume loss, and thus, causing settlements of structures constructed above. The Organic-rich Silt soils are not reliable bearing materials for slabs, foundations, pavements, etc.

Silt: Below Existing Fill or below Buried Organic Layer, a Silt stratum was penetrated in all explorations, except Test Boring SB-8. This stratum was penetrated to exploration termination depth (7 to 20 feet) in some explorations and to about 8 to 18 feet below grade, where shale fragments were sampled. This stratum consists predominantly of Silt with variable Clay, Sand and Gravel contents. Based on SPT blow counts, this stratum is medium stiff to hard in consistency, in general.

In Boring SB-8, an anomalous Gravel stratum mixed with probable Cobbles was noted below the Silt stratum. This Gravel stratum was penetrated to boring termination depth.

Weathered Shale Bedrock: Below Silt, some Borings penetrated a Weathered Shale Bedrock Stratum, to boring termination depths, where drilling became harder, or auger and sampler refusal was noted in probable bedrock. No rock coring was performed to further investigate the bedrock.

4.2 Groundwater Observations

Groundwater level observations and measurements are made by the CME field crew when groundwater accumulates in the Borehole. CME notes the water level inside the borehole during advancement and following casing (auger) removal. CME also notes the visual appearance of the moisture condition of the samples as retrieved. The condition and time of groundwater level observations are unique to each Boring, time and date, and are recorded on the individual Test Boring Logs.

During CME's exploration, groundwater was observed in Borings SB-2, SB-3, SB-7, and SB-12, at 2.8, 12.4, 10.8 and 9.3 feet below grade, respectively, corresponding to about elevation 578 to 565 feet. Groundwater was not noted in the other Borings during the brief period of drilling.

² SPT = Standard Penetration Testing

³ Building Code = 2020 Building Code of New York State

Perched water may be present in the Existing Fill layer during certain times of the year. Perched water occurs when more pervious soil overlies less pervious soil, and when the more pervious soil receives surface water from precipitation or by other means.

Groundwater fluctuations at this site will occur depending on several factors, such as rainfall, seasonal changes, prevailing climate, and adjacent construction operations, among other factors.

4.3 Expansive Soils

Based on CME's visual naked-eye classification of the soil samples retrieved from the explorations and the definition of "Expansive Soil" given in Section 1803.5.3 of the Building Code, soils exhibiting potentially expansive character were not sampled by this exploration program. The weathered Shale Bedrock may be expansive. Shale expansion testing will be required to determine its expansive characteristics. However, due to the depth of the weathered Shale Bedrock, it is CME's professional opinion that the Shale expansion is not a concern. Therefore, Shale expansion testing is not warranted.

4.4 Site Class

Based on a computational analysis using the information obtained from the CME Test Borings and the interpretation of Building Code Section 1613, which references Chapter 20 of ASCE 7, the subject project site is defined as a "Very Dense Soil and Soft Rock" profile, representative of a Site Class "C".

The Test Borings did not sample soils vulnerable to liquefaction, sudden collapse or failure under seismic loading conditions. Please refer to the attached *ASCE 7 Hazards Report* for Design Spectral Response Curves for Risk Category III, Non-essential Structures.

5.0 FOUNDATION RECOMMENDATIONS

5.1 Site Characterization and Foundation Considerations

CME's exploration revealed Existing Fill to approximately 3 to 13 feet below grade, underlain by a Buried Organic Layer (to approximately 8 to 11 feet below grade, in areas). Please refer to Report Section 4.1 for a description of the Existing Fill and Buried Organic Layer. The Existing Fill does not appear to have been placed in a prepared manner and meets the Building Code definition of "Unprepared Fill". Unprepared Fill is assigned a zero-bearing capacity by the Building Code and is deemed "Unsuitable Soils". The Buried Organic Layer is also not reliable bearing material for slabs, foundations, pavements, etc.

See Table 1 for approximate depth/elevation at bottom of Existing Fill and Buried Organic Layer.

Table 1: Approximate Depth/Elevation at Bottom of Existing Fill and Buried Organic Layer			
Test Boring ID	Elevation at Grade ¹ (ft)	Approx. Bottom of Existing Fill/Buried Organic Layer	
		Depth (ft)	Elevation (ft)
DSB-1	580.5	8	572
SB-1	582.5	6	576
SB-2	580.2	8	572
SB-3	577.2	4	573
SB-4	577.1	3	574
SB-5	582.6	4	578
SB-6	578.9	6	572
SB-7	577.6	8	570
SB-8	576.7	8	568
SB-9	582.1	4	578
SB-10	579.2	4	575
SB-11	578.6	11	567
SB-12	576.2	13	563
TP-1	579.0	6	573
TP-2	577.5	6	571
TP-3	576.0	4	572
Notes: 1. Elevation at grade for Test Borings were determined via hand-held GPS survey equipment. Please see the <i>GPS Coordinates and Elevations Table</i> attached. Elevation at grade for Test Pits were estimated to the nearest 0.5 feet based on Client-provided <i>Soil Boring Plan</i>. 2. Depth of Existing Fill or Buried Organic Layer in the explorations are provided for planning and budgeting purposes only. Actual depths may vary and shall be determined during construction by the IPGE.			

Multiple conference calls were convened between the Design Team and CME Engineers to discuss foundation options for this project. The following options were discussed:

- **Option 1 - Ground Improvement via Mass-excavation and Replacement:** With this option, complete removal of Existing Fill and Buried Organic Layer to virgin soil (i.e., to depths/elevations listed in Table 1) will be required, followed by replacement with controlled and compacted Select Granular Fill. Then the buildings can be supported utilizing conventional shallow footing foundations and slabs-on-grade.
- **Option 2 - Ground Improvement with Aggregate Piers:** The Existing Fill and the Buried Organic Layer will be left in-place and improved via a ground improvement system consisting of Aggregate Piers and Load Transfer Platform. The proposed buildings may be supported utilizing conventional shallow footing foundations and slabs-on-grade systems bearing on the Load Transfer Platform.
- **Option 3 - Deep Foundation System:** The Existing Fill and the Buried Organic Layer will be left in-place and deep foundations consisting of driven piles or drilled caissons will be installed

to bear on the Shale Bedrock. The building superstructure and the grade-level structural floor slab will be supported on pile caps and grade beams framing to deep foundation elements.

After considering Cost and Schedule for the above foundation options, March Associates, Inc. (Project Architect) elected Option 2 for this project. This report provides foundation recommendations for this option.

5.2 Foundation Recommendations

5.2.1 Aggregate Piers

An Aggregate Pier (aka: Stone Column) system is a proprietary ground improvement system used for settlement control and to improve bearing characteristics of poor or weak soils. Aggregate Piers are installed using specially designed tooling, which laterally displaces the soil as the element is installed. The behavior of the soil surrounding the Aggregate Piers is often improved due to the increased lateral strain that results from the displacement drilling technique.

The Aggregate Pier ground improvement system typically requires a Load Transfer Platform (LTP) to assist in load transfer between the foundation elements and the Aggregate Piers. The LTP is typically designed by the Aggregate Pier Specialty Contractor (Ground Improvement Contractor) and installed by the owner's Earthwork Contractor. The LTP is typically comprised of well-compacted granular material, such as NYSDOT Type 2 Subbase Course Material (Run-of-Crush Limestone).

The Aggregate Pier ground improvement system shall be designed and installed by a Ground Improvement Contractor to meet the performance specifications given in the Contract Documents. The Registered Design Professional (RDP) shall prepare plans and specifications to include, but not limited to, design soil bearing pressure, footing dimensions, and bearing elevation, design loads (with breakdown of live and dead load components), and settlement tolerance (total and differential). CME can assist the RDP in preparing the Aggregate Pier Specification, if needed. CME should be afforded the opportunity to review and comment on said plans and specifications, prior to issuing the bid documents.

Ground improvement is required under the entire building footprint (i.e., under footing foundations and slab-on-grade). CME recommends that the proposed ground improvement system be designed and installed to provide an Allowable Soil Bearing Pressure of 4,000 psf (with a minimum Factor of Safety of 2.0) for the support of footing foundations and a Modulus of Subgrade Reaction of 200 pci for the support of slabs-on-grade.

5.2.2 Delegated Design

CME recommends that the design of the ground improvement system be delegated to the Ground Improvement Contractor. Delegated Design must be in accordance with New York State Education Law (Section 29.3(b)(2) of the *Rules of the Board of the Regents*).

Under a Delegated Design, the Contractor is required to prepare a complete Design & Installation submittal package, which must include, but is not limited to, all computations (organized in a logical manner), design methods, factors of safety, Building Code compliance check, equipment to be used, procedure of installation, modulus test setup, criteria for acceptance of ground improvement elements, and all material specifications, quality control and workmanship requirements. The Design & Installation Submittal package shall be signed and sealed by the Contractor's Licensed Professional Engineer (currently registered in New York State) and who is responsible for the design. CME recommends that the Design & Installation package be submitted at least fifteen (15) business days in advance of the pre-installation conference, for review and comment.

According to Section 29.3(b)(2)(e) & (f) of the Rules of the Board of Regents, the Registered Design Professional of Record (the Delegator) is required to review and determine that the delegated component or system design conforms to the performance specifications and any subsequent amendments; to the overall project design; and that it can be integrated into the building system. The Registered Design Professional of Record shall be required to provide written notification of the decision, or the submittal may be so marked (Approved; Disapproved; Revise/Resubmit).

5.2.3 Load Testing

Two Static Load Tests (Soil Modulus Test) shall be conducted in conformance with the Aggregate Pier specifications and the approved Aggregate Pier Design Submittal and in general conformance with ASTM D-1143. The Test Aggregate Pier installation and load testing shall occur in the presence of the Inspecting Professional Geotechnical Engineer (IPGE), at locations selected by the Design Team.

The Load Tests shall occur on sacrificial Aggregate Piers. The Load Test results shall be considered satisfactory when all of the acceptance criteria set forth by the Ground Improvement Design Engineer are met and accepted by the RDP.

5.2.4 Special Inspection of Aggregate Piers

Special Inspection, per the Building Code Section 1705.8, is required on a Continuous Basis, while Aggregate Piers are being installed and during Load Testing by the Owner's Special Inspection agency. The Aggregate Pier Contractor shall submit all certifications and material data sheets for the material delivered to the jobsite for review and conformance verification by the IPGE.

5.3 Alternate Ground Improvement Option

Ground Improvement Contractors who have the capabilities to design and construct an aggregate pier system have their own proprietary methodologies. Therefore, not all Ground Improvements Contractors will agree on whether a specific site is a good candidate for their proprietary aggregate pier system. Therefore, if a Ground Improvement Contractor bidding this project has an alternate ground improvement system that they believe is best for this site and is cost effective, CME recommends that they submit a design of their ground improvement system to the RDP for their review and consideration.

5.4 Precondition Surveys and Vibration Monitoring

Ground improvement operations (installation of aggregate piers) and other new construction at this site will cause ground vibration which may cause damage to nearby structures and surrounding utilities.

CME recommends that the Construction Contract Documents require a Precondition Survey of the areas of the existing structures and surrounding utilities, which may be affected by the ground improvement operations and new construction of the proposed structures. This survey shall be conducted by a N.Y.S Licensed Professional Engineer (LPE) with 10 years of demonstrable, similar experience. The Contractor's LPE shall assess damage potential, based on their planned work and shall suggest any adjustments necessary to eliminate damage.

CME recommends that the condition of the existing structures be carefully assessed, and a construction plan prepared and submitted which clearly demonstrates the work, the vibration monitoring necessary, and the threshold vibration limits to eliminate potential damage to the existing structures during construction.

CME recommends that a Vibration Monitoring Program be specified in the Construction Contract Documents. The intent of the Vibration Monitoring Plan is to establish protocol to document vibrations in real time during construction and vibratory soil compaction, such that adjacent structures are not damaged during said activities. Additionally, the LPE shall assess whether construction activities, such as installation of aggregate piers, will cause soil densification, which may lead to adjacent structure settlement. The Vibration Monitoring Plan is to be prepared and signed by the Contractor's LPE in N.Y.S who has demonstrable experience in this type of work. The lateral and vertical extents of precondition survey area, vibration monitoring points, threshold vibration limits, vibration recording and reporting protocols, and other pertinent items shall be defined in the Construction Contract Documents, and if deemed appropriate, threshold vibration limits, shall be adjusted by the LPE.

The Vibration Monitoring Plan shall be required as a pre-construction submittal, that shall be reviewed and commented on, by the Design Team. CME can assist with review and editing of the drawings and specification shells for these portions of the work. Please forward these specifications and drawings to CME and allow approximately ten business days for response.

6.0 FILL & BACKFILL

6.1 Fill & Backfill Materials

Imported Fill Material consisting of **Select Granular Fill** is recommended for all structure pad fill and backfill and for other structural areas. Select Granular Fill shall be approved by the Registered Design Professional (RDP), after review of all prequalification test submittals.

The minimum requirements for a prequalification submittal shall include the following test results which are not more than 2 months old:

- ✓ Sieve Analysis – ASTM D422
- ✓ Moisture-Density Relationship – ASTM D1557
- ✓ Plasticity Index – ASTM D4318
- ✓ Soundness Test – ASTM C88

Select Granular Fill material shall be well-graded sand and gravel, approved recycled product or crushed rock product which is capable of being compacted to the required density at the proper moisture content and which is free of deleterious materials, trash, roots, debris, frozen material and organic or other foreign matter. Select Granular Fill to be used within the building pad shall be free of Recycled Asphalt Pavement (RAP) products.

Select Granular Fill material shall be accepted based on gradation, soundness, plasticity index and a well-defined Moisture-Density Relationship Curve. Imported Granular Fill to be placed within 2'-0" of final exterior grade shall be subjected to Soundness requirements. Soundness shall be less than 30% loss based on a four-cycle magnesium sulfate soundness test. Plasticity Index of that portion of fill material passing the No. 40 mesh sieve shall not exceed 5.0. Gradation requirements are as provided in Table 2 below.

Table 2: Select Granular Fill – Recommended Gradation

Standard Sieve Size	% Passing by Dry Weight
2-inch	100
1/4-inch	25 to 65
No. 40	5 to 40
No. 200	0 to 10

6.2 Filling & Backfilling Execution

CME recommends that all filling and backfilling to occur on this project be accomplished in a workmanlike manner according to good industry practice. All filling and backfilling shall be installed in a quality-controlled manner with prequalified materials, with quality assurance structural tests and inspections conducted at regular intervals according to the Building Code Chapters 17 and 18, and consistent with the following methodology.

1. The grade to receive fill shall be dry, firm and stable, free of mud, water and loose or frozen material. The grade shall be proofrolled, inspected and deemed satisfactory by the IPGE prior to placement of fill.
2. Fill material shall be placed on satisfactory grade, in a manner to minimize segregation. The fill shall be placed in nearly horizontal lifts commencing at the lowest fill area elevation and proceeding with each lift upward and outward from the lower lift.
3. The moisture content of the material shall be adjusted prior to application of compaction such that it is within 3% of the Optimum Moisture Content. This procedure may involve adding water when the fill material is too dry or discing and aerating to reduce moisture when the fill material is too wet.
4. The compacted lift thickness and minimum in-place field density shall conform to the recommendations provided in Table 3.

Table 3: Structural Fill Compaction and Lift Thickness Recommendations

Minimum In-Place Density ¹	Maximum Compacted Lift Thickness ² (inch)	Fill Area Description
95%	12	Mass fill areas and Subbase Course
95%	8-10	Confined areas such as utility trenches and foundation backfill.
1. As determined using ASTM D1557, Modified Effort Proctor. 2. Or compactor manufacturer's recommended thickness, whichever is less.		

5. When the test results indicate that insufficient compaction has been obtained in any layer, the Contractor shall take action to modify or alter the moisture content of the soil, provide additional compaction or make other adjustments to increase the in-place soil density. If the Contractor cannot obtain satisfactory compaction due to material properties, the Contractor shall remove the unsatisfactory material and replace it with new material.
6. Materials which are frozen, or which include mud, debris, organics or other deleterious materials shall be removed and replaced with clean specified material.
7. No fill shall be placed over an area or lift of fill that has not been tested and achieved satisfactory results.

7.0 SOIL SPECIAL INSPECTION

In addition to the Geotechnical Engineering Observation and Inspection specified previously in this Report, the Building Code requires special inspection and tests for all structural fill, backfill, concrete and reinforcement of the geotechnical constructions proposed for this project.

7.1 Accredited Testing Agency Required

CME recommends that the Testing Agency providing special inspections and structural tests be Accredited by a Nationally Recognized Authority (such as: AASHTO Re:source, A2LA or NVLAP) to demonstrate compliance with ASTM E329 to conduct soil, aggregate and concrete materials testing. All testing and inspection staff must possess current credentials and nationally recognized certification or licensure which is applicable to the specific material and construction element that they are inspecting and/or testing.

7.2 Required Inspections & Tests of Soils

CME recommends that the Soil Special Inspection be accomplished in full conformance with the Building Code requirements and Table 4 given herein:

Table 4: Statement of Required Soil Special Inspections	
Type	Frequency of Special Inspections & Tests
1. Verify excavations are extended to proper depth and have reached proper material.	Periodically during excavation.
2. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	Continuously prior to placement of compacted fill.
3. Perform classification and testing of compacted fill materials.	Periodically per the Earthwork Specifications.
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of structural fill.	Continuously during fill installation and per Earthwork Specifications. Perform 1 In-Place Field Density (IPFD) test per 2500 square feet of lift or 30 lineal feet of trench or wall per lift per side.
5. Observe Test Aggregate Pier Installation and Static Load Testing of Aggregate Pier. (See Report Section 5.2.3)	Continuously during test Aggregate Piers installation and load testing by the Inspecting Professional Geotechnical Engineer (IPGE).
6. Inspection of Production Aggregate Piers (See Report Section 5.2.4)	Continuously during production Aggregate Piers installation by IPGE.
7. Examine and approve LTP subgrade prior to placement of LTP material, if an LTP is incorporated into the design.	Continuously during excavation for LTP installation by IPGE.
8. Witness LTP installation, if incorporated into the design, conduct in-place density testing, approve bearing surface for footing and slab construction.	Continuously during installation by IPGE.

8.0 OTHER IMPORTANT CONSIDERATIONS

CME provides the information in this section for those using our reports, so they may acquire a better understanding of geotechnical engineering professional practice and the limitations associated with its application to this and other projects.

8.1 Changes to the Project

CME has described in Report Section 2.0 our understanding of the proposed development at the time this report is published. It is anticipated that the preliminary plans may change during the design phase. Substantial changes consist of many items such as, but not limited to; bearing elevation, planned depth of cuts or fills, decrease or increase in design loads, structure footprint growth or shrinkage, structure location movement, and time period of construction (compression or relaxation), among others.

Please advise CME of substantial changes so CME can evaluate the continued applicability of the analyses and recommendations given in this Report. It will help reduce project risks, could save you time and money, and result in a higher quality construction project.

8.2 Review of Plans & Specs

CME recommends that it be afforded the opportunity to review the Plans and Specifications prepared pursuant to this Report, prior to Bidding. This review will help to verify that a correct interpretation of CME's recommendations and design intent given in this Report are implemented and incorporated into the Construction Documents. Since CME is not aware of the project schedule, it is the responsibility of the Client to forward the applicable construction contract documents to CME for review. Please allow at least 5 business days for CME to complete the review and issue a report of comments and findings.

8.3 Construction Phase Geotechnical Services

The analysis and recommendations contained in this report are preliminary and are based on the specific data obtained from the limited subsurface explorations referenced in this report. The explorations indicate subsurface conditions only at the specific locations and times, and only to the depths penetrated. The validity of the recommendations is based in part on CME's assumptions about the stratigraphy, as well as information about the proposed development provided by others. CME's assumptions may be confirmed only during earthwork and foundation construction operations.

The recommendations made in this report are based on the "Observational Method". The Observational Method ensures continuity from the design to the construction and has been at the heart of many successful construction projects. It relies upon extensive use of monitoring and observational procedures during the construction. Construction monitoring allows CME to take advantage of conditions more favorable than those anticipated based on the subsurface exploration program. It often provides for timely warning when conditions are less favorable, allowing for changes or alterations to be made before a problem shows itself in newly completed construction. Therefore, it is recommended that CME be retained to provide Construction Phase Observation and the Soil and Foundation Special Inspections.

It is very important to point out that CME's engineering recommendations given in this Report are premised upon CME being retained to provide Construction Phase Geotechnical Engineering Observation as they relate to earthwork, filling and backfilling, and foundation installations. If others are retained to provide construction phase observation, a complete understanding, interpretation or execution of CME's reported recommendations may not occur.

9.0 STANDARD OF CARE AND WARRANTY

CME has endeavored to conduct the services identified herein in a manner consistent with that level of care and skill ordinarily exercised by members of the geotechnical engineering profession currently practicing in the same locality and under similar conditions as this project. No warranty, either express or implied, is made or intended by CME's proposal, contract, and written and oral reports, all of which warranties are hereby expressly disclaimed. CME shall not be responsible for the acts or omissions of Client, its contractors, agents and consultants. CME has relied upon information supplied by Client, its contractors, agents and consultants, or information available from generally accepted reputable sources, without independent verification, and CME assumes no responsibility for the accuracy thereof.

10.0 CLOSING COMMENTS

In accordance with CME's Subcontract for Geotechnical Services, CME will dispose of all unconsumed samples sixty (60) days after submission of this report. All consumed samples were disposed of immediately after test completion. If you would like to keep the unconsumed samples for a longer time period, please email a request to do so, within five (5) business days from the date of this report to Rachel DiRenzo, rdirenzo@cmeassociates.com.

Please do not hesitate to contact our office if you have any questions regarding this report, its conclusions, its recommendations, or its application to actual field conditions revealed during construction.

Respectfully Submitted,
CME Associates, Inc.

A handwritten signature in black ink, appearing to read "Chen Liu".

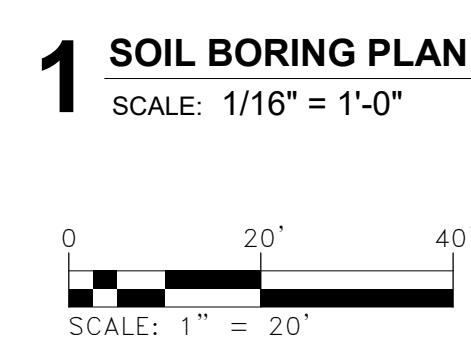
Chen Liu, Ph.D., EIT
Geotechnical Engineer

Reviewed By,
CME Associates, Inc.

A handwritten signature in blue ink, appearing to read "Anas N. Anasthas".

Anas N. Anasthas, P.E.
Senior Geotechnical Engineer





	-	30'-DEEP SOIL BORING	12 locations
	-	50' DEEP SOIL BORING	1 location
	-	30'-DEEP INFILTRATION TEST	(2 LOCATIONS)
	-	TEST PIT	(3 LOCATIONS)
	-	EXISTING ELECTRICAL LINE	
	-	EXISTING GAS LINE	
	-	EXISTING WATER SERVICE	
	-	EXISTING SANITARY LINE	
	-	EXISTING STORM LINE	

Annotated by CME in Red.



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MEP ENGINEER:
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Utica, NY 13501
315 733 9000

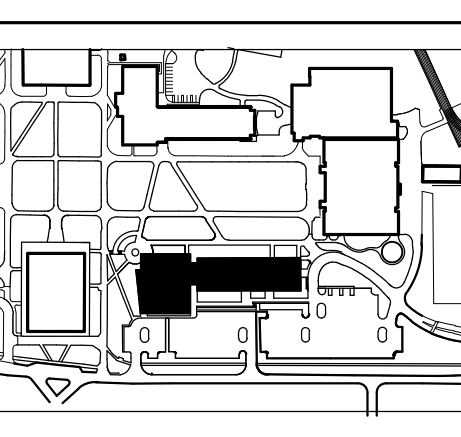
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Syracuse, NY 13204
315 476 1022

SEAL:

[illegible]

COPYRIGHT © 2018 MITCHELL GRINGOLA ARCHITECTS LLP
ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY
THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK.

KEY PLAN:



PLAN NORTH

PROJECT:

SCIENCE &
TECHNOLOGY BUILDING

DRAWING TITLE:

SOIL BORING PLAN

PROJECT NO: 231100	DATE: 1/15/24
PHASE: SCHEMATIC DESIGN	SCALE: As indicated

B-100

CME Exploration Location Plan, ELP-1

Mohawk Valley Community College Science and Technology Building
Utica, NY

Legend

📍 MVCC - P1 Parking Lot



GPS Coordinates and Elevations Table
Mohawk Valley Community College Science & Technology Building
Utica, New York

TABLE 1			
Boring ID	Latitude	Longitude	Elevation (FT. AMSL)
DSB-1	43.07600804	-75.21895063	580.5
SB-1	43.07619165	-75.21872168	582.5
SB-2	43.07590604	-75.21856157	580.2
SB-3	43.07553498	-75.21833291	577.2
SB-4	43.07518730	-75.21812284	577.1
SB-5	43.07616581	-75.21907773	582.6
SB-6	43.07580481	-75.21891170	578.9
SB-7	43.07543943	-75.21869143	577.6
SB-8	43.07508313	-75.21846503	576.7
SB-9	43.07607298	-75.21924256	582.1
SB-10	43.07577827	-75.21903586	579.2
SB-11	43.07569646	-75.21861002	578.6
SB-12	43.07533475	-75.21839396	576.2
IT-1	43.07555471	-75.21876338	578.2
IT-2	43.07626458	-75.21868628	584.0
Reference 1	43.07511272	-75.21832974	576.6

Notes:

AMSL: Above Mean Sea Level.

1. GPS coordinates were obtained with handheld survey equipment (Trimble TSC5 and SP-85 Receiver).
2. NYSDOT CORS positions are based on North American Datum of 1983 - NAD 83 (2011).
3. Elevations are based on the North American Vertical Datum of 1988 - NAVD 88.
4. Reference 1 refers to the center of the sanitary manhole located east of Test Boring SB-8.

		6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG			Boring No.	DSB-1	
							Page No.	1 of 1	
							Report No.	28107B-01-0224	
Project Name:	Mohawk Valley Community College Science and Technology Building, Utica, NY						Date Started	12/19/23	
Client:	Appel Osborne Landscape Architecture						Date Finished	12/19/23	
Location:	CME Exploration Location Plan - ELP-1						Surface Elev.	580.5'	
METHODS OF INVESTIGATION					GROUNDWATER OBSERVATIONS				
Driller:	Beau Fletcher	Casing:	3 ¼" ID H.S.A.			Date	Time	Depth (Ft.)	Casing At (Ft.)
Driller:	Ryan Casatelli	Casing Hammer:				12/19/23	While Drilling	None Noted	18.6
Inspector:		Other:				12/19/23	Before Casing Removed	None Noted	18.6
Drill Rig:	CME 550X	Soil Sampler:	2" OD Split Barrel			12/19/23	After Casing Removed	None Noted	out
Type:	ATV	Hammer Wt:	140 lbs.			12/19/23	After Casing Removed	caved @ 11.0	out
Rod Size:	AWJ	Hammer Fall:	30 in.						
LOG OF BORING SAMPLES				VISUAL CLASSIFICATION OF MATERIAL					
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.)		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine		SPT "N" or RQD %
		From	To				and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%		
0	1A	0.0	0.5	SS/12	5-3-3	0.5	Asphalt Pavement		6
1		0.5	1.0				Subbase; Grey cmf gravel, silt (moist)		
1	1B	1.0	2.0				FILL; Brown silt, cmf gravel, mf sand (moist)		
2	2	2.0	4.0	SS/14	3-3-3-5		FILL; Brown silt, cmf gravel, cmf sand (moist)		6
3									
4	3	4.0	6.0	SS/6	4-3-3-4		FILL; Brown silt, cmf gravel, cmf sand (wet)		6
5									
6	4	6.0	8.0	SS/12	4-5-7-11		FILL; Brown silt, cmf gravel, smf sand (wet)		12
7									
8	5	8.0	9.4	SS/12	6-11-50@5"		Dark Grey SILT, some weathered ROCK fragments, little cmf GRAVEL (moist)		50+
9									
10									
11									
12									
13	6	13.5	13.7	SS/2	50@2"		Grey weathered ROCK fragments and ROCK flour (moist)		50+
14									
15									
16									
17									
18									
19	7	18.5	18.6	SS/1	50@1"		Grey weathered ROCK fragments and chips (moist)		50+
20							Bottom of Boring @ 18.6'		

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.		SB-1																						
				Page No.		1 of 1																						
				Report No.		28107B-01-0224																						
Project Name:		Mohawk Valley Community College Science and Technology Building, Utica, NY				Date Started		12/21/23																				
Client:		Appel Osborne Landscape Architecture				Date Finished		12/21/23																				
Location:		CME Exploration Location Plan - ELP-1				Surface Elev.		582.5'																				
METHODS OF INVESTIGATION						GROUNDWATER OBSERVATIONS																						
Driller:		Beau Fletcher		Casing:		3 ¼" ID H.S.A.		<table border="1"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Depth (Ft.)</th> <th>Casing At (Ft.)</th> </tr> </thead> <tbody> <tr> <td>12/21/23</td> <td>While Drilling</td> <td>None Noted</td> <td>8.0</td> </tr> <tr> <td>12/21/23</td> <td>Before Casing Removed</td> <td>None Noted</td> <td>8.0</td> </tr> <tr> <td>12/21/23</td> <td>After Casing Removed</td> <td>None Noted</td> <td>out</td> </tr> <tr> <td>12/21/23</td> <td>After Casing Removed</td> <td>caved @ 6.2</td> <td>out</td> </tr> </tbody> </table>	Date	Time	Depth (Ft.)	Casing At (Ft.)	12/21/23	While Drilling	None Noted	8.0	12/21/23	Before Casing Removed	None Noted	8.0	12/21/23	After Casing Removed	None Noted	out	12/21/23	After Casing Removed	caved @ 6.2	out
Date	Time	Depth (Ft.)	Casing At (Ft.)																									
12/21/23	While Drilling	None Noted	8.0																									
12/21/23	Before Casing Removed	None Noted	8.0																									
12/21/23	After Casing Removed	None Noted	out																									
12/21/23	After Casing Removed	caved @ 6.2	out																									
Driller:		Ryan Casatelli		Casing Hammer:																								
Inspector:				Other:																								
Drill Rig:		CME 550X		Soil Sampler:		2" OD Split Barrel																						
Type:		ATV		Hammer Wt:		140 lbs.																						
Rod Size:		AWJ		Hammer Fall:		30 in.																						
LOG OF BORING SAMPLES					VISUAL CLASSIFICATION OF MATERIAL																							
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.)		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine		SPT "N" or RQD %																			
		From	To				and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%																					
0	1	0.0	0.3	SS/9	7-6-2	0.3	Asphalt Pavement		8																			
1		0.5	2.0				FILL; Grey cmf gravel, silt, cmf sand (moist)																					
2	2	2.0	4.0	SS/11	4-6-12-28		FILL; Brown silt, cmf gravel, cmf sand (wet)		18																			
3																												
4	3	4.0	6.0	SS/20	7-9-13-13		FILL; Brown silt, cmf gravel, cmf sand (moist)		22																			
5																												
6	4	6.0	7.7	SS/15	26-40-35-50@2"		Grey SILT, little cmf GRAVEL, little highly weathered ROCK fragments, little ROCK flour (moist)		75																			
7																												
8							<u>Auger Refusal @ 8.0'</u>																					
9							Bottom of Boring @ 8.0'																					
10																												
11																												
12																												
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19																												
20																												

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.		SB-2									
				Page No.		1 of 1									
				Report No.		28107B-01-0224									
Project Name:		Mohawk Valley Community College Science and Technology Building, Utica, NY				Date Started		12/21/23							
Client:		Appel Osborne Landscape Architecture				Date Finished		12/21/23							
Location:		CME Exploration Location Plan - ELP-1				Surface Elev.		580.2'							
METHODS OF INVESTIGATION						GROUNDWATER OBSERVATIONS									
Driller:		Gary Richards		Casing:		3 ¼" ID H.S.A.		Date		Time		Depth (Ft.)		Casing At (Ft.)	
Driller:		Chris O'Hara		Casing Hammer:				12/21/23		While Drilling		2.8		Spoon Hole	
Inspector:				Other:				12/21/23		Before Casing Removed		None Noted		13.5	
Drill Rig:		D120		Soil Sampler:		2" OD Split Barrel		12/21/23		After Casing Removed		None Noted		out	
Type:		International		Hammer Wt:		140 lbs.		12/21/23		After Casing Removed		caved @ 5.9		out	
Rod Size:		AWJ		Hammer Fall:		30 in.									
LOG OF BORING SAMPLES						VISUAL CLASSIFICATION OF MATERIAL									
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From To		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%		SPT "N" or RQD %					
0		0.0	1.0				Asphalt Pavement								
1	1	1.0	2.5	SS/8	4-5-8		FILL; Brown silt, some mf gravel, trace clay (moist)					13			
2	2	2.5	4.0	SS/12	11-10-11		FILL; Dark Brown/Brown silt, clay, mf gravel, fine sand (moist)					21			
3	3	4.0	6.0	SS/15	7-10-9-7		FILL; Similar as above (moist)					19			
4	4	6.0	8.0	SS/16	7-6-6-5		FILL; Similar as above (moist)					12			
5	5	8.0	10.0	SS/13	3-2-4-5		Dark Grey/Brown SILT, some CLAY, trace fine SAND, trace fine GRAVEL (moist, medium stiff)					6			
6	6	13.5	14.9	SS/17	8-21-50@5"		Grey SILT, trace CLAY, trace fine SAND, trace mf GRAVEL (moist, hard)					50+			
7							Bottom of Boring @ 14.9'								
8															
9															
10															
11															
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15															
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18															
19															
20															

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.		SB-3									
				Page No.		1 of 1									
				Report No.		28107B-01-0224									
Project Name:		Mohawk Valley Community College Science and Technology Building, Utica, NY				Date Started		12/21/23							
Client:		Appel Osborne Landscape Architecture				Date Finished		12/21/23							
Location:		CME Exploration Location Plan - ELP-1				Surface Elev.		577.2'							
METHODS OF INVESTIGATION						GROUNDWATER OBSERVATIONS									
Driller:		Gary Richards		Casing:		3 ¼" ID H.S.A.		Date		Time		Depth (Ft.)		Casing At (Ft.)	
Driller:		Chris O'Hara		Casing Hammer:				12/21/23		While Drilling		None Noted		8.0	
Inspector:				Other:				12/21/23		Before Casing Removed		12.4		13.5	
Drill Rig:		D120		Soil Sampler:		2" OD Split Barrel		12/21/23		After Casing Removed		None Noted		out	
Type:		International		Hammer Wt:		140 lbs.		12/21/23		After Casing Removed		caved @ 7.5		out	
Rod Size:		AWJ		Hammer Fall:		30 in.									
LOG OF BORING SAMPLES						VISUAL CLASSIFICATION OF MATERIAL									
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From To		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%		SPT "N" or RQD %					
0		0.0	1.0				Asphalt Pavement								
1	1	1.0	2.5	SS/11	WH-3-5		FILL; Brown silt, fine sand, mf gravel (moist)					8			
2	2	2.5	4.0	SS/13	7-9-8		FILL; Brown silt, cmf sand, mf gravel (moist)					17			
3															
4	3	4.0	6.0	SS/10	15-10-10-18		Brown SILT, some SAND, trace CLAY, trace cmf GRAVEL (moist, very stiff)					20			
5															
6	4	6.0	8.0	SS/8	15-7-5-8		Similar as above (moist, stiff)					12			
7															
8	5	8.0	10.0	SS/10	2-7-29-39		Similar as above (moist, hard)					36			
9															
10	6	10.0	12.0	SS/3	21-27-25-23		Brown SILT, some SAND, trace mf GRAVEL (moist, hard)					52			
11															
12															
13															
14	7	13.5	15.4	SS/10	25-37-33-50@4"		Brown/Grey SILT, some SAND, little ROCK fragments (moist, hard)					70			
15							Bottom of Boring @ 15.4'								
16															
17															
18															
19															
20															

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.		SB-4			
				Page No.		1 of 1			
				Report No.		28107B-01-0224			
Project Name:		Mohawk Valley Community College Science and Technology Building, Utica, NY				Date Started		12/21/23	
Client:		Appel Osborne Landscape Architecture				Date Finished		12/21/23	
Location:		CME Exploration Location Plan - ELP-1				Surface Elev.		577.1'	
METHODS OF INVESTIGATION						GROUNDWATER OBSERVATIONS			
Driller: Gary Richards		Casing: 3 ¼" ID H.S.A.		Date		Time		Depth (Ft.)	Casing At (Ft.)
Driller: Chris O'Hara		Casing Hammer:		12/21/23		While Drilling		None Noted	8.0
Inspector:		Other:		12/21/23		Before Casing Removed		None Noted	18.5
Drill Rig: D120		Soil Sampler: 2" OD Split Barrel		12/21/23		After Casing Removed		None Noted	out
Type: International		Hammer Wt: 140 lbs.		12/21/23		After Casing Removed		caved @ 1.7	out
Rod Size: AWJ		Hammer Fall: 30 in.							
LOG OF BORING SAMPLES					VISUAL CLASSIFICATION OF MATERIAL				
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From To		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%	SPT "N" or RQD %
0		0.0	1.0			1.0	Asphalt Pavement		
1	1	1.0	2.5	SS/11	8-8-8		FILL; Brown silt, fine sand, mf gravel (moist)		16
2	2	2.5	4.0	SS/9	7-8-11		Brown SILT, some fine SAND, trace CLAY, trace cmf GRAVEL (moist, very stiff)		19
3									
4	3	4.0	6.0	SS/8	40-27-20-22		Brown SILT, some SAND, trace cmf GRAVEL (moist, hard)		47
5									
6	4	6.0	8.0	SS/10	23-18-24-21		Similar as above (moist, hard)		42
7									
8	5	8.0	10.0	SS/15	11-25-36-29		Similar as above (moist, hard)		61
9									
10									
11									
12									
13	6	13.5	15.5	SS/12	8-9-12-17		Dark Grey SILT, some fine SAND, little weathered ROCK fragments (moist, very stiff)		21
14									
15									
16									
17									
18	7	18.5	19.9	SS/14	26-33-50@5"		Dark Grey SILT, some weathered ROCK fragments, some fine SAND, trace CLAY (wet, hard)		50+
19							Bottom of Boring @ 19.9'		
20									

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.		SB-5									
				Page No.		1 of 1									
				Report No.		28107B-01-0224									
Project Name:		Mohawk Valley Community College Science and Technology Building, Utica, NY				Date Started		12/21/23							
Client:		Appel Osborne Landscape Architecture				Date Finished		12/21/23							
Location:		CME Exploration Location Plan - ELP-1				Surface Elev.		582.6'							
METHODS OF INVESTIGATION						GROUNDWATER OBSERVATIONS									
Driller:		Beau Fletcher		Casing:		3 ¼" ID H.S.A.		Date		Time		Depth (Ft.)		Casing At (Ft.)	
Driller:		Ryan Casatelli		Casing Hammer:				12/21/23		While Drilling		None Noted		9.0	
Inspector:				Other:				12/21/23		Before Casing Removed		None Noted		9.0	
Drill Rig:		CME 550X		Soil Sampler:		2" OD Split Barrel		12/21/23		After Casing Removed		None Noted		out	
Type:		ATV		Hammer Wt:		140 lbs.		12/21/23		After Casing Removed		caved @ 7.0		out	
Rod Size:		AWJ		Hammer Fall:		30 in.									
LOG OF BORING SAMPLES						VISUAL CLASSIFICATION OF MATERIAL									
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From To		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%		SPT "N" or RQD %					
0	1	0.0	0.5	SS/15	14-15-9	0.5	Asphalt Pavement		24						
1		0.5	2.0				Subbase; Brown/Grey cmf gravel, silt, cmf sand (moist)								
2	2	2.0	4.0	SS/20	17-16-20-24		FILL; Brown silt, cmf gravel, cmf sand (moist)		36						
3															
4	3	4.0	6.0	SS/22	11-18-22-25		Grey SILT, little cmf GRAVEL, trace fine SAND (moist, hard)		40						
5															
6	4	6.0	7.2	SS/11	27-32-50@2"		Grey SILT, little cmf GRAVEL, trace fine SAND (moist, hard)		50+						
7															
8	5	8.0	8.3	SS/4	50@4"		Grey weathered ROCK fragments and ROCK flour (moist)		50+						
9															
10							Auger Refusal @ 9.0'								
11		Bottom of Boring @ 9.0'													
12															
13															
14															
15															
16															
17															
18															
19															
20															

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

CME Associates, Inc. 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.	SB-6				
				Page No.	1 of 1				
				Report No.	28107B-01-0224				
Project Name:	Mohawk Valley Community College Science and Technology Building, Utica, NY			Date Started	12/21/23				
Client:	Appel Osborne Landscape Architecture			Date Finished	12/21/23				
Location:	CME Exploration Location Plan - ELP-1			Surface Elev.	578.9'				
METHODS OF INVESTIGATION				GROUNDWATER OBSERVATIONS					
Driller:	Beau Fletcher	Casing:	3 ¼" ID H.S.A.	Date	Time	Depth (Ft.)	Casing At (Ft.)		
Driller:	Ryan Casatelli	Casing Hammer:		12/21/23	While Drilling	None Noted	13.8		
Inspector:		Other:		12/21/23	Before Casing Removed	None Noted	13.8		
Drill Rig:	CME 550X	Soil Sampler:	2" OD Split Barrel	12/21/23	After Casing Removed	None Noted	out		
Type:	ATV	Hammer Wt:	140 lbs.	12/21/23	After Casing Removed	None Noted	out		
Rod Size:	AWJ	Hammer Fall:	30 in.	12/21/23	After Casing Removed	caved @ 7.0	out		
LOG OF BORING SAMPLES				VISUAL CLASSIFICATION OF MATERIAL					
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.)		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%	SPT "N" or RQD %
0	1	0.0	0.5	SS/14	2-11-11	0.5	Asphalt Pavement		22
1		0.5	2.0			FILL; Brown silt, cmf gravel, cmf sand (wet) See Remark 1			
2	2	2.0	4.0	SS/15	8-8-9-9		FILL; Brown silt, cmf gravel, cmf sand (wet)		17
3	3	4.0	6.0	SS/15	18-8-16-10		FILL; Brown silt, cmf gravel, cmf sand (moist)		24
4									
5	4	6.0	8.0	SS/20	7-8-9-11		Grey/Brown SILT, little cmf GRAVEL, trace mf SAND (moist, very stiff)		17
6									
7	5	8.0	10.0	SS/0	2-2-2-3		No Recovery		4
8									
9	6	10.0	12.0	SS/16	5-4-6-10		Grey SILT, little cmf GRAVEL, little cmf SAND, trace weathered ROCK fragments (wet, stiff)		10
10									
11	7	13.5	13.8	SS/3	50@4"		Grey weathered ROCK fragments, little ROCK flour (moist)		50+
12									
13							Bottom of Boring @ 13.8'		
14									
15									
16									
17									
18									
19									
20									

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks: 1. Perched water noted in hole.

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.		SB-7									
				Page No.		1 of 1									
				Report No.		28107B-01-0224									
Project Name:		Mohawk Valley Community College Science and Technology Building, Utica, NY				Date Started		12/20/23							
Client:		Appel Osborne Landscape Architecture				Date Finished		12/20/23							
Location:		CME Exploration Location Plan - ELP-1				Surface Elev.		577.6'							
METHODS OF INVESTIGATION						GROUNDWATER OBSERVATIONS									
Driller:		Beau Fletcher		Casing:		3 ¼" ID H.S.A.		Date		Time		Depth (Ft.)		Casing At (Ft.)	
Driller:		Ryan Casatelli		Casing Hammer:				12/20/23		While Drilling		10.8		13.5	
Inspector:				Other:				12/20/23		Before Casing Removed		10.8		13.5	
Drill Rig:		CME 550X		Soil Sampler:		2" OD Split Barrel		12/20/23		After Casing Removed		8.6		out	
Type:		ATV		Hammer Wt:		140 lbs.		12/20/23		After Casing Removed		caved @ 10.8		out	
Rod Size:		AWJ		Hammer Fall:		30 in.									
LOG OF BORING SAMPLES						VISUAL CLASSIFICATION OF MATERIAL									
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From To		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine		and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%		SPT "N" or RQD %				
0	1	0.0	0.5	SS/14	5-10-7	0.5	Asphalt Pavement				17				
1		0.5	2.0				FILL; Brown silt, cmf gravel, cmf sand (moist)								
2	2	2.0	4.0	SS/15	9-6-4-6		FILL; Grey/Brown silt, cmf gravel, clay (moist)				10				
3															
4	3	4.0	6.0	SS/14	5-7-9-16		FILL; Brown silt, cmf gravel, cmf sand (moist)				16				
5															
6	4	6.0	7.4	SS/15	15-26-50@5"		FILL; Brown silt, cmf gravel, cmf sand (moist)				50+				
7															
8	5	8.0	10.0	SS/16	11-17-10-13		Brown SILT, little cmf GRAVEL, little cmf SAND (moist, very stiff)				27				
9															
10	6	13.5	15.0	SS/12	18-15-19		Brown SILT, some cmf GRAVEL, some cmf SAND (wet, hard)				34				
11															
12															
13															
14															
15															
16							Auger Refusal @ 16.2'								
17							Bottom of Boring @ 16.2'								
18															
19															
20															

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.		SB-8																						
				Page No.		1 of 1																						
				Report No.		28107B-01-0224																						
Project Name:		Mohawk Valley Community College Science and Technology Building, Utica, NY				Date Started		12/19/23																				
Client:		Appel Osborne Landscape Architecture				Date Finished		12/19/23																				
Location:		CME Exploration Location Plan - ELP-1				Surface Elev.		576.7'																				
METHODS OF INVESTIGATION						GROUNDWATER OBSERVATIONS																						
Driller:		Beau Fletcher		Casing:		3 ¼" ID H.S.A.		<table border="1"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Depth (Ft.)</th> <th>Casing At (Ft.)</th> </tr> </thead> <tbody> <tr> <td>12/19/23</td> <td>While Drilling</td> <td>None Noted</td> <td>13.5</td> </tr> <tr> <td>12/19/23</td> <td>Before Casing Removed</td> <td>None Noted</td> <td>13.5</td> </tr> <tr> <td>12/19/23</td> <td>After Casing Removed</td> <td>None Noted</td> <td>out</td> </tr> <tr> <td>12/19/23</td> <td>After Casing Removed</td> <td>caved @ 5.9</td> <td>out</td> </tr> </tbody> </table>	Date	Time	Depth (Ft.)	Casing At (Ft.)	12/19/23	While Drilling	None Noted	13.5	12/19/23	Before Casing Removed	None Noted	13.5	12/19/23	After Casing Removed	None Noted	out	12/19/23	After Casing Removed	caved @ 5.9	out
Date	Time	Depth (Ft.)	Casing At (Ft.)																									
12/19/23	While Drilling	None Noted	13.5																									
12/19/23	Before Casing Removed	None Noted	13.5																									
12/19/23	After Casing Removed	None Noted	out																									
12/19/23	After Casing Removed	caved @ 5.9	out																									
Driller:		Ryan Casatelli		Casing Hammer:																								
Inspector:				Other:																								
Drill Rig:		D120		Soil Sampler:		2" OD Split Barrel																						
Type:		Truck		Hammer Wt:		140 lbs.																						
Rod Size:		AWJ		Hammer Fall:		30 in.																						
LOG OF BORING SAMPLES					VISUAL CLASSIFICATION OF MATERIAL																							
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.)		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine		SPT "N" or RQD %																			
		From	To				and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%																					
0	1	0.0	0.5	SS/14	5-4-7	0.5	Asphalt Pavement		11																			
1		0.5	2.0				FILL; Brown silt, cmf gravel, cmf sand (moist)																					
2	2	2.0	4.0	SS/19	10-10-16-22		FILL; Brown silt, cmf gravel, cmf sand (moist)		26																			
3																												
4	3	4.0	6.0	SS/22	22-22-27-24		FILL; Brown silt, cmf gravel, cmf sand (moist)		49																			
5																												
6	4	6.0	8.0	SS/19	29-22-24-44		FILL; Brown cmf gravel, silt, cmf sand (moist)		46																			
7																												
8	5	8.0	8.8	SS/6	26-50@3"		Grey cmf GRAVEL, some COBBLE pieces, trace SILT (moist)		50+																			
9																												
10	6	13.5	14.4	SS/4	32-50@5"		Grey cmf GRAVEL, some COBBLE pieces (moist)		50+																			
11							Bottom of Boring @ 14.4'																					
12																												
13																												
14																												
15																												
16																												
17																												
18																												
19																												
20																												

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.		SB-9																						
				Page No.		1 of 1																						
				Report No.		28107B-01-0224																						
Project Name:		Mohawk Valley Community College Science and Technology Building, Utica, NY				Date Started		12/21/23																				
Client:		Appel Osborne Landscape Architecture				Date Finished		12/21/23																				
Location:		CME Exploration Location Plan - ELP-1				Surface Elev.		582.1'																				
METHODS OF INVESTIGATION						GROUNDWATER OBSERVATIONS																						
Driller:		Beau Fletcher		Casing:		3 ¼" ID H.S.A.		<table border="1"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Depth (Ft.)</th> <th>Casing At (Ft.)</th> </tr> </thead> <tbody> <tr> <td>12/21/23</td> <td>While Drilling</td> <td>None Noted</td> <td>12.1</td> </tr> <tr> <td>12/21/23</td> <td>Before Casing Removed</td> <td>None Noted</td> <td>12.1</td> </tr> <tr> <td>12/21/23</td> <td>After Casing Removed</td> <td>None Noted</td> <td>out</td> </tr> <tr> <td>12/21/23</td> <td>After Casing Removed</td> <td>caved @ 9.2</td> <td>out</td> </tr> </tbody> </table>	Date	Time	Depth (Ft.)	Casing At (Ft.)	12/21/23	While Drilling	None Noted	12.1	12/21/23	Before Casing Removed	None Noted	12.1	12/21/23	After Casing Removed	None Noted	out	12/21/23	After Casing Removed	caved @ 9.2	out
Date	Time	Depth (Ft.)	Casing At (Ft.)																									
12/21/23	While Drilling	None Noted	12.1																									
12/21/23	Before Casing Removed	None Noted	12.1																									
12/21/23	After Casing Removed	None Noted	out																									
12/21/23	After Casing Removed	caved @ 9.2	out																									
Driller:		Ryan Casatelli		Casing Hammer:																								
Inspector:				Other:																								
Drill Rig:		CME 550X		Soil Sampler:		2" OD Split Barrel																						
Type:		ATV		Hammer Wt:		140 lbs.																						
Rod Size:		AWJ		Hammer Fall:		30 in.																						
LOG OF BORING SAMPLES					VISUAL CLASSIFICATION OF MATERIAL																							
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.)		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine		SPT "N" or RQD %																			
		From	To				and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%																					
0	1A	0.0	0.5	SS/14	6-5-9	0.5	Asphalt Pavement		14																			
1		0.5	1.5				Subbase; Grey mf gravel, silt (wet)																					
2	1B 2	1.5	2.0	SS/16	9-18-32-27		FILL; Brown silt, cmf gravel, cmf sand (moist)		50																			
3		2.0	4.0				FILL; Brown silt, cmf gravel, cmf sand (wet)																					
4	3	4.0	6.0	SS/16	5-10-12-20		Grey SILT, little cmf GRAVEL, trace fine SAND (moist, very stiff)		22																			
5																												
6	4	6.0	8.0	SS/22	18-20-22-26		Grey SILT, little cmf GRAVEL, trace fine SAND (moist, hard)		42																			
7																												
8	5	8.0	9.3	SS/12	13-19-50@4"		Similar as above (moist, hard)		50+																			
9																												
10																												
11																												
12							Auger Refusal @ 12.1'																					
13							Bottom of Boring @ 12.1'																					
14																												
15																												
16																												
17																												
18																												
19																												
20																												

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.		SB-10			
				Page No.		1 of 1			
				Report No.		28107B-01-0224			
Project Name:		Mohawk Valley Community College Science and Technology Building, Utica, NY				Date Started		12/21/23	
Client:		Appel Osborne Landscape Architecture				Date Finished		12/21/23	
Location:		CME Exploration Location Plan - ELP-1				Surface Elev.		579.2'	
METHODS OF INVESTIGATION						GROUNDWATER OBSERVATIONS			
Driller:	Beau Fletcher	Casing:	3 ¼" ID H.S.A.			Date	Time	Depth (Ft.)	Casing At (Ft.)
Driller:	Ryan Casatelli	Casing Hammer:				12/21/23	While Drilling	None Noted	12.1
Inspector:		Other:				12/21/23	Before Casing Removed	None Noted	12.1
Drill Rig:	CME 550X	Soil Sampler:	2" OD Split Barrel			12/21/23	After Casing Removed	None Noted	out
Type:	ATV	Hammer Wt:	140 lbs.			12/21/23	After Casing Removed	caved @ 9.2	out
Rod Size:	AWJ	Hammer Fall:	30 in.						
LOG OF BORING SAMPLES					VISUAL CLASSIFICATION OF MATERIAL				
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.)		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine		SPT "N" or RQD %
		From	To				and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%		
0	1	0.0	0.5	SS/12	7-7-8	0.5	Asphalt Pavement		15
1		0.5	2.0				FILL; Brown/Grey silt, cmf grael, cmf sand (moist)		
2	2	2.0	4.0	SS/18	10-10-10		FILL; Brown silt, cmf gravel, cmf sand (moist)		20
3									
4	3	4.0	6.0	SS/15	4-5-7-7		Brown/Grey SILT, little cmf GRAVEL, little SAND (moist, stiff)		12
5									
6	4	6.0	8.0	SS/8	8-8-7-6		Grey/Green SILT, little mf GRAVEL, little mf SAND (moist, very stiff)		15
7									
8	5	8.0	10.0	SS/14	3-3-4-5		Grey SILT, some CLAY (moist, medium stiff)		7
9									
10									
11									
12									
13									
14	5	13.5	13.9	SS/5	50@5"		Grey weathered ROCK fragments, little ROCK flour, trace SILT (moist)		50+
15							Bottom of Boring @ 13.9'		
16									
17									
18									
19									
20									

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.		SB-11																						
				Page No.		1 of 1																						
				Report No.		28107B-01-0224																						
Project Name:		Mohawk Valley Community College Science and Technology Building, Utica, NY				Date Started		12/18/23																				
Client:		Appel Osborne Landscape Architecture				Date Finished		12/18/23																				
Location:		CME Exploration Location Plan - ELP-1				Surface Elev.		578.6'																				
METHODS OF INVESTIGATION						GROUNDWATER OBSERVATIONS																						
Driller:		Beau Fletcher		Casing:		3 ¼" ID H.S.A.		<table border="1"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Depth (Ft.)</th> <th>Casing At (Ft.)</th> </tr> </thead> <tbody> <tr> <td>12/18/23</td> <td>While Drilling</td> <td>None Noted</td> <td>14.0</td> </tr> <tr> <td>12/18/23</td> <td>Before Casing Removed</td> <td>None Noted</td> <td>14.6</td> </tr> <tr> <td>12/18/23</td> <td>After Casing Removed</td> <td>9.8</td> <td>out</td> </tr> <tr> <td>12/18/23</td> <td>After Casing Removed</td> <td>caved @ 10.4</td> <td>out</td> </tr> </tbody> </table>	Date	Time	Depth (Ft.)	Casing At (Ft.)	12/18/23	While Drilling	None Noted	14.0	12/18/23	Before Casing Removed	None Noted	14.6	12/18/23	After Casing Removed	9.8	out	12/18/23	After Casing Removed	caved @ 10.4	out
Date	Time	Depth (Ft.)	Casing At (Ft.)																									
12/18/23	While Drilling	None Noted	14.0																									
12/18/23	Before Casing Removed	None Noted	14.6																									
12/18/23	After Casing Removed	9.8	out																									
12/18/23	After Casing Removed	caved @ 10.4	out																									
Driller:		Ryan Casatelli		Casing Hammer:																								
Inspector:				Other:																								
Drill Rig:		D120		Soil Sampler:		2" OD Split Barrel																						
Type:		Truck		Hammer Wt:		140 lbs.																						
Rod Size:		AWJ		Hammer Fall:		30 in.																						
LOG OF BORING SAMPLES						VISUAL CLASSIFICATION OF MATERIAL																						
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.)		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%	SPT "N" or RQD %																			
		From	To																									
0		0.0	0.5			0.5	Asphalt Pavement																					
1	1A	0.5	1.0	SS/12	4-5-10		Subbase; Grey cmf gravel, silt (moist)		15																			
	1B	1.0	2.0				FILL; Brown silt, mf gravel (moist)																					
2	2	2.0	4.0	SS/16	11-7-7-11		FILL; Brown/Grey silt, mf gravel, clay, mf sand (moist)		14																			
3																												
4	3	4.0	6.0	SS/24	4-5-8-11		FILL; Grey/Brown silt, clay, cmf gravel (moist)		13																			
5																												
6	4	6.0	8.0	SS/17	7-7-6-6		FILL; Grey/Brown silt, clay, cmf gravel, rock fragments (moist)		13																			
7																												
8	5	8.0	10.0	SS/12	1-3-4-8		Possible FILL; Dark Brown SILT, little PEAT, little WOOD (moist, medium stiff)		7																			
9																												
10	6A	10.0	11.0	SS/16	3-5-8-13		Possible FILL; Dark Brown SILT, little PEAT, little WOOD (moist, stiff)		13																			
11	6B	11.0	12.0				Grey SILT, little mf SAND, little cmf GRAVEL, trace weathered ROCK (moist, stiff)																					
12	7	12.0	14.0	SS/17	8-6-9-23		Grey SILT, little weathered ROCK fragments, little cmf SAND (moist, very stiff)		15																			
13																												
14	8	14.0	14.6	SS/6	50-50@1"		Grey weathered ROCK fragments, little ROCK flour (moist)		50+																			
15							Bottom of Boring @ 14.6'																					
16																												
17																												
18																												
19																												
20																												

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.		SB-12									
				Page No.		1 of 1									
				Report No.		28107B-01-0224									
Project Name:		Mohawk Valley Community College Science and Technology Building, Utica, NY				Date Started		12/19/23							
Client:		Appel Osborne Landscape Architecture				Date Finished		12/19/23							
Location:		CME Exploration Location Plan - ELP-1				Surface Elev.		576.2'							
METHODS OF INVESTIGATION						GROUNDWATER OBSERVATIONS									
Driller:		Beau Fletcher		Casing:		3 ¼" ID H.S.A.		Date		Time		Depth (Ft.)		Casing At (Ft.)	
Driller:		Ryan Casatelli		Casing Hammer:				12/19/23		While Drilling		9.3		18.5	
Inspector:				Other:				12/19/23		Before Casing Removed		9.3		18.5	
Drill Rig:		D120		Soil Sampler:		2" OD Split Barrel		12/19/23		After Casing Removed		7		out	
Type:		Truck		Hammer Wt:		140 lbs.		12/19/23		After Casing Removed		caved @ 9.2		out	
Rod Size:		AWJ		Hammer Fall:		30 in.									
LOG OF BORING SAMPLES						VISUAL CLASSIFICATION OF MATERIAL									
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From To		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%		SPT "N" or RQD %					
0		0.0	0.8			0.8	Asphalt Pavement								
1	1	1.0	2.5	SS/9	3-3-4		FILL; Grey/Brown silt, cmf gravel, cmf sand (moist)				7				
2	2	2.5	4.0	SS/15	6-6-8		FILL; Brown/Grey silt, cmf gravel, cmf sand (moist)				14				
3															
4	3	4.0	6.0	SS/16	4-5-12-15		FILL; Brown cmf gravel, silt, cmf sand (moist)				17				
5															
6	4	6.0	8.0	SS/17	14-17-24-22		FILL; Brown silt, cmf gravel, cmf sand (moist)				41				
7															
8	5	8.0	10.0	SS/12	8-5-11-8		Miscellaneous FILL; Dark Grey cmf sand, cinders, ash, cmf gravel, silt (wet)				16				
9															
10															
11															
12															
13	6	13.5	15.0	SS/13	10-16-10		Grey SILT, some cmf GRAVEL, little cmf SAND (moist, very stiff)				26				
14															
15															
16															
17															
18	7	18.5	20.0	SS/12	39-36-50		Augered hard beginning @ 18.0' Grey SILT, some highly weathered ROCK fragments, little mf GRAVEL (moist)				86				
19															
20							Bottom of Boring @ 20.0'								

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.		IT-1					
				Page No.		1 of 1					
				Report No.		28107B-01-0224					
Project Name:		Mohawk Valley Community College Science and Technology Building, Utica, NY				Date Started		12/21/23			
Client:		Appel Osborne Landscape Architecture				Date Finished		12/21/23			
Location:		CME Exploration Location Plan - ELP-1				Surface Elev.		578.2'			
METHODS OF INVESTIGATION						GROUNDWATER OBSERVATIONS					
Driller: Beau Fletcher		Casing: 3 ¼" ID H.S.A.		Date		Time		Depth (Ft.)		Casing At (Ft.)	
Driller: Ryan Casatelli		Casing Hammer:		12/21/23		While Drilling		None Noted		4.0	
Inspector:		Other:		12/21/23		Before Casing Removed		None Noted		4.0	
Drill Rig: CME 550X		Soil Sampler: 2" OD Split Barrel		12/21/23		After Casing Removed		None Noted		out	
Type: ATV		Hammer Wt: 140 lbs.		12/21/23		After Casing Removed		caved @ 3.0		out	
Rod Size: AWJ		Hammer Fall: 30 in.									
LOG OF BORING SAMPLES						VISUAL CLASSIFICATION OF MATERIAL					
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From To		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%	SPT "N" or RQD %		
0	1	0.0	0.3	SS/15	10-8-16	0.3	Asphalt Pavement			24	
1		0.5	2.0				FILL; Brown silt, cmf gravel, cmf sand (moist)				
2	2	2.0	4.0	SS/12	12-13-12-8		FILL; Brown silt, cmf gravel, cmf sand (moist)			25	
3											
4	3	4.0	5.5	SS/12	9-7-8		FILL; Brown/Grey silt, cmf gravel, cmf sand (moist)			15	
5											
6	4	5.5	7.0	SS/17	11-13-22		FILL; Brown/Grey silt, cmf gravel, cmf sand (moist)			35	
7											
8							Bottom of Boring @ 7.0'				
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.		IT-2									
				Page No.		1 of 1									
				Report No.		28107B-01-0224									
Project Name:		Mohawk Valley Community College Science and Technology Building, Utica, NY				Date Started		12/21/23							
Client:		Appel Osborne Landscape Architecture				Date Finished		12/21/23							
Location:		CME Exploration Location Plan - ELP-1				Surface Elev.		584.0'							
METHODS OF INVESTIGATION						GROUNDWATER OBSERVATIONS									
Driller:		Beau Fletcher		Casing:		3 ¼" ID H.S.A.		Date		Time		Depth (Ft.)		Casing At (Ft.)	
Driller:		Ryan Casatelli		Casing Hammer:				12/21/23		While Drilling		None Noted		N/A	
Inspector:				Other:				12/21/23		Before Casing Removed		None Noted		N/A	
Drill Rig:		CME 550X		Soil Sampler:		2" OD Split Barrel		12/21/23		After Casing Removed		None Noted		out	
Type:		ATV		Hammer Wt:		140 lbs.		12/21/23		After Casing Removed		caved @ 4.8		out	
Rod Size:		AWJ		Hammer Fall:		30 in.									
LOG OF BORING SAMPLES						VISUAL CLASSIFICATION OF MATERIAL									
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From To		Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine		and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%		SPT "N" or RQD %				
0	1A	0.0	1.0	SS/14	1-2-9-5	1.0	Topsoil and Organic Material (moist)				11				
1	1B	1.0	2.0				FILL; Brown silt, cmf gravel, cmf sand (moist)								
2	2	2.0	4.0	SS/20	4-5-7-10		FILL; Brown silt, cmf gravel, cmf sand (moist)				12				
3															
4	3	4.0	5.5	SS/9	6-12-15		Grey SILT, little mf GRAVEL, trace mf SAND (moist, very stiff)				27				
5	4	5.5	7.0	SS/15	9-15-19		Grey SILT, little mf GRAVEL, trace fine SAND (moist, hard)				34				
6															
7							Bottom of Boring @ 7.0'								
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

INFILTRATION TEST REPORT**Test ID: IT-1**

Project:	Mohawk Valley Community College Science and Technology Building, Utica, New York	CME Report No.:	28107B-01-0224
		Test Date:	12/28/23
Client:	Mohawk Valley Community College, c/o Appel Osborne	Test Location:	See Exploration Location Plan, ELP-1
		Technician:	Daniel MacDougall

Test Preparation and Dimensions

Casing Installed in: ☐ Test Pit ☒ Borehole

Casing Diameter and Type: 4 inch I.D. PVC

A Existing Grade Elevation (ft): 578.2 ±

B Casing Stickup Length Above Grade (ft): 0.00

C Top of Casing Elevation (ft): (A+B)= 578.2 ±

D Depth to Bottom of Test Hole, Below Top of Casing (ft): 5.00

E Bottom of Test Hole Elevation: (C-D)= 573.2 ±

Burmister Classification of Soil at Bottom of Hole: FILL; Brown/Grey silt, cmf gravel, cmf sand

Thickness/Type of Scour/Sediment Protection Layer Installed: 3" of Pea Gravel

Date and Time Pre-Soaked: 12/27/23 Time: 10:00

Depth to Water Level, Below Top of Casing

Just After Pre-Soak Filling (ft): 2.80

Just Prior to First Test Filling (ft): 4.00 Date: 12/28/2023 Time: 10:30

Test Observations

Run 1			Run 2			Run 3			Run 4		
Real Time (hh:mm)	Elapsed Time (h:mm)	Depth to Water Level, Below Top of Casing (feet)	Real Time (hh:mm)	Elapsed Time (h:mm)	Depth to Water Level, Below Top of Casing (feet)	Real Time (hh:mm)	Elapsed Time (h:mm)	Depth to Water Level, Below Top of Casing (feet)	Real Time (hh:mm)	Elapsed Time (h:mm)	Depth to Water Level, Below Top of Casing (feet)
10:31	0:00	2.70	11:35	0:00	2.70		0:00			0:00	
10:32	0:01	2.70	11:36	0:01	2.70		0:01			0:01	
10:33	0:02	2.70	11:37	0:02	2.70		0:02			0:02	
10:34	0:03	2.70	11:38	0:03	2.70		0:03			0:03	
10:36	0:05	2.70	11:40	0:05	2.70		0:05			0:05	
10:41	0:10	2.70	11:45	0:10	2.70		0:10			0:10	
10:46	0:15	2.70	11:50	0:15	2.70		0:15			0:15	
11:01	0:30	2.70	12:05	0:30	2.70		0:30			0:30	
11:16	0:45	2.70	12:20	0:45	2.70		0:45			0:45	
11:31	1:00	2.70	12:35	1:00	2.70		1:00			1:00	

Test Results

Run:	Run 1	Run 2	Run 3	Run 4
Infiltration Rate (feet/hour):	0.00	0.00		
Infiltration Rate (inches/hour):	0.00	0.00		

Final Infiltration Rate (inches/hour): 0.00 ☐ Based on average of all four runs
☒ Based on result of last run

Note(s)

1. Test performed in general conformance with NYS Stormwater Management Design Manual, Appendix D: Infiltration Testing Requirements.
2. IT-1 test pipe installed adjacent to Test Boring IT-1.
3. Test pipe bailed dry and recharged prior to the start of second test.

INFILTRATION TEST REPORT



Test ID: IT-2

Project:	Mohawk Valley Community College Science and Technology Building, Utica, New York	CME Report No.:	28107B-01-0224
		Test Date:	12/28/23
Client:	Mohawk Valley Community College, c/o Appel Osborne	Test Location:	See Exploration Location Plan, ELP-1
		Technician:	Daniel MacDougall

Test Preparation and Dimensions

Casing Installed in: ☐ Test Pit ☒ Borehole

Casing Diameter and Type: 4 inch I.D. PVC

A Existing Grade Elevation (ft): 584.0 ±

B Casing Stickup Length Above Grade (ft): 0.80

C Top of Casing Elevation (ft): (A+B)= 584.8 ±

D Depth to Bottom of Test Hole, Below Top of Casing (ft): 5.80

E Bottom of Test Hole Elevation: (C-D)= 579.0 ±

Burmister Classification of Soil at Bottom of Hole: Grey SILT, little mf GRAVEL, trace mf SAND

Thickness/Type of Scour/Sediment Protection Layer Installed: 3" of Pea Gravel

Date and Time Pre-Soaked: 12/27/23 Time: 10:15

Depth to Water Level, Below Top of Casing

Just After Pre-Soak Filling (ft): 3.50

Just Prior to First Test Filling (ft): 4.60 Date: 12/28/2023 Time: 11:48

Test Observations

Run 1			Run 2			Run 3			Run 4		
Real Time (hh:mm)	Elapsed Time (h:mm)	Depth to Water Level, Below Top of Casing (feet)	Real Time (hh:mm)	Elapsed Time (h:mm)	Depth to Water Level, Below Top of Casing (feet)	Real Time (hh:mm)	Elapsed Time (h:mm)	Depth to Water Level, Below Top of Casing (feet)	Real Time (hh:mm)	Elapsed Time (h:mm)	Depth to Water Level, Below Top of Casing (feet)
11:51	0:00	3.50	12:55	0:00	3.50		0:00			0:00	
11:52	0:01	3.50	12:56	0:01	3.50		0:01			0:01	
11:53	0:02	3.50	12:57	0:02	3.50		0:02			0:02	
11:54	0:03	3.50	12:58	0:03	3.50		0:03			0:03	
11:56	0:05	3.50	13:00	0:05	3.50		0:05			0:05	
12:01	0:10	3.50	13:05	0:10	3.50		0:10			0:10	
12:06	0:15	3.50	13:10	0:15	3.50		0:15			0:15	
12:21	0:30	3.50	13:25	0:30	3.50		0:30			0:30	
12:36	0:45	3.50	13:40	0:45	3.50		0:45			0:45	
12:51	1:00	3.50	13:55	1:00	3.50		1:00			1:00	

Test Results

Run:	Run 1	Run 2	Run 3	Run 4
Infiltration Rate (feet/hour):	0.00	0.00		
Infiltration Rate (inches/hour):	0.00	0.00		

Final Infiltration Rate (inches/hour): 0.00

☐ Based on average of all four runs

☒ Based on result of last run

Note(s)

- Test performed in general conformance with NYS Stormwater Management Design Manual, Appendix D: Infiltration Testing Requirements.
- IT-2 test pipe installed adjacent to Test Boring IT-2.
- Test pipe bailed dry and recharged prior to the start of second test.

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST PIT LOG		Test Pit ID Page No. Report No.	TP-1 1 of 1 28107B-01-0124	
Project Name:		Mohawk Valley Community College Science & Techology Building		Date Started	01/25/24	
Client:		Appel Osborne Landscape Architecture		Date Finished	01/25/24	
Location:		See Exploration Location Plan, ELP-1		Surface Elev.	Approx. 579'	
METHOD OF INVESTIGATION			GROUNDWATER OBSERVATIONS			
Operator: Terry Gardener			Date	Time	Depth (Ft.)	Comment
Inspector: Kyle Shepherd, EIT/Chen Liu, Ph.D., EIT			1/25/2024	9:24	Remark 3	Seeping water at fabric location
Equipment: Link Belt Model LNK27						
Type: Toothed Bucket						
Bucket Width: 24" Wide						
VISUAL CLASSIFICATION OF MATERIAL						
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From To		Depth of Change (Ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%
0				0.4	Asphalt Pavement	
1				1.2	Subbase Course: Grey cmf GRAVEL and cmf SAND, little SILT (moist, easy digging)	
2					Fabric identified at the bottom	
3					Possible FILL; Brown/Orange SILT, some CLAY, little cmf SAND, little cmf GRAVEL (moist, easy digging)	
4						
5						
6				6	Grey SILT, some CLAY, little cmf SAND, little cmf GRAVEL, trace COBBLES (moist, easy to moderate digging)	
7						
8					Bottom of Test Pit @ 8'	
9						
10						
11						
12						
13						
14						
15						
16						
Remarks: 1. See attached Test Pit Photographs . 2. All test pits were excavated and backfilled by a subcontractor to CME utilizing a Link Belt Model LNK 27 excavator, equipped with a 24" wide bucket with teeth. 3. No standing water noted in the hole during the short exploration period; however, seepage water noted to enter the hole from about 1 foot below grade.						

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST PIT LOG		Test Pit ID TP-2	Page No. 1 of 1
Report No. 28107B-01-0124		Date Started 01/25/24		Date Finished 01/25/24	
Project Name: Mohawk Valley Community College Science & Techology Building		Client: Appel Osborne Landscape Architecture		Location: See Exploration Location Plan, ELP-1	
Surface Elev. Approx. 577.5'					
METHOD OF INVESTIGATION			GROUNDWATER OBSERVATIONS		
Operator: Terry Gardener			Date 1/25/2024	Time 10:45	Depth (Ft.) Remark 3
Inspector: Kyle Shepherd, EIT/Chen Liu, Ph.D., EIT			Comment Seeping water from below pavement		
Equipment: Link Belt Model LNK27					
Type: Toothed Bucket					
Bucket Width: 24" Wide					
VISUAL CLASSIFICATION OF MATERIAL					
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From To		Depth of Change (Ft.)	c - coarse m - medium f - fine and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%
0				0.4	Asphalt Pavement
1				1.2	Subbase Course: Grey cmf GRAVEL and cmf SAND, little SILT (moist, easy digging) <i>Fabric identified at the bottom</i>
2					Possible FILL; Brown SAND and SILT, little SHALE fragments (wet, easy digging)
3				3.5	
4					Possible FILL; Brown/Orange SILT, little CLAY, little COBBLES, little cmf GRAVEL (moist, moderate digging)
5					
6				6	
7					Dark SILT, some CLAY, little ROOTS/ORGANICS (moist, moderate digging)
8				8	
9					Brown/Dark/Green cmf GRAVEL, some SILT, little COBBLES, little cmf SAND, trace CLAY (wet, hard digging)
10					Bottom of Test Pit @ 10'
11					
12					
13					
14					
15					
16					
Remarks: 1. See attached <i>Test Pit Photographs</i> . 2. All test pits were excavated and backfilled by a subcontractor to CME utilizing a Link Belt Model LNK 27 excavator, equipped with a 24" wide bucket with teeth. 3. No standing water noted in the hole during the short exploration period; however, seepage water noted to enter the hole from about 1 foot below grade.					

		6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST PIT LOG			Test Pit ID TP-3	Page No. 1 of 1
							Report No. 28107B-01-0124	
Project Name:		Mohawk Valley Community College Science & Techology Building					Date Started	01/25/24
Client:		Appel Osborne Landscape Architecture					Date Finished	01/25/24
Location:		See Exploration Location Plan, ELP-1					Surface Elev.	Approx. 576'
METHOD OF INVESTIGATION				GROUNDWATER OBSERVATIONS				
Operator:		Terry Gardener		Date	Time	Depth (Ft.)	Comment	
Inspector:		Kyle Shepherd, EIT & Chen Liu, Ph.D., EIT		1/25/2024	13:10	N/A	None observed	
Equipment:		Link Belt Model LNK27						
Type:		Toothed Bucket						
Bucket Width:		24" Wide						
VISUAL CLASSIFICATION OF MATERIAL								
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From To		Depth of Change (Ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%		
0				0.3	Asphalt Pavement			
1					FILL; Grey/Brown cmf SAND, some SILT, some cmf GRAVEL (moist, easy digging)			
2				2				
2				2.5	FILL; Grey/Red/Green SILT, little CLAY, little cmf SAND (moist, moderate digging)			
3					FILL; Brown cmf SAND and cmf GRAVEL, some COBBLES, trace ORGANIC/ROOTS (moist, moderate digging)			
4				4				
4					Grey cmf SAND and cmf GRAVEL, some COBBLES, little SILT, trace CLAY, trace SHALE fragments (moist, hard digging)			
5								
6								
7								
8								
9				9				
10					Grey SILT and cmf GRAVEL, some cmf SAND, little SHALE fragments (moist, hard digging)			
11					Bottom of Test Pit @ 11'			
12								
13								
14								
15								
16								
Remarks: 1. See attached <i>Test Pit Photographs</i> . 2. All test pits were excavated and backfilled by a subcontractor to CME utilizing a Link Belt Model LNK 27 excavator, equipped with a 24" wide bucket with teeth.								



Photograph 1: Test Pit TP-1



Photograph 2: Test Pit TP-1



Photograph 3: Test Pit TP-2



Photograph 4: Test Pit TP-2



Photograph 5: Test Pit TP-3



Photograph 6: Test Pit TP-3

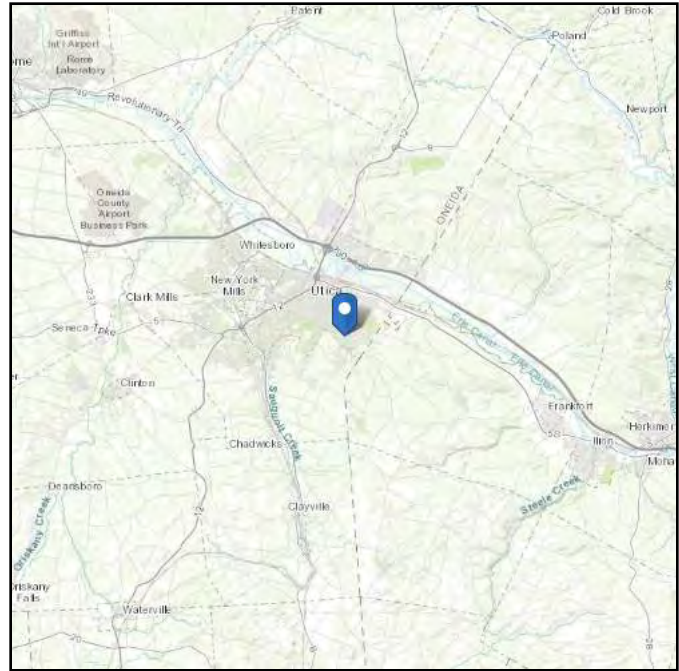
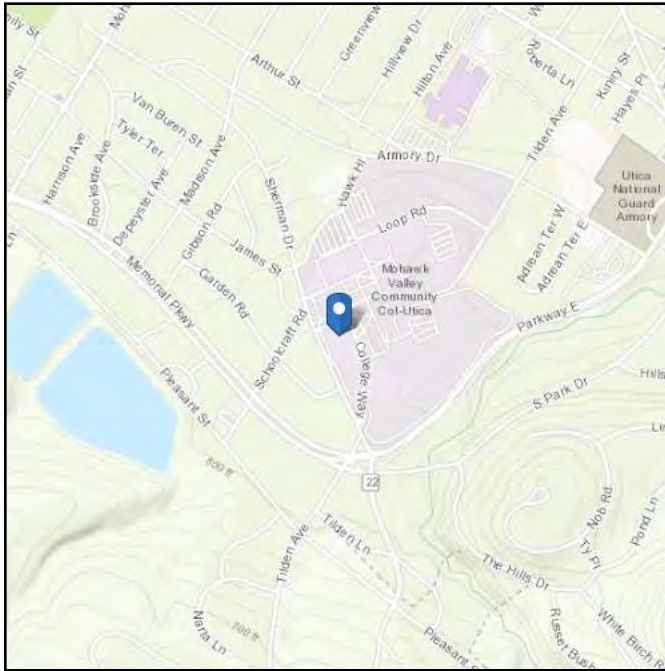


ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: III
Soil Class: C - Very Dense
Soil and Soft Rock

Latitude: 43.075778
Longitude: -75.219036
Elevation: 579.6619410524623 feet



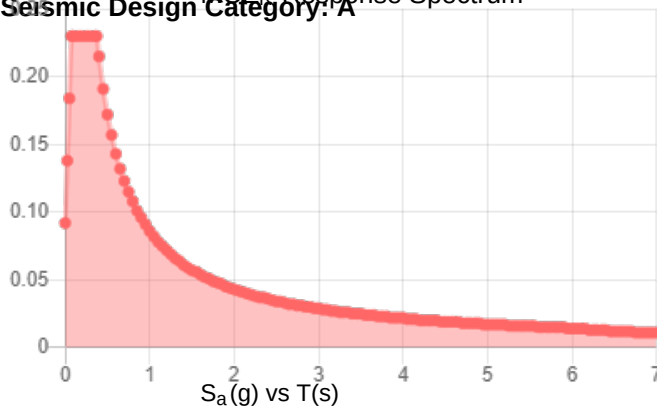


Site Soil Class: C - Very Dense Soil and Soft Rock

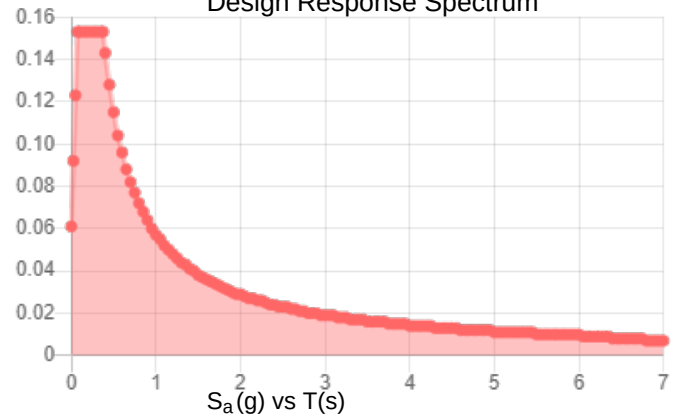
Results:

S_S :	0.177	S_{D1} :	0.057
S_1 :	0.057	T_L :	6
F_a :	1.3	PGA :	0.093
F_v :	1.5	PGA _M :	0.12
S_{MS} :	0.23	F_{PGA} :	1.3
S_{M1} :	0.086	I_e :	1.25
S_{DS} :	0.153	C_v :	0.7

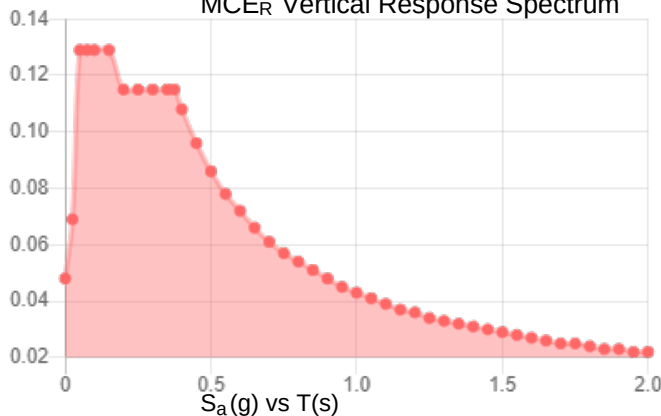
Seismic Design Category: A MCE_R Response Spectrum



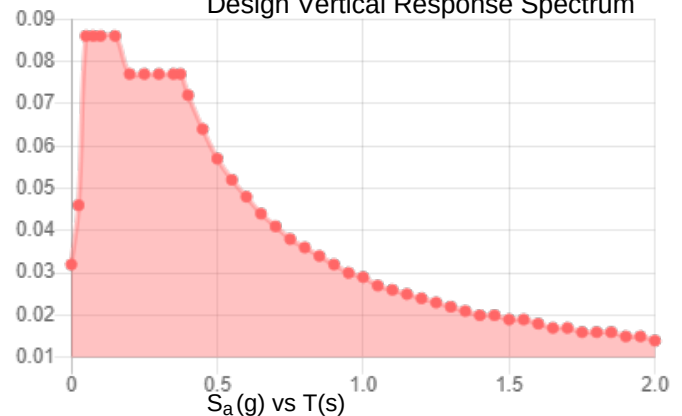
Design Response Spectrum



MCE_R Vertical Response Spectrum



Design Vertical Response Spectrum



Data Accessed: Fri Jan 05 2024

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.



The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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GENERAL INFORMATION & KEY TO TEST BORING LOGS

The **Subsurface Exploration – Test Boring Logs** produced by **CME Associates, Inc.** (CME) present observations and mechanical data collected by the CME Drill Crew while at the site, supplemented, at times, by classification of the materials removed from the borings determined through visual identification by technicians in the laboratory. It is cautioned that the materials removed from the borings represent only a fraction of the total volume of the deposits at the site and may not necessarily be representative of the subsurface conditions between adjacent borings or between the sampled intervals. The data presented on the Exploration Logs together with the recovered samples will provide a basis for evaluating the character of the subsurface conditions relative to the proposed construction. The evaluation must consider all the recorded details and their significance relative to each other. Often, analyses of standard boring data indicate the need for additional testing and sampling procedures to more accurately evaluate the subsurface conditions. Any evaluations of the contents of CME's report and the recovered samples must be performed by Licensed Professionals having experience in Soil Mechanics, Geological Sciences and Geotechnical Engineering. The information presented in this Key defines some of the methods, procedures and terms used on the CME Exploration Logs to describe the conditions encountered. Refer to the Log on page 4 for key number.

Key No.

Description

1. The figures in the **DEPTH SCALE** column define the vertical scale of the Boring Log.
2. The **SAMPLE NO.** is used for identification on the sample containers and in the Laboratory Test Report or Summary.
3. The **SAMPLE DEPTH** column gives the depth range from which a sample was recovered.
4. The **TYPE / SAMPLE RECOVERY** column is used to signify the various types of samples. "SS is Split Spoon, "U" is Undisturbed Tube, and "C" is Rock Core. For soil and rock samples, the recovered length of the sample is recorded in inches.
5. **BLOWS ON SAMPLER** – This column shows the results of the "Standard Penetration Test (SPT) ASTM D1586", recording the number of blows required to drive a 2-inch outside diameter (O.D.) split spoon sampler into the ground beneath the casing. The number of blows required for each six inches of penetration is recorded. The total number of blows required for the 6-inch to 18-inch interval is summarized in the **SPT "N"** column and represents the "Standard Penetration Number". The outside diameter of the sampler, the hammer weight and the length of drop are noted in the **Methods of Investigation** portion of the log. A "WH" or "WR" in this column indicates that the sample spoon advanced a 6-inch interval under the Weight of Hammer + Rod or Weight of Rod, respectively. If a rock core sample is taken, the core bit size designation is given here.
6. The **DEPTH OF CHANGE** column designates the depth (in feet) that the driller noted a compactness or stratum change. In soft materials or soil strata exhibiting a consistent relative density, it is difficult for the driller to determine the exact change from one stratum to the next. In addition, a grading or gradual change may exist. In such cases the depth noted is approximate or estimated only and may be represented by a dashed line. When continuous split spoon sampling is not employed, or an interval of several feet exists between samplings, the Depth of Change may not be indicated at all.
7. **VISUAL CLASSIFICATION OF MATERIAL** – Soil materials sampled and recovered are described by the Driller or Geotechnical Representative on the original field log. Notes of the Drillers observations are also placed in this column. Recovered samples may also be visually classified by a Geologist, Engineer, or Soil Technician. Visual soil classifications are made using a modified Burmister System as practiced by CME and as generally described in this Key and abbreviated on the Test Boring Log. This modified Burmister System is a type of visual-manual textural classification estimated by the Driller, Geologist, Engineer, or Technician on the basis of weight-fraction of the recovered material and estimated plasticity, among other characteristics. See Table 1 "**Classification of Materials**". The description of the relative compactness or consistency is based upon the standard penetration number as defined in Table 2. The description of the recovered sample moisture condition is described as dry, moist, wet, or saturated. Water used to advance the boring may affect the moisture content of the recovered sample. Special terms may be used to describe recovered materials in greater detail, such terms are listed in ASTM D653. When sampling gravelly soils with a standard two-inch O.D. Split Spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter. The presence of boulders, cobbles, and large gravel is sometimes, but not necessarily, detected by observation of the casing advancement and sampler blows and/or through the "action" of the drill rig, sampler and/or casing as reported by the Driller.

The description of **Rock** is based upon the recovered rock core. Terms frequently used in the description are included in Tables 3, 4 and 5. The length of core run is defined as length of penetration between retrievals of the core barrel from the bore hole, expressed in inches. The core recovery expresses the length of core recovered from the core barrel per core run, in percent. The size core barrel used is noted in Column 5. An "N" size core, being larger in diameter than "A" size core, often produces better recovery, and is frequently utilized where accurate information regarding the geologic conditions and engineering properties is needed. An estimate of in-situ rock quality is provided by a modified core recovery ratio known as the "**Rock Quality Designation**" (RQD). This ratio is determined by considering only pieces of core that are at least 4 inches long and are hard and sound. Breaks obviously caused by drilling are ignored. The percentage ratio between the total length of such core recovered and the length of core drilled on a given run is the RQD. Table 4 indicates in-situ rock quality as related to the RQD.



8. The SPT "N" or RQD is given in this column as applicable to the specific sample taken. In Very Compact coarse-grained soils and in Hard fine-grained soils the N-value may be indicated as 50+ or 100+. This typically means that the blow count was achieved prior to driving the sampler the entire 6-inch interval or the sampler refused further penetration. For an "N" size rock core, the RQD is reported here, expressed in percent (%).
9. **GROUNDWATER OBSERVATIONS** and timing noted by the Drill Crew are shown in this section. It is important to realize that the reliability of the water level observations depend upon the soil type (e.g. water does not readily stabilize in a hole through fine grained soils), and that drill water used to advance the boring may have influenced the observations. Groundwater levels typically fluctuate seasonally so those noted on the log are only representative of that exhibited during the period of time noted on the log. One or more perched or trapped water levels may exist in the ground seasonally. All the available resources and data should be evaluated. If definite conclusions cannot be made, it is often prudent to examine the conditions more thoroughly through test pit excavations or through groundwater observation well installations.
10. **METHODS of INVESTIGATION** provides pertinent information regarding the identity of the Drill Crew members, inspector (if any), drill rig make and model, drill rig mount vehicle, casing and type of advancement, soil and rock sampling tools and appurtenances used in the installation of the Test Boring.

TABLE 1 - CLASSIFICATION OF MATERIALS	
GROUP	COARSE GRAINED SOILS TEXTURAL SIZES
BOULDERS	larger than 12" diameter
COBBLES	12" diameter to 3" sieve
GRAVEL	3" - coarse - 1" - medium - 1/2" - fine - #4 sieve
SAND	#4 - coarse - #10 - medium - #40 - fine - #200 sieve
GROUP	FINE GRAINED SOILS SIZE (PLASTICITY*)
SILT	#200 sieve (0.074mm) to 0.005mm size (see below *)
CLAY	0.005mm size to 0.001 mm size (see below *)
GROUP	ORGANIC SOILS, PEAT, MUCK, MARL
ORGANIC	Based on smell, visual-manual and laboratory testing

ABBREVIATIONS	TERM	ESTIMATED PERCENT OF TOTAL SAMPLE BY WEIGHT
f - fine	and	35 to 50%
m - medium	some	20 to 35%
c - coarse	little	10 to 20%
	trace	0 to 10%

*PLASTICITY DESCRIPTIONS and INDICATOR FIELD TESTS			
TERM	PLASTICITY INDEX	DRY STRENGTH TEST	
		INDICATION	FIELD TEST RESULT
non-plastic	0 - 3	Very low	falls apart easily
slightly plastic	4 - 15	Slight	easily crushed by fingers
plastic	15 - 30	Medium	difficult to crush
highly plastic	31 or more	High	impossible to crush with fingers
Other Field Tests include: Dilatancy, Thread and Shine Testing			

**TABLE 2 - DESCRIPTION OF SOIL COMPACTNESS OR CONSISTENCY based on SPT "N"**

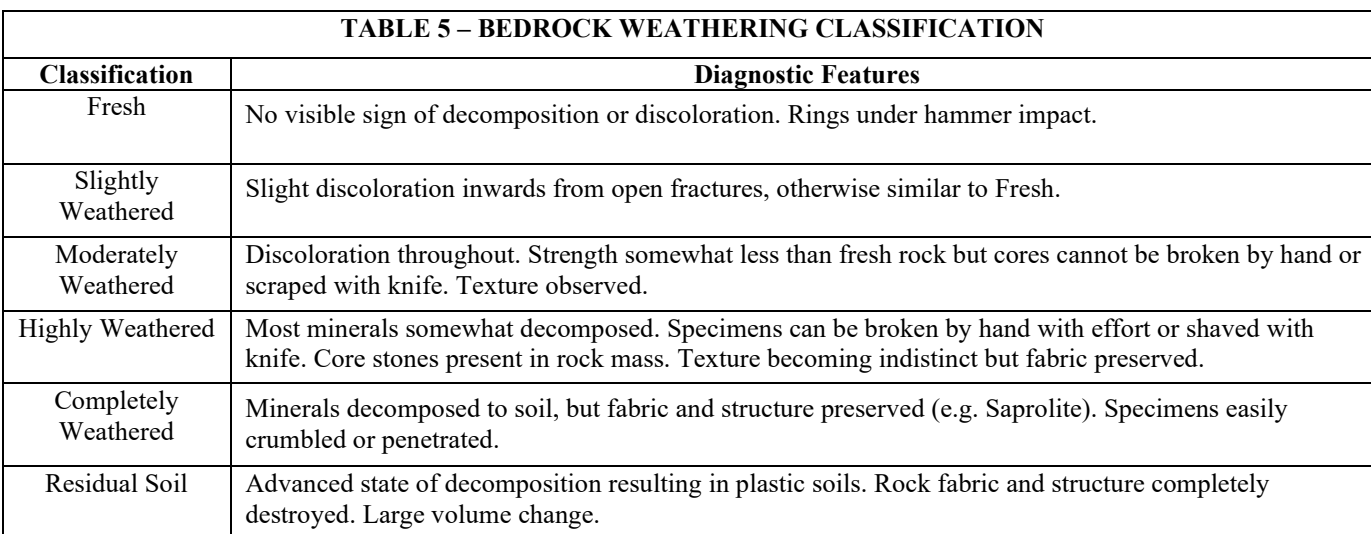
Primary Soil Type	Descriptive Term of Compactness	Range of Standard Penetration Resistance (N)
COARSE GRAINED SOILS	Very Loose	less than 4 blows per foot
(More than half of Material is larger than No. 200 sieve size)	Loose	4 to 10
	Medium Compact	10 to 30
	Compact	30 to 50
	Very Compact	Greater than 50
FINE GRAINED SOILS	Descriptive Term of Consistency	Range of Standard Penetration Resistance (N)
(More than half of material is smaller than No. 200 sieve size)	Very Soft	less than 2 blows per foot
	Soft	2 to 4
	Medium Stiff	4 to 8
	Stiff	8 to 15
	Very Stiff	15 to 30
	Hard	Greater than 30
*The number of blows of 140-pound weight falling 30 inches to drive a 2-inch O.D., 1-3/8 inch I.D. sampler 12 inches is defined as the Standard Penetration Resistance, designated "N".		

TABLE 3 - ROCK CLASSIFICATION TERMS

Rock Classification Terms		Field Test or Meaning of Term
Hardness	Soft	Scratched by fingernail. Crumbles under firm blows with a geologic pick.
	Medium Soft	Shallow indentations (1 to 3 mm) can be made by firm blows of a geologic pick. Can be peeled with a pocketknife with difficulty.
	Medium Hard	Scratched distinctly by penknife or steel nail. Can't be peeled or scraped with knife.
	Hard	Scratched with difficulty by penknife or steel nail. Requires more than one blow with a geologic hammer to break it
	Very Hard	Cannot be scratched by penknife or steel nail. Breaks only by repeated heavy blows with a geologic hammer.
Bedding (Divisional planes and/or surfaces separating it from layers above and below)	Thinly Laminated Laminated Thinly Bedded Medium Bedded Thickly Bedded Massive	less than 1/8 th inch 1/8 th to 1 inch 1 inch to 4 inches 4 inches to 12 inches 12 inches to 48 inches greater than 48 inches

TABLE 4
Relation of Rock Quality Designation (RQD) and in-situ Rock Quality

RQD %	Rock Quality Term Used
90 to 100	Excellent
75 to 90	Good
50 to 75	Fair
25 to 50	Poor
0 to 25	Very Poor



 CME Associates, Inc.	6035 Corporate Drive. East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST BORING LOG		Boring No.		B-2		
					Page No.		1 of 1		
					Report No.				
Project Name:								Date Started	
Client:								Date Finished	
Location:								Surface Elev.	
METHODS OF INVESTIGATION						GROUNDWATER OBSERVATIONS			
Driller:		10		Casing:		10		Date	
Driller:				Casing Hammer:				Time	
Inspector:				Other:				Depth (Ft.)	
Drill Rig				Soil Sampler:				Casing At (Ft.)	
Type:				Hammer Wt:					
Rod Size:				Hammer Fall:					
LOG OF BORING SAMPLES					VISUAL CLASSIFICATION OF MATERIAL				
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.)		Type/ Sample Rec. (m)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%	SPT "N" or RQD %
		From	To						
1	2	3	3	4	5	6		7	8

Remarks:



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East Syracuse, New York 13057
(315) 701-0522
(315) 701-0526 (Fax)

www.cmeassociates.com

Transmittal

August 05, 2024

Appel Osborne Landscape Architecture (Client)
102 West Division Street, Suite 100
Syracuse, New York 13204
Phone: 315.476.1022

Attn: Vincent P. Pietrzak, RLA, ASLA, Partner
vpietrzak@appelosborne.com

Re: Mohawk Valley Community College Science and Technology Building
Utica, New York
CME Project No.: 28107-05

Gentlepeople:

Attached you will find....

<u>Number of Copies</u>	<u>Report Number</u>	<u>Description</u>
1	28107B-02-0824	Subsurface Exploration and Foundation Recommendation Report – Addendum 1

The above report was emailed to Vincent P. Pietrzak at vpietrzak@appelosborne.com and Matthew E. Lacy at mlacey@marchassoc.com on 08/05/2024.

Respectfully submitted,
CME Associates, Inc.

A handwritten signature in black ink that reads "Kyle Shepherd".

Kyle Shepherd, E.I.T.
Staff Geotechnical Engineer

Subsurface Exploration and Foundation Recommendation Report Addendum 1

Mohawk Valley Community College Science and Technology Building Utica, New York

Prepared For: (Client)

Appel Osborne Landscape Architecture

Attn: Vincent P. Pietrzak, RLA, ASLA, Partner
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Syracuse, New York 13204
Phone: 315.476.1022
Email: vpietrzak@appelosborne.com

Prepared by: (Geotechnical Engineer)

CME Associates, Inc.

Attn: Kyle Shepherd, E.I.T. and
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East Syracuse, New York 13057
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an@cmeassociates.com

**CME Report No.: 28107B-02-0824
August 05, 2024**

Table of Contents
Report No. 28107B-02-0824

	Page
1.0 INTRODUCTION.....	1
2.0 TEST PIT EXPLORATION.....	1
2.1 Subsurface Conditions.....	1
2.1.1 Subsurface Profile.....	2
2.1.2 Groundwater Observations.....	3
3.0 GROUND IMPROVEMENT	3
4.0 STANDARD OF CARE AND WARRANTY	3
5.0 CLOSING	4

Attachment Listing:

CME Exploration Location Plan, ELP-2 (1 of 1)
GPS Coordinates and Elevation Table (1 of 1)
Site Grading Plan (1 of 1)
Test Pit Logs (3 of 3)
Test Pit Photographs (3 of 3)

Subsurface Exploration and Foundation Recommendation Report – Addendum 1 Mohawk Valley Community College Science and Technology Building Utica, New York

1.0 INTRODUCTION

CME Associates, Inc. (CME) conducted a limited subsurface exploration in December 2023 and issued a Subsurface Exploration and Foundation Recommendation Report (CME Report Number: 28107B-01-0224, dated 02/23/2024). Said report provides recommendations for a conventional shallow footing foundation and slab-on-grade system with ground improvement. Based on the limited subsurface information available, a ground improvement system consisting of aggregate piers and load transfer platform was recommended for the entire footprint of the proposed building (head building + shed building), for the support of footing foundations and the slab-on-grade.

CME recommended additional explorations consisting of Test Pits within the head building footprint, to further investigate the Existing Fill and Buried Organic Layer. The purpose of this additional exploration is to investigate if the recommended aggregate pier ground improvement within the head building could be relaxed for cost savings.

CME issued a Change Order (CME Change Order No. 2, dated 08/01/2024) for this Test Pit exploration, which was authorized by Client. The Test Pits were excavated and backfilled on 07/30/2024 by others. This report presents the findings of the Test Pit exploration and CME's recommendations relative to ground improvement within the head building footprint.

2.0 TEST PIT EXPLORATION

Three Test Pits, labeled TP-4 to TP-6, were excavated on 07/30/2024. The Test Pits were excavated using a CAT 305E2 CR excavator, equipped with either a 24-inch-wide bucket with teeth, a 39-inch-wide bucket with a blade, or a 13.5-inch-wide bucket with a blade. Buckets were swapped depending on digging conditions. The undersigned Engineer was on-site to observe the Test Pit excavation, to take photographs and to prepare Test Pit Logs. The *Test Pit Logs* and *Test Pit Photographs* are attached.

The exploration locations were selected and marked in the field by CME. Prior to advancing the Test Pits, Public and Private utilities at the exploration locations were cleared by others.

The attached *CME Exploration Location Plan*, labeled ELP-2, depicts the approximate locations of Test Pits excavated. GPS coordinates and elevation at grade at the exploration locations were surveyed by CME using hand-held GPS survey equipment. Please refer to the attached *GPS Coordinates and Elevation Table* for details of the survey and results.

2.1 Subsurface Conditions

The subsurface conditions presented herein have been generalized for simplicity and brevity by CME from the actual data obtained from the Subsurface Exploration conducted at the subject project site. It is possible for the subsurface conditions between sampling intervals and between exploration locations to vary from that inferred and/or given in this section or on the Exploration Logs. Please refer to the attached *Test Pit Logs* for actual conditions encountered.

2.1.1 Subsurface Profile

The explorations identified Topsoil at grade. Below surfacings, the explorations identified a subsurface profile consisting of Sandy Fill, underlain by a gravel subbase course, underlain by a Silty Sand Fill, underlain by Cobble and Gravel, underlain by a Buried Organic Layer, underlain by Silt. A brief description of each stratum is given below, in the approximate order of encounter.

Surfacings: All Test Pits identified about 6 inches of Topsoil and Organic Material at grade.

Sandy Fill: Test Pit TP-4 and Test Pit TP-6 identified about 1 foot of Sandy Fill underlying surfacings. The Sandy Fill contained Sand with a lesser and variable mixture of Gravel and Silt.

Gravel Subbase Course: All Test Pits identified a Gravel Subbase Course underlying Sandy Fill or underlying Surfacing. The Gravel Subbase Course contained Gravel with a lesser amount of Sand. This stratum extended to 2.5 feet in Test Pit TP-4, 1.5 feet in Test Pit TP-5, and 2 feet in Test Pit TP-6.

Silty Sand Fill: All Test Pits identified a Silty Sand Fill stratum under the Gravel Subbase Course. The Silty Sand Fill contained Sand and Silt with a lesser and variable amount of Clay, Gravel and Cobbles. This stratum extended to 5 feet in Test Pit TP-4, 3.5 feet in Test Pit TP-5, and 7 feet in Test Pit TP-6. Please note, in Test Pit 4 this stratum contained trace organic inclusions, and trace roots were observed in Test Pit TP-6.

The Silty Sand Fill is judged to have been placed in a random, unprepared manner (i.e., not placed in controlled, compacted lifts). The Silty Sand Fill meets the Building Code¹ definition of Unprepared Fill, which is assigned a zero bearing capacity.

Cobble and Gravel: Test Pit TP-5 identified a Cobble and Boulder stratum underlying Silty Sand Fill. The Cobble and Gravel stratum consists predominantly of Cobbles and Gravel, with lesser and variable Sand, Boulders, and Silt. This stratum extended to termination depth at Test Pit TP-5, 5 feet below grade. Difficult digging was noted in this stratum.

Buried Organic Layer: Test Pit TP-6 identified a Buried Organic layer under Silty Sand Fill. This Buried Organic layer consists predominately of Organic-rich Silt soils mixed with Peat and woody Organic Material. This stratum was penetrated to about 9 feet below grade.

The Organic-rich Silt soils in this stratum contain significant woody and fibrous organic material in various stages of decomposition. This stratum is moderately compressible under new loads imposed, as it is susceptible to compression, consolidation, and creep over time. Further, the organic matter in this stratum will likely decay over time, causing volume loss, and thus, causing settlements of structures constructed above. The Organic-rich Silt soils are not reliable bearing materials for slabs, foundations, pavements, etc.

Silt: Test Pit TP-4 and Test Pit TP-6 identified a Silt stratum underlying Silty Sand Fill or underlying Buried Organic Layer. The Silt stratum contained Silt with a lesser and variable mixture of Sand, Gravel, and Clay. This stratum extended to termination depth at Test Pit TP-4 and at Test Pit TP-6, 6 feet and 9.5 feet respectively. Moderate to Difficult digging was noted in this stratum.

¹ Building Code = 2020 Building Code of New York State

2.1.2 Groundwater Observations

Groundwater level observations and measurements are made by the undersigned engineer when groundwater accumulates in the Test Pits. This engineer also noted the visual appearance of the moisture condition of the samples as retrieved. The condition and time of groundwater level observations are unique to each exploration and are recorded on the individual Test Pit Logs.

During this exploration, groundwater was not observed in any of the Test Pits. Seeping water from the side was noted in Test Pit TP-6 at approximately 4 feet below grade. Perched water may be present in the Gravel Subbase Course stratum during certain times of the year. Perched water occurs when more pervious soil overlies less pervious soil, and when the more pervious soil received water from surface runoff or other means.

Groundwater fluctuations at this site will occur depending on several factors, such as rainfall, seasonal changes, prevailing climate, and adjacent construction operations, among other factors.

3.0 GROUND IMPROVEMENT

Please see Site Grading Plan, labeled L-001, for approximate locations of the explorations relative to the planned improvements. The findings of the Test Pit explorations and CME's evaluation suggest that ground improvement via partial removal and replacement in lieu of aggregate piers may be considered for a small portion of the head building footprint, around the North-West corner, for the support of the slab-on-grade. All footing foundations will still need aggregate piers as recommended in CME Report No.: 28107B-01-0224.

This information was relayed to March Associates during a conference call on 08/01/2024. During this conference call, it was collectively agreed upon by March Associates and CME to continue with the aggregate pier system for the entire building footprint, as recommended in CME Report No.: 28107B-01-0224.

4.0 STANDARD OF CARE AND WARRANTY

CME has endeavored to conduct the services identified herein in a manner consistent with that level of care and skill ordinarily exercised by members of the geotechnical engineering profession currently practicing in the same locality and under similar conditions as this project. No warranty, either express or implied, is made or intended by CME's proposal, contract, and written and oral reports, all of which warranties are hereby expressly disclaimed. CME shall not be responsible for the acts or omissions of Client, its contractors, agents and consultants. CME has relied upon information supplied by Client, its contractors, agents and consultants, or information available from generally accepted reputable sources, without independent verification, and CME assumes no responsibility for the accuracy thereof.

5.0 CLOSING

This report is intended to satisfy a specific service scope presented in the referenced Agreement. No other representations, expressed or implied, are intended or made with respect to the information provided herein, and including but not limited to, its suitability for use by others.

Respectfully Submitted,
CME Associates, Inc.

A handwritten signature in black ink that reads "Kyle Shepherd".

Kyle Shepherd, E.I.T.
Staff Geotechnical Engineer

Reviewed By,
CME Associates, Inc.

A handwritten signature in black ink that reads "Anas N. Anasthas".

Anas N. Anasthas, P.E.
Senior Geotechnical Engineer

CME Exploration Location Plan, ELP-2

Mohawk Valley Community College Science and Technology Building
Utica, NY

Legend

- ◆ Approximate IT Location
- Approximate Test Boring Location
- Approximate Test Pit Location
- ▲ Ref-1



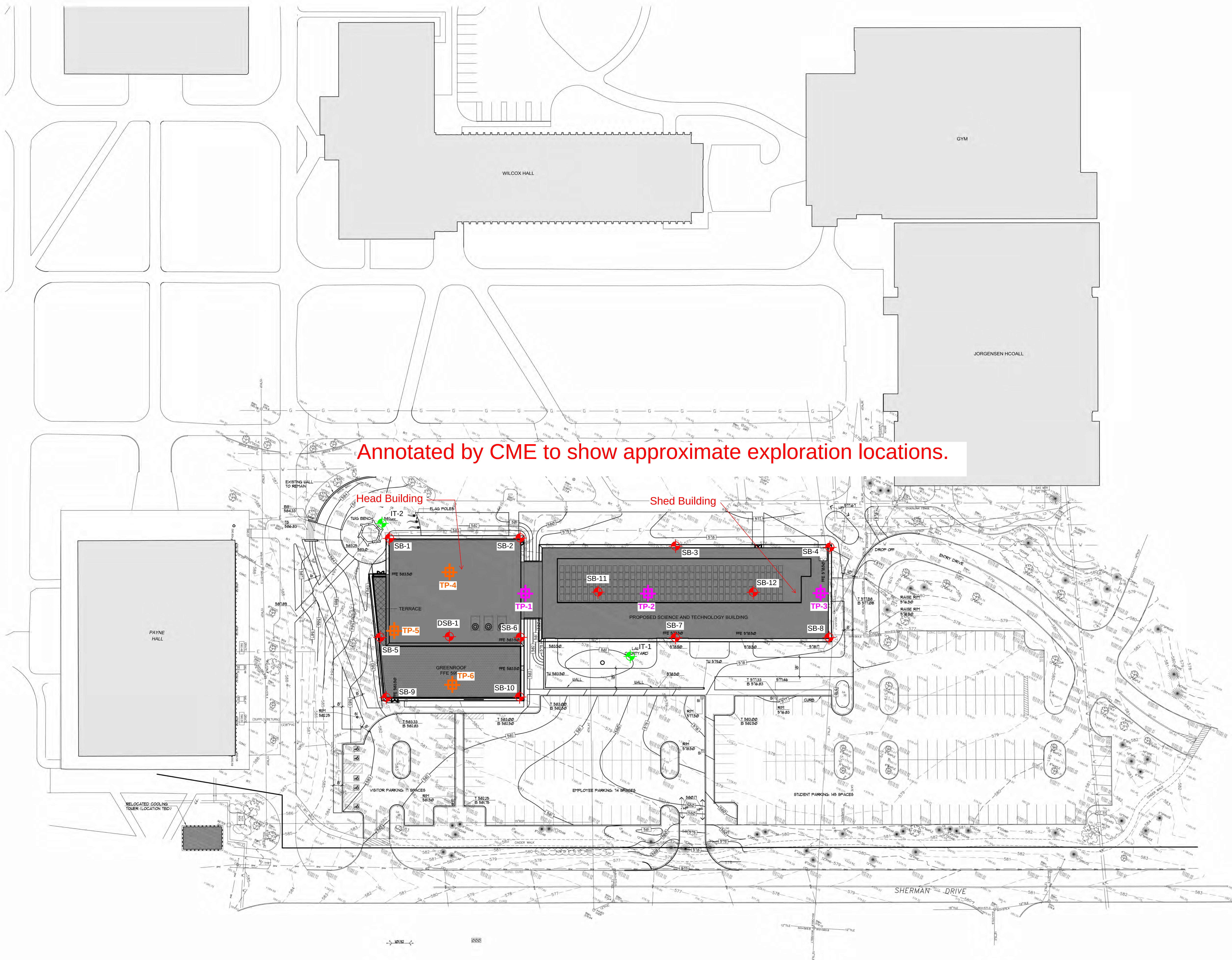
GPS Coordinates and Elevations Table**Mohawk Valley Community College Science and Technology Building****Utica, NY**

TABLE 1			
Exploration ID	Latitude	Longitude	Elevation (FT. AMSL)
TP-4	43.076041	-75.218766	581.7
TP-5	43.076119	-75.219008	582.6
TP-6	43.075929	-75.219102	580.8

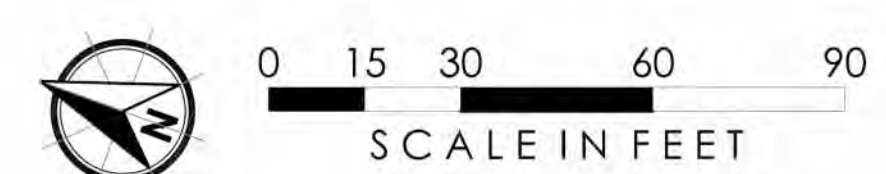
Notes:

AMSL: Above Mean Sea Level

1. GPS coordinates were obtained utilizing hand-held GPS survey equipment.
2. NYSDOT CORS positions are based on the North American Datum of 1983 - NAD83 (2011).
3. Elevations are based on the North American Vertical Datum of 1988 - NAVD 88.



MOHAWK VALLEY COMMUNITY COLLEGE - SCIENCE & TECHNOLOGY BUILDING - SITE GRADING PLAN



PARKING LOT DATA
P1 LOT
EXISTING SPACES: 461

PROPOSED:
VISITOR: 17
EMPLOYEE *74 (GATED)
STUDENT: 145
TOTAL: 236

LOSE OF 225 SPACES

	6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST PIT LOG		Test Pit ID	TP-4
					Page No.	1 of 1
					Project No.	28107
Project Name:	Mohawk Valley Community College Science and Technology Building Addition - Site 2				Date Started	07/30/24
Client:	Appel Osborne Landscape Architecture				Date Finished	07/30/24
Location:	See CME Exploration Location Plan, ELP-2				Surface Elev.	581.7'
METHOD OF INVESTIGATION				GROUNDWATER OBSERVATIONS		
Operator:	Justin Weakley			Date	Time	Depth (ft.)
Inspector:	Kyle Shepherd, E.I.T.			07/30/24	10:12	-
Equipment:	CAT 305E2 CR Excavator					
Type:	Bladed Bucket					
Bucket Width:	39" wide, 13.5" wide					
VISUAL CLASSIFICATION OF MATERIAL						
Depth Scale (Feet)	Sample No.	Sample Depth (ft.) From To		Depth of Change (ft.)	c - coarse m - medium f - fine and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%	
0				0.5	Topsoil and Organic Material (moist, easy digging)	
1				1.5	FILL; Greyish Brown cmf sand, some cmf gravel, little silt (moist, easy digging)	
2				2.5	FILL; Grey gravel, some cmf sand (moist, difficult digging)	
3				5.0	FILL; Brown silt, some cmf sand, some cmf gravel, little clay, little cobble, trace boulder, trace organic inclusions (moist, moderate digging)	
4						
5						
6					Grey SILT and cmf SAND, little cmf GRAVEL, trace CLAY (moist, moderate to difficult digging)	
7					Bottom of Test Pit @ 6 feet	
8						
9						
10						
11						
12						
13						
14						
15						
16						
Remarks: 1. See attached <i>Test Pit Photographs</i> . 2. Test Pit excavated and backfilled by others, utilizing a CAT 305E2 CR Excavator, equipped with muliple buckets. 3. Test Pit terminated after reaching stiff material. 4. 39" wide bucket used from 0 - 4 feet depth, 13.5" wide bucket used from 4 foot depth to termination.						

 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522		SUBSURFACE EXPLORATION TEST PIT LOG		Test Pit ID	TP-5
				Page No.	1 of 1
				Project No.	28107
Project Name:	Mohawk Valley Community College Science and Technology Building Addition - Site 2			Date Started	07/30/24
Client:	Appel Osborne Landscape Architecture			Date Finished	07/30/24
Location:	See CME Exploration Location Plan, ELP-2			Surface Elev.	582.6'
METHOD OF INVESTIGATION			GROUNDWATER OBSERVATIONS		
Operator:	Justin Weakley		Date	Time	Depth (ft.)
Inspector:	Kyle Shepherd, E.I.T.		07/30/24	9:25	-
Equipment:	CAT 305E2 CR Excavator				
Type:	Bladed Bucket				
Bucket Width:	39" wide, 13.5" wide				
VISUAL CLASSIFICATION OF MATERIAL					
Depth Scale (Feet)	Sample No.	Sample Depth (ft.) From To		Depth of Change (ft.)	c - coarse m - medium f - fine and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%
0				0.5	Topsoil and Organic Material (moist, easy digging)
1					FILL; Grey gravel, some cmf sand (moist, difficult digging)
2				1.5	
3					Possible Fill; Brown/Yellow cmf sand, some silt, some gravel, little cobble, trace clay (moist, moderate digging)
4				3.5	Grey COBBLE, some GRAVEL, some cmf SAND, little BOULDER, little SILT, trace CLAY (moist, difficult digging)
5					
6					Bottom of Test Pit @ 5 feet
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
Remarks: 1. See attached <i>Test Pit Photographs</i> . 2. Test Pit excavated and backfilled by others, utilizing a CAT 305E2 CR Excavator, equipped with muliple buckets. 3. Test Pit terminated after difficulty digging through COBBLE/BOULDER. 4. 39" wide bucket used from 0 - 4 feet depth, 13.5" wide bucket used from 4 foot depth to termination.					



6035 Corporate Drive
East Syracuse, NY 13057
Phone: 315-701-0522

SUBSURFACE EXPLORATION TEST PIT LOG

Test Pit ID**TP-6****Page No.**

1 of 1

Project No.

28107

Project Name: Mohawk Valley Community College Science and Technology Building Addition - Site 2**Date Started** 07/30/24**Client:** Appel Osborne Landscape Architecture**Date Finished** 07/30/24**Location:** See CME Exploration Location Plan, ELP-2**Surface Elev.** 580.8'**METHOD OF INVESTIGATION****GROUNDWATER OBSERVATIONS****Operator:** Justin Weakley**Date****Time****Depth (ft.)****Comment****Inspector:** Kyle Shepherd, E.I.T.

07/30/24

8:15

4

Water seeping from side walls

Equipment: CAT 305E2 CR Excavator**Type:** Toothed Bucket, Bladed Bucket**Bucket Width:** 24" wide, 13.5" wide**VISUAL CLASSIFICATION OF MATERIAL**

Depth Scale (Feet)	Sample No.	Sample Depth (ft.)		Depth of Change (ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%
		From	To			
0				0.5	Topsoil and Organic Material (moist, easy digging)	
1				FILL; Brown cmf sand, little cmf gravel, trace cobble (moist, easy digging)		
2				1.5		
3				2.0	FILL; Grey gravel, some cmf sand (wet, difficult digging)	
4				FILL; Brown/Yellow cmf sand and silt, little clay, trace cmf gravel, trace cobble, trace roots (moist, moderate digging)		
5						
6						
7				7.0	Buried Organic Layer; Black SILT, little PEAT, little WOOD (moist, easy to moderate digging)	
8						
9				9.0		
10				Mottled Grey SILT, some cmf SAND, little cmf GRAVEL, little CLAY (moist, moderate digging)		
11				Bottom of Test Pit @ 9.5 feet		
12						
13						
14						
15						
16						

Remarks:

1. See attached *Test Pit Photographs*.
2. Test Pit excavated and backfilled by others, utilizing a CAT 305E2 CR Excavator, equipped with muliple buckets.
3. Test Pit terminated at maximum reach of excavator.
4. 24" wide bucket with teeth used from 0 - 7 feet depth, 13.5" wide bucket with blade used from 7 foot depth to termination.



Photograph 1: Test Pit TP-4



Photograph 2: Excavated Material From Test Pit TP-4



Photograph 3: Test Pit TP-5



Photograph 4: Excavated Material From Test Pit TP-5



Photograph 5: Test Pit TP-6



Photograph 6: Excavated Material From Test Pit TP-6

SECTION 01 0040

MILESTONE SCHEDULE

1.0 GENERAL:

1.01 RELATED SECTIONS/REQUIREMENTS:

- A. Section 011100: Summary of Work
- B. Section 013216: Construction Schedules
- C. Section 017700: Project Closeout

1.02 DESCRIPTION:

The following Milestone Schedule serves as a basis for bidding. A master schedule will be developed after all required information and schedules have been received and approved by all Prime Contractors. This master schedule will incorporate the milestones listed below:

MILESTONES:

Task:	Date:
Out to Bid	April 18, 2025
Bids Due	June 05, 2025
Descope and Award	June 13, 2025
Contracts Executed	June 27, 2025
Mobilize – Site, Electrical, GC	July 14, 2025
Site Prep, Construction Fence, Site Stripping	July 2025
Ground Improvements	September 2025
Foundations/ Structural Steel– Shed Building	November, 2025
Shed Building Substantial Completion	May 1, 2027
Head Building Substantial Completion	June 15, 2027
Final Completion	August 15, 2027

END OF SECTION

SECTION 01 1100

SUMMARY OF WORK

PART 1 – GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of this project is separated by the Construction Manager into several Bid Packages, each of which could be awarded to Prime Contractors (Controlling Contractors). The Owner, Architect, and Construction Manager have determined which portions of the work of this project belong to each Bid Package.

The contracts include:

BID PACKAGE #1:	GENERAL CONSTRUCTION (H2455701)
BID PACKAGE #2:	SITWORK CONSTRUCTION (H2445702)
BID PACKAGE #3:	ROOFING CONSTRUCTION (H2455703)
BID PACKAGE #4:	FIRE PROTECTION CONSTRUCTION (H2455704)
BID PACKAGE #5:	PLUMBING CONSTRUCTION (H2455705)
BID PACKAGE #6:	MECHANICAL CONSTRUCTION (H2455706)
BID PACKAGE #7:	ELECTRICAL CONSTRUCTION (H2455707)

- B. Each Prime Contractor shall perform the work of the bid package awarded to them under separate stipulated lump sum contracts with the Owner. Each Prime Contractor shall furnish, including but not limited to, all labor, allowances, unit prices, materials, tools, equipment, supervision, coordination, layout, deliveries, trucking, shop drawings, submittals, etc., necessary to complete the work described in the Bid Package awarded to them.
- C. If any General Requirement condition or work are assigned to more than one Prime Contractor, each Prime Contractor shall include all costs associated with that General Requirement or work in their base bid. The Construction Manager will determine which Prime Contractor will perform the work associated with the General Requirement conditions or work. The Construction Manager will seek a credit from the Prime Contractor that does not perform the General Requirement or work.
- D. The Drawings and Specifications are to be considered as supplementing each other. Any work that is specified but not shown, or shown but not specified, shall be furnished, installed, and/or performed, as though mentioned in both the specifications and drawings. Details on drawings are to be considered typical for similar applications unless specifically noted otherwise.

- E. All Contractors shall provide, furnish, and install, but not necessarily be limited to all work indicated in the specifications for Divisions 0 and 1, as it pertains to your contract work and all related Specification sections and Contract Drawings.
- F. Each Prime Contractor is responsible for all Work shown on the Contract Drawings and contained within the Contract Specifications for Work relative to their Contract.

1.2 CONTRACTS – GENERAL REQUIREMENTS

- A. **All Contractors are required to review all contract documents prior to bidding including but not limited to, Contract Drawings, Specifications, Summaries and remaining documents for Work relative to their contract's scope of work and the work of other Bid Packages, and include in their Bid Package all the work relative to their Contract. The following requirements apply to all Prime Contracts and must be included in the base bid:**

- 1. All existing conditions must be verified in the field. The Owner takes no responsibility for actual conditions found deviating from the Drawings. If existing conditions interfere with Contract Work, Contractor is responsible to eliminate or rectify this condition as directed by the Architect. Contractor is responsible for familiarizing himself with jobsite logistics, and completely inspecting the existing site for obstructions and conditions.
- 2. All Contractors must plan, provide, and maintain their own access, ramps, stairs as needed for their work. Staging of trailer(s), parking, materials, machinery, and equipment to be coordinated with the Construction Manager. Each Contractor must maintain free and safe access on the jobsite for all personnel and safe pedestrian traffic inside and outside the Work areas as it pertains to the Work of their Contract. A qualified flagperson must regulate any operation interfering with pedestrian or vehicular traffic. Trucking and delivery operations must be coordinated with the Owner, Construction Manager, and all other trades.
- 3. All Work must conform to applicable codes including state laws, local ordinances, OSHA, and requirements of governmental agencies having jurisdiction for all Work performed. Each Prime Contractor is considered a Controlling Contractor in respect to all OSHA requirements, and shall include all costs associated with meeting this requirement in the base bid. All Contractors personnel working on site are required to have the 10 hour OSHA certification training. OSHA 10 cards are to be provided to Construction Manager prior to working on site.
- 4. All Contractors shall employ experienced trades people and an adequate work force at all times. A shortage of labor in the industry will not be accepted as an excuse for not properly staffing the project or executing the Work on schedule

and in accordance with Contract Documents. Sufficient work force shall be provided at all times to maintain progress of the job. All Contractors understand that project schedule must be met and that they will adequately man the projects to successfully complete the Contract Work in accordance with the Construction Manager's schedule and phasing plan. The option to work extended hours and weekends at the Contractors' expenses under prior agreement with the Construction Manager may be made available to meet the schedule at no cost to the Owner.

5. All contractors shall submit to Construction Manager an "Equipment and Material Procurement Report" within two weeks after notification of award. The Contractor shall list all equipment and material that are being purchased, drawings, submittals, samples, etc. for a complete composite report. The report shall be resubmitted to the Construction Manager with updated information weekly until the Construction Manager notifies the Contractor that only bi-weekly or monthly reports are required. Failure to submit this report could result in rejection of the pencil copy of the application for payment.
6. All contractors shall submit a subcontractor/supplier list including addresses and contact information for review by Architect/Construction Manager.
7. All contractors are to provide a copy of their safety program to the Construction Managers site office for the duration of construction.
8. The Owner is exempt from payment of Federal, State, and local taxes including sales and compensating use taxes on all materials and supplies incorporated into the completed work. These taxes are not to be included in the bids. This exemption does not apply to tools, machinery, equipment or other property leased by or to the Contractor or a Contractor, or to supplies and materials, which even though they are consumed, are not incorporated into the completed work, pursuant to State and Federal regulations. The Contractor and Contractors shall be responsible for and pay any, and all, applicable taxes, as required by law, including sales and compensating use taxes on said leased tools, machinery, equipment or other property and upon all said unincorporated supplies and materials.
9. Contractors shall comply with all applicable Federal, State, County, and Municipal Laws concerning pollution of surrounding public waters and air. All Work shall be performed in such a manner that objectionable conditions will not be created in public water through or adjacent to the project areas.
10. Contractors shall cooperate with all firms performing testing and inspection. Contractors will provide complete data and materials for required reports, and allow and provide means of access to their Work by firms performing testing and inspections. All Contractors shall provide access by the Construction Manager,

Architect, Testing Agencies, etc. as required to look at and/or inspect the Work. The access shall include, but not limited to, ladders, scaffold, lifts, etc. as necessary to complete the inspection(s).

11. On-site supervision is required from activity inception until determined not required by the Construction Manager. If supervision is reduced or terminated without the consent of the Construction Manager, the Construction Manager will appoint an individual to manage Work under this contract with all cost borne by the Contractor.
12. Any vehicle leaving the jobsite that provides materials, services or manpower, shall remove mud and concrete from wheels and undercarriages.
13. ADDITIONAL INSTRUCTIONS – The Construction Manager or Architect will, from time-to-time, issue additional instructions to the Contractor as may be necessary to amplify, augment, modify, or clarify the contract documents. These may be in the form of Drawings, Sketches, Specifications, Response to RFIs, Interpretation, Orders and Supplemental Instructions, Change Orders, Construction Change Directives, Minor Changes, etc. Submittals shall be resubmitted and otherwise kept up to date as required by additional instructions. Decisions required from the Construction Manager, Architect and/or Engineer, shall be anticipated by the Contractor to provide ample time for inspection, investigation, or detailed drawings. Only written questions on the R.F.I. form will be responded to by the Construction Manager and/or Architect or their Consultants.
14. Contractors shall examine surfaces and conditions before start of work. It is required that the Contractors report unacceptable or adverse conditions to the Construction Manager in writing. Notification does not eliminate any of the preparation and patching requirements. Do not proceed until unacceptable conditions are corrected and deemed acceptable by the Architect or Owner. Starting of Work implies and confirms acceptance and acknowledges the Work was included in the base bid.
15. The Contractor shall take special care in verifying that his equipment matches the characteristic of the power being supplied.
16. Insubordination, unsafe practices, horseplay, abusive behavior or language, wanton destruction of property, use of drugs including tobacco or alcohol, Vaping, possession of firearms, and solicitation will not be tolerated. The Contractor will remove abusive persons from the site and/or involvement in the project at the direction of the Construction Manager. This shall include office management personnel that conduct themselves in an abusive disrespectful manner. There will be no warnings, and Contractor shall designate a responsible

on-site supervisor and/or manager to handle any situations that may arise, including terminations.

17. Union business shall not be conducted on site. Any union representatives that visit the site must declare what Contractor's personnel they represent and must be escorted by that Contractor's Union Steward at all times. No visitors, sales representative, or non-working personnel shall be permitted on site without prior consent of the Construction Manager in writing. No photographs shall be taken without the Construction Manager's prior written approval.
18. Construction light, per requirements and power, within 75 feet of all work areas shall be made available during all working hours by the Electrical Contractor.
19. The General Construction Contractor shall provide dumpsters for the use of all Contractors EXCEPT the Sitework and Roofing Contractors. Sitework and Roofing Contractors shall provide dumpsters for their own use. The General Contractor shall also provide and empty an adequate number of trash receptacles throughout the site for the duration of the projects as directed by the Construction Manager. Trash receptacles in open air shall have lids to prevent trash from blowing around the site.
20. The Sitework Contractor shall provide all temporary fencing required on site with the exception of fencing required to protect the work of any individual trade.
21. Temporary water for construction activities will be available by utilizing an existing Fire Hydrant. The General Contractor will provide a meter adapted for connection to the hydrant and hose connections in coordination with the MVWA. General Contractor shall assume all costs for water usage as well as erect or provide a heated hotbox to prevent freezing. Each trade shall provide hoses for their own use.
22. All Contractors shall plank, and adequately protect all walks, pavement, curbs, etc which are to be crossed by their equipment and deliveries.
23. All Prime Contractors may use temporary toilet facilities provided by the General Construction Contractor. The General Construction Contractor shall provide an adequate quantity of temporary toilet facilities, and shall provide separate facilities for use by women on the jobsite. The General Construction Contractor shall provide lockable toilet facilities for the sole use of the Construction Manager. These facilities shall be pumped and cleaned weekly.
24. **SNOW REMOVAL:**
The General Construction Contractor shall be responsible for removing snow, ice, slush, etc. from the work zones including site and the buildings on a daily basis. Temporary project roads, parking, staging, etc. shall be kept clear and passable for all parties at all times. Roofing Contractor will be responsible for any snow removals from the building that may be required for their roofing work.

25. TEMPORARY HEAT & PROTECTION:

- A. The General Construction Contractor shall provide, maintain, and monitor temporary heat for all areas of the project. The General Construction Contractor shall provide, locate, relocate and maintain a sufficient number of indirect heaters to sustain a minimum temperature of 55 degrees Fahrenheit within all work areas once the building is enclosed.
 - a. The Electrical Contractor shall provide material and labor to connect, and disconnect power to the temporary heating equipment, including relocation of equipment.
 - b. Oneida County shall be responsible for the cost of Liquid Propane Gas for the temporary heaters for the duration of the project (supplier to be coordinated through CM) beginning at the point that the building is fully enclosed, prior to that phase, heating shall be provided by the Contractor requiring it at their expense. See section 01 51 23 for details.
 - c. The General Construction Contractor is responsible to furnish and install temporary closure for all doors, windows and openings. In addition to the temporary heating provided by the General Construction Contractor, all Contractors are responsible to provide temporary heat and protection required to complete the Work of their Contract (i.e., temporary heat and protection necessary for construction of foundations, masonry, sidewalks, etc.)

26. SUPERINTENDENCE AND COORDINATION

- A. Each Prime Contractor shall always have a Superintendent on site, while their crews are working. Each Prime Contractor's superintendent shall work with the others to maintain continuity of Work in accordance with the Master Project Schedule. Each Prime Contractor must cooperate to the maximum extent with the other Prime Contractors to facilitate the execution of their Work. Timely notice of change in any Prime Contractor's schedule shall be given to the Construction Manager so that all operations may be rescheduled or modified as required provided the reason for the delay is approved.
- B. Each Prime Contractor shall expedite the layout of his Work when the location of Work by other trades is dependent upon such layouts. Whenever the Work of one Prime Contractor is delayed due to the failure of another to layout his Work or to effect timely completion of any portion of his Work, the Prime Contractor being delayed shall notify the superintendent whose Work is causing the delay. That Superintendent

shall take prompt and effective action to complete the Work causing the delay.

- C. Each Prime Contractor shall thoroughly coordinate their Work with the Work of the other Prime Contractors. Provisions in locations of Work to accommodate other Prime Contractors will be made. Fabrication and installation of materials and equipment shall not be made until the exact location is determined and agreed.

27. SPECIAL CONSIDERATIONS DURING CONSTRUCTION

- A. Maintain clear exits throughout the construction phase.
- B. Maintain Material Safety Data Sheets & Safety Manuals on site available for review by responsible individuals. Schedule Work as required so that Substantial Completion of the project occurs a minimum of 48 hours or the manufacturers recommended time for "baking out" and exhausting of volatile organic compounds, such as glues, paints, furniture, carpeting, wall covering, drapery, etc., used in Construction prior to building occupancy by the Owner.

28. GENERAL SAFETY AND SECURITY STANDARDS

- A. Prime Contractors are responsible to keep material and tools secured in locked boxes and storage containers within the construction fence.

1.3 STORAGE REQUIREMENTS

- A. Each Prime Contractor is responsible for their own office trailers, storage trailers, telephone, internet service, and power hookups and all costs for such. Locations to be coordinated and approved with Construction Manager and Owner. There is a logistics plan that allows space for trailers and parking.
- B. Each Prime Contractor and their Subcontractors shall limit operations, including storage of materials and prefabrication, to areas within the Contract limit lines. The Construction Manager will allow no storage inside the work zones unless specifically designated and agreed to in writing. Stored materials affecting the performance of any Prime Contractor's Work will be moved at the discretion of the Construction Manager, with no expense to the Owner to accommodate the work. All handling and removal costs will be deducted from the Prime Contractor who owns the material, tools, and equipment in the form of a back charge.
- C. All Contractors shall obtain and pay for the use of additional storage or work areas needed for operations. The Contractor shall provide all storage trailers and temporary facilities as required to complete the project, or to protect their work and materials.
- D. Contractor shall assume full responsibility for the protection and safekeeping of products stored on and off the site and shall cooperate with the Construction Manager to ensure security for the Owner's property. This protection shall include material furnished by the

Owner for installation by the Contractor. Each Contractor shall protect their Work. All Contractors shall provide protection from damage to adjacent and adjoining Work and/or structures. Each Prime Contractor shall clean, repair and/or replace any damage that they are responsible for creating.

1.4 SCHEDULING REQUIREMENTS

- A. All Contractors shall submit a computerized "bar type" critical path schedule which links tasks and activities, by building and by area of the building, which meets the Milestone Schedule and the dates of Substantial Completion for approval by the Construction Manager within (2) weeks of contract award. The Construction Manager will modify durations, add activities, and the sequence of activities as necessary to meet the dates identified in the Milestone Schedule. The bar type schedule shall indicate significant events such as submittals, Shop Drawings, material ordering, fabrication, delivery, coordination, installation, testing, punch list, and other critical activities, and turnover by area or system as agreed with Construction Manager. This Schedule shall be updated monthly, or sooner if requested by the Construction Manager, showing progress and problems, and shall be submitted in reproducible form. PROGRESS PAYMENTS MAY NOT BE REVIEWED OR APPROVED WITHOUT THIS CRITICAL INFORMATION.
- B. Once the Construction Manager reviews the preliminary schedules, a Master Schedule will be developed. The Construction Manager will interface the activities of Prime Contractors into the Master Schedule. All Prime Contractors shall attend a Master Scheduling Meeting to finalize the proposed schedule. The Construction Manager shall periodically update the Schedule as the project progresses. The Master Schedule will be periodically updated and distributed as Work progresses, and at the discretion of the Construction Manager. The Master Project Schedule will change at the discretion of the Construction Manager.
- C. Work shall be completed in accordance with the Milestone Schedule and Phasing Plan. The Schedule will change as per site conditions, field progress and as determined by the Construction Manager and/or the Owner.
- D. On-Site project meetings will take place weekly or bi-weekly depending on the level of work taking place. Each Prime Contractor shall submit a **two week (or one week) progress report** and **two week (or one week) look-ahead** (man loaded by work activity and area) to Construction Manager prior to the progress meeting. Frequency will depend on what meeting schedule is set. A Contractor's representative shall attend all project meetings with all Contractors, chaired by Construction Manager, for the purposes of job coordination and sequencing and evaluating progress. Each Contractor is responsible for coordinating the job with other trades and the Construction Manager. Contractor is to cooperate with other trades in the pursuit of the overall project's success. Each Contractor shall review other trades' Shop Drawings and actively participate in resolving

discrepancies, conflicts, interference's, etc. The Construction Manager may request additional meetings and progress meetings throughout the project. All Prime Contractors and their Subcontractors shall attend the meetings at no additional cost to the Owner.

- E. All Superintendents will be required to attend Monday morning Foreman's meetings chaired by the Beebe Project Manager to map out work for the upcoming week.
- F. The intention of the work is to follow a logical sequence, however, the Prime Contractors may be required by Construction Manager to temporarily omit or leave out any section or portion of his Work, or perform his Work out of sequence. All such out of sequence Work and comeback time to these areas shall be performed at no additional cost.

1.5 CHANGES IN SCOPE AND ALLOWANCE AUTHORIZATIONS

- A. Each Prime Contractor shall include a contingency allowance, refer to Allowance Authorization Section, in his Base Bid for the amount described in the Bid Packages, for the purpose of covering the costs of field directive work, changes in scope, and/or unforeseen conditions as directed by the Owner, Construction Manager, or Architect. Overhead and profit on allowances are to be included in the Contractors Base Bid. **Prime Contractors will not be allowed overhead and profit on Allowance Authorizations or work.**
- B. Each Contractor shall fill out the Labor Rate Worksheet and certify that the labor rates, insurance enumerations, labor fringe benefit enumerations, and expenses are correct and in accordance with actual and true cost incurred. An individual Labor Rate Worksheet shall be filled out for each trade and activity upon award of Contract and before submission of the first application for payment. The Labor Rate Worksheet form can be found in the Specifications for this project. This completed document shall establish the rates used on all proposals, changes in scope, and time and material work.
- C. Contractors shall not start or perform any Work that is, or may be considered, out of scope without written direction/authorization from the Construction Manager. Contractors who commence or perform work without written authorization shall not be entitled to a change order. **Starting work without written authorization signifies the Work was included in the base bid and a Change Order is not required.**
- D. Proposals: All proposals shall be broken down by labor and material. The labor breakdown shall be broken down by hours for each activity. All Contractors shall include actual invoices from Vendors, Contractors, and Suppliers for all items included in proposals. Request for Change Orders will not be reviewed or processed without the detailed labor breakdown along with the actual vendor, supplier, and/or contractor invoices as backup documentation. Any outstanding proposals that are past the required response date may hold review of pencil copies. Contractors are urged to provide proposals in a timely manner to allow work to continue on schedule. Contractors shall

use AED Green Book Rates or another approved source for Owner provided equipment included in proposals. All pricing on proposals shall be to meet the schedule.

- E. Time and Material Work: **The Construction Manager's onsite personnel shall authorize all Time and Material work on the day the Work occurred or the following day by signing the T&M Worksheets.** The Contractor shall provide a copy of the authorized Time and Material work order for the Construction Manager at the time of authorization. The Prime Contractor shall not "lump together" several Time and Material worksheets for various scopes of work. All Contractors shall include actual invoices from Vendors, Contractors, and Suppliers for all items included in the pricing of Time and Material work. Time and Material work will not be reviewed or processed without the PM's signature and actual invoices as backup documentation. Contractors/Bid Packages shall use AED Green Book Rates or another approved source for Owner provided equipment uses on Time and Material work. **Time & Material is required to be submitted for payment within 60 days of completion, invoices not submitted within that timeframe will not be processed for payment.**
- F. Subcontractor's proposals to Prime Contractors/Bid Package: Subcontractors are required to provide the same documentation as the Prime Contractors for changes in scope and Time and Material work.
- G. The Construction Manager and/or Architect will contact Vendors, Suppliers, and Subcontractors to verify and validate pricing.
- H. **Markup for Proposals and Time and Material Work:** Markups, only allowed on Change Orders, include both (combined) Overhead and Profit as documented in the Supplemental Conditions. Prime combined not to exceed 15%, Prime Mark Up on Subcontractor work is 5%.

1.6 WOOD BLOCKING REQUIREMENTS

- A. The General Construction Contractor shall furnish and install all wood blocking concealed within the walls. All Contractors are responsible to coordinate the location of blocking required for their contract work.
- B. All non-concealed blocking shall be provided by the Contractor requiring it.

1.7 DEMOLITION AND REMOVALS

- A. In addition to the demolition and removal notes elsewhere in the specifications and shown on the Drawings, all contractors are responsible for the following:
 - All items called to be removed or demolished must be removed in their entirety back to the source. Abandonment of items will not be allowed unless specifically described in the Contract Documents.

- All Contractors are to follow all regulations regarding Silica Dust Control, any cutting of materials that contain silica shall be completed using water.

1.8 CLEANUP REQUIREMENTS

- A. Clean up is a safety issue. Each Prime Contractor shall include general housekeeping of their debris. All Contractors are required to perform daily cleanup and participate in a weekly joint clean up involving all Prime Contractors on site. Each Prime Contractor working is required to participate and supply labor to help in the periodic cleanup. Failure to participate in the joint cleanup will result in a change order deduct to the Contract
- B. In addition to daily general housekeeping, the General Construction Contractor shall provide a weekly broom sweep of all the Work areas for the entire duration of the project as determined by the Construction Manager. The broom sweep shall include light debris from all trades working on site.
- C. Refer to Specification Section 017400 for final cleaning requirements.
- D. Cleanup shall be shown as a separate line item on all Prime Contractor's Schedule of Values.

1.9 CONCRETE

- A. All Prime Contractors are responsible to furnish and install all concrete work required to complete the Work of their contract.

1.10 FIRESTOPPING

- A. Firestopping of penetrations will be the responsibility of the Prime Contractor requiring the penetration.

1.11 SITE UTILITIES

- A. The Electrical Contractor shall furnish and install all excavation, backfill, conduit, cable, electrical manholes, vaults, pull boxes, ductbanks, pre-cast and cast in place pads, light pole bases for the work of their contract.

1.12 ROOF PENETRATIONS

- A. The Contractor requiring the penetration shall layout and mark the penetration.
- B. Curbs and supports are furnished by the Contractor requiring them.
- C. The Contractor requiring the penetration shall be responsible for cutting the roof deck.

- D. The Roofing Contractor shall install the curb and support, including blocking, and shall furnish and install all blocking, flashing, roof insulation, membrane, sealant, etc., required for a complete installation.
- E. The Roofing Contractor shall furnish, install, and remove temporary protection for roof openings.
- F. The General Contractor shall furnish and install all supplemental framing and roof frames at roof penetrations.

1.13 UNDERGROUND UTILITIES/INSIDE THE BUILDING

- A. All Contractors shall perform excavation and backfill inside the building as required to complete the Work of their Contract.

1.14 PARKING

Parking within the Construction fence will be limited to the superintendent from each Prime Contractor. All other workers must park in designated spaces in parking lot A2 and walk to the building site. Workers while walking to and from lot A2 must not interact with students or staff at any time.

BID PACKAGE No. 1 – Contract #H2455701

General Construction

REFERENCE DIVISIONS:

0 – Bidding and Contract Requirements
1 – General Requirements
All Contract Drawings and Specifications
All Addendas

REFERENCE SPECIFICATION SECTIONS:

Division 2: As it pertains to this contract
Division 3: Entire Division
Division 4: Entire Division
Division 5: Entire Division
Division 6: Entire Division
Division 7: Entire Division
Division 8: Entire Division
Division 9: Entire Division,
Division 10: Entire Division
Division 11: Entire Division
Division 12: Entire Division
Division 13: Entire Division
Division 14: Entire Division
Division 31: 312000 as it pertains to their work, Section 316613 in its entirety
Division 41: Entire Division

REFERENCE DRAWINGS:

All Contract Drawings as listed in Project Manuals

ALLOWANCES:

Refer to Specification Section 012100 of Project Manual

ALTERNATES:

Refer to Specification Section 012300 of Project Manual, if applicable

UNIT PRICES: (Used for both Change Order adds and deducts)

Refer to Specification Section 012200 Unit Prices, if applicable

GENERAL CONSTRUCTION

1.01 GENERAL REQUIREMENTS

- A. Furnish all labor, materials, equipment, supervision, handling, hauling, scaffolding, layout, Shop Drawings, delivery, storage, hoisting, mock-ups, licensed surveying, etc., necessary for the completion of all General Construction.
- B. This Contractor shall also provide, but is not necessarily limited to, all Work indicated in the Specifications for Divisions 0 and 1, and all Specifications as listed on the previous page of this Specification Section. All Drawings as pertains to your work and along with related work on Site, Electrical, HVAC, and Plumbing.
- C. This Contractor shall provide all protection from weather of the timber frame components as required by the manufacturer.
- D. This Contractor shall provide and maintain sanitary facilities per specification and OSHA Regulations for all trades for the duration of the project. this shall include separate lockable portable facilities for use by the Construction Manager. See General Summary for additional information.
- E. This Contractor is responsible to furnish, install and maintain safety railings at all perimeters of all floors, stair openings, stair railings, duct openings, shafts etc. from the start of construction to such time as the building has received its final assembly.
- F. This Contractor shall review the Shop Drawings of other trades and vendors and actively participate in resolving discrepancies, conflicts, interferences, etc.
- G. It is not anticipated to have permanent power in the building until late in the project. The elevator installation is to be scheduled closely with the Electrical Contractor so that power form the temporary service can be connected for use by the elevator company during installation.
- H. This Contractor is responsible to hire a professional cleaning firm to complete final cleaning of the entire project at completion to the satisfaction of the Architect and Construction Manager. See 012100 for Allowance amount to be included for this work.
- I. This Contractor is responsible to provide dumpsters for all trades for the duration of the project for use by all trades except Roofing and Site, Provide recycling of debris as required by governing laws. GC shall also provide and empty an adequate number of trash receptacles throughout the site for the duration of the projects as directed by the Construction Manager. Trash receptacles in open air shall have lids to prevent trash from blowing around the site.
- J. This Contractor shall provide, maintain and monitor temporary heat for all areas of the project. This is to include a sufficient number of indirect heating units to maintain a minimum temperature of 55 degrees Fahrenheit in all work areas once the building is enclosed. The Electrical Contactor shall be responsible for wiring of all temporary heating

units, this includes relocation if necessary. Oneida County shall be responsible for the cost of Liquid Propane Gas for the temporary heaters for the duration of the project (supplier to be coordinated through CM) beginning at the point that the building is fully enclosed, prior to that phase, heating shall be provided by the Contractor requiring it at their expense. See section 01 51 23 for details.

- K. Coordination of Load Transfer Platform shall be coordinated so that installation takes place after other trades have completed their under slab piping.
- L. General Construction Contractor responsible for providing office trailer for the Construction Manager for the duration of the project. See 015000 Temporary Facilities for details.

1.02 POURED IN PLACE CONCRETE:

- A. Excavations and backfill for foundation installation shall be by the Site Contractor.
- B. This Contractor shall provide all underpinning as indicated or required for a complete installation.
- C. This Contractor shall be responsible for all dewatering of excavations to allow for forming and pouring of footings and foundations.

1.03 MASONRY:

- A. This Contractor shall provide, monitor, and maintain all special cold weather temporary protection and temporary heat (i.e., enclosures, additional heat, etc.) and preparation of work and materials to perform their work as required.
- B. This Contractor shall perform all drilling, cutting, toothing, caulking, temporary weather protection, coordination, etc., necessary to continue his work. This Contractor shall furnish and install all blocks, brick, insulation, caulking, accessories, fasteners, scaffolding, hoisting, miscellaneous components, etc. as required to perform masonry.
- C. This Contractor shall include all caulking, sealants, backer rod, samples, guarantees, etc., required for a complete installation of all the work relative to this contract. This contractor shall furnish and install sealants where a masonry surface comes in contact with a dissimilar surface. This shall include caulking of louvers, vents, flashing, etc. provided and installed by others.
- D. This Contractor shall take note that most areas that receive CMU walls have no ceilings requiring the CMU to be topped out with the same appearance as the field of the wall and that cutting and fitting CMU around piping, ducts and conduit will be required.

1.04 METAL FABRICATIONS-MISCELLANEOUS METALS

- A. This Contractor shall include fabrication, furnishing, and installation of all angles, bent plates, permanent steel brace as required to secure and support masonry walls where indicated on the Contract Drawings.

- B. This Contractor shall provide and install new roof frames and framed openings for all trades and prime contractors as indicated in the Contract Documents. This Contractor is responsible to review the Site, Architectural, Mechanical, Electrical, and Plumbing Drawings for miscellaneous metals not shown on the Structural Drawings and include all costs in their bid.

1.05 ALUMINUM ENTRANCES ALUMINUM WINDOWS, GLASS & GLAZING

- A. This Contractor shall furnish and install all aluminum entrances, storefronts, curtainwalls, windows, glass and glazing that may be required by local code or considered good construction practice.
- B. This Contractor shall furnish and install caulk, sealant, joint fillers, batt insulation and gaskets for metal to metal, metal to glass, and glass to glass conditions. This Contractor shall caulk under all thresholds to prevent water from entering the building/facility under the threshold. This Contractor shall furnish and install miscellaneous batt insulation around the perimeter of all exterior doors and windows.
- C. This Contractor shall be responsible to final clean and buff all glass, framing, hardware, and other miscellaneous door and window components/accessories installed by this contractor to a uniform surface free from die marks, scratches, dirt, installation marks, or other surface blemishes formed on exposed surfaces upon project completion. The final cleaning shall include all adjoining surfaces. The final cleaning shall include both the interior and exterior surfaces.

1.06 DOORS, FRAMES and HARDWARE

- A. This Contractor shall provide final adjustments as required for correct functions. Any discrepancies found on design documents, codes, etc., shall be brought to the Construction Manager's attention as early as possible. This Contractor shall provide only skilled mechanics to install and adjust finish hardware.

1.07 CERAMIC TILE & SOFT FLOORING

- A. This Contractor shall examine all surfaces to receive flooring for defects, dirt, oil, etc., that would adversely affect installation, void the warranty, and potentially shorten life of the flooring or walls. Do not proceed until unacceptable conditions are corrected and acceptable, starting work implies acceptance.
- B. This Contractor shall provide and maintain protection during and after installation, including, but not limited to, the use of barricades, craft paper, plastic, plywood, etc. Damaged flooring because of inadequate protection will be replaced at the expense of this contractor at no cost to the Owner.

- C. This Contractor is advised that all areas will require accessibility to construction traffic. Therefore, these areas may have to be done in sections and coordinated with the other Prime Contractors.
- D. This Contractor shall provide, finishing, sealing, waxing, etc. of the work of this contract, immediately prior to Owner occupancy.
- E. This Contractor shall wax and/or seal flooring pursuant to the recommendations of the manufacturer. This Contractor shall provide final cleaning, finishing, waxing, etc. of the work of this Contract, immediately prior to Owner occupancy.
- F. This Contractor shall provide and install surface preparation, base, trim, risers, transitions strips, treads, etc. as indicated or required for a complete installation.
- G. This Contractor shall furnish and install miscellaneous transition strips as required to provide a smooth transition between floor coverings. The use of transition strips shall be at the discretion of the Project Architect.

1.08 METAL FRAMING, GYPSUM SYSTEMS and ACOUSTICAL CEILINGS

- A. This Contractor shall coordinate and install all blocking, plywood sheathing, and furring in GWB walls as required for the other Prime Contractors. The Prime Contractor(s) requiring the blocking shall coordinate the location of the blocking and have ample time for the installation.

1.09 ACOUSTICAL

- A. This Contractor shall provide acoustical ceiling tiles and grid for the installation of other trade devices.
- B. This Contractor shall provide a schedule for placing ceiling tiles in acoustical grid system that is agreed to and signed off on by all trades people that have work above or adjacent to the affected areas. The sign off represents acceptance by the affected trades (HVAC and Temperature Controls, Electrical and Special Systems, and others) that all of their work is complete above the ceilings and, as a result, any damages caused by their workers after acceptance and sign off will be replaced at no charge to the Owner. The party responsible for damaged tiles will be backcharged by the Construction Manager and repaired by this Contractor.
- C. This Contractor shall install hold down clips at all ceiling tile located in vestibules and within 10 feet of all outside doors.
- D. This Contractor shall furnish and install extra hangar wires at lights.

1.10 PAINTING and WALLCOVERING

- A. This Contractor is responsible for touch up of painted surfaces affected by the normal working practices of all trades. This touch up is to include minor patching of painted surfaces scratched or damages during the course of construction. It will be

responsibility of the Construction Manager and Architects to determine the level of repairs necessary to affect acceptance. No additional costs will be charged to the Owner for this activity. When the Construction Manager and Architect find that damages as a result of any trade or vendor, other than this Contractor, are excessive in nature, this Contractor will make necessary repairs to the painted surface and subsurface and the responsible party(s) will be backcharged for the cost incurred by this Contractor.

- B. This Contractor shall back prime and seal all edges and surfaces of solid wood and plywood schedule to be finishes in the field prior to installation. This Contractor shall review the Specifications and Contract Drawings for items that require field finishing.
- C. The Painting Contractor will be required to protect all items installed prior to painting of the structure not required to be painted. Painting Contractor will be required to paint any piping, duct, conduit, etc. that may be installed after painting of the exposed structure.

1.11 FINISH CARPENTRY, MILLWORK and CASEWORK

- A. This Contractor shall provide all openings in casework, countertops, and other components, provided by this Contractor, that require the installation of items by other Contractors. The openings shall include, but are not limited to, sinks, faucets, soap dispensers, gas lines, water lines, exhaust air, piping, outlets, power and data, vents, registers, outlets, phone lines, other penetrations, etc.
- B. This Contractor shall pay specific attention to sinks provided by others and the installation in casework. This Contractor shall make all modifications, including but not limited to replacement, resulting from the failure to coordinate the casework and countertops with sinks.

1.12 EXCAVATIONS

- A. General Contractor shall be responsible for all excavations and backfill for building foundations to 5' outside of the building footprint. All spoils are to be disposed of off site. Grade shall be restored/excavated to 18" below finished floor of the building. All spoils are to be disposed of off site.
- B. The Aggregate Pier Contractor shall be a Subcontractor to the General Construction Contractor.

BID PACKAGE No. 2 – Contract #H2445702

Sitework

REFERENCE DIVISIONS:

0 – Bidding and Contract Requirements
1 – General Requirements
All Contract Drawings and Specifications
All Addendas

REFERENCE SPECIFICATION SECTIONS:

Division 02: As it pertains to this contract
Division 03: 033000 as it pertains to this contract
Division 07: 079200 as it pertains to this contract
Division 31: 312000 as it pertains to this contract, Includes all other Sections in its entirety with exception of 316613
Division 32: Entire Division
Division 33: Entire Division

REFERENCE DRAWINGS:

All Contract Drawings listed in the Project Manual

ALLOWANCES:

Refer to Specification Section 012100 of Project Manual

ALTERNATES:

Refer to Specification Section 012300 of Project Manual, if applicable.

UNIT PRICES: (Used for both Change Order adds and deducts)

Refer to Specification Section 012200 Unit Prices, if applicable

SITEWORK

2.1 GENERAL REQUIREMENTS:

Furnish and install, in strict accordance with Drawings and Specifications, and in general includes the following Work:

- A. This Contractor shall also provide, but shall not be limited to, all division 00, 01, and applicable specification section as listed on prior page and as shown on the drawings and described in the specifications. This contractor shall also provide, but not be limited to all related work on all drawings as listed in project manual.
- B. This Contractor shall furnish all labor, materials, equipment, supervision, engineering, and licensed surveyor to complete the Work of the Sitework Contract. This Contractor shall clean all roads and driveways in and around the site during construction operations resulting from their Work.
- C. This Contractor is responsible for all finish grading for all disrupted areas due to Construction by their own Work and their Subcontractors, including where staging and temporary parking areas have taken place and damage to grassed areas that has occurred.
- D. The parking lots and entrances to the campus are to remain operational throughout the Construction Project. Only scheduled and phased shutdowns, deliveries, and Work coordinated with the Construction Manager will be allowed.
- E. This Contractor is to perform all the restoration of surfaces required to accomplish this scope of Work including, but not limited to, topsoiling, seeding, asphalt cutting and patching, concrete pavement restoration, curb cutting and patching, removal and replacement of bollards, fencing repairs, etc., if encountered.
- F. This Contractor shall provide all surveying and layout as required to complete the Work of this Contract.
- G. This Contractor shall protect the sides of excavations, where necessary, to prevent sliding or caving-in of banks and free from loose earth, debris, etc.
- H. This Contractor shall be responsible to verify the location and provide protection of all underground utilities and structures (including existing foundations) prior to commencing excavations.
- I. This Contractor shall not cause nor permit interference with, nor hindrance to, any municipal department, individual, public service corporation, or other company, in protecting its structures and facilities, nor in removing, replacing or relocating same.
- J. The Contract Drawings show the location and character of certain existing subsurface

structures and facilities to possibly be encountered in excavations or located in such proximity to the work as to require precautions for their protection. The sizes, materials, locations, and depths shown are only approximate, and This Contractor shall satisfy himself as to the accuracy and completeness of such information. This Contractor shall not be relieved from any of their obligations, not be entitled to claim for damages or additional compensations, sustained or arising out of inadequacy or inaccuracy of the information given. This Contractor shall be responsible for locating and protecting all existing utilities, and repair of any existing utilities damaged by this Contractor.

- K. Wherever existing utilities come within limits of the Work, this Contractor shall notify in writing the Construction Manager, Owner, and the Utility Company before, in any way, disturbing them. Any Work of realignment, relocation, removal, or extension of the utilities shall be done as mutually agreed by the Utility Company, the Construction Manager, and the Architect. This Contractor shall maintain satisfactory drainage of the excavation at all times from exposure of the structure until completion of its realignment or readjustment. Interruption of service by utilities shall be kept to a minimum and shall be scheduled with the Owner, Construction Manager, and any parties affected by a utility service interruption.
- L. In addition to notices to Utilities and others required elsewhere herein, this Contractor shall give written notice of their proposed construction operations to the Owner and the Construction Manager of all public and private utilities, including DIG New York, at least four days in advance of breaking ground in any area in which a utility is located. All domestic water mains and fire hydrants are to be in continuous operation from mobilization through completion of this project.
- M. This Contractor shall, at all times, have on the site suitable and sufficient materials to adequately protect, support, and sustain any and all existing structures and facilities, whether above or below ground, and shall use same as may be necessary or required to protect, support and sustain any and all such structures as may become weakened, endangered, undermined or uncovered.
- N. If tolerances are exceeded, this Contractor shall remedy the entire situation by removing and refinishing surfaces at no additional cost to the Owner or other Contractors.
- O. This Contractor shall rake and fine grade the topsoil, fertilize, seed, mulch, and maintain all areas disturbed by construction operations. This Contractor shall clean all driveways, walks, and buildings of any excess seed or mulch as necessary.
- P. This Contractor shall haul spoil material off site or import fill and/or additional topsoil as necessary.
- Q. This Contractor shall provide all Work associated with the SWPPP compliance. All costs for compliance, including maintenance, shall be included in this Contractor's Base Bid.

R. It is the intent of the Sitework Contract – Bid Package #2, to include all sitework indicated on the Contract Documents to include the following:

- Excavation, backfill and restoration for communications conduits from the Academic Building to the handhole alongside new dumpster pad. Conduits and handholes by Electrical Contractor.
- Excavation and backfill for all under slab plumbing piping to 5' outside the building foundations. Coordinate with the Plumbing Contractor.
- Excavation, backfill and restoration for all work associated with Cooling Tower relocation.
- Excavation and backfill for new gas service to building.
- Excavation and backfill for PEX waterline from new S&T building to relocated cooling tower. Piping by Plumbing Contractor.

The following are provided by other Prime Contractors:

- Excavation and backfill for new Site Electrical Work and under slab conduit inside the building footprint as shown on E011 by Electrical Contractor.
- Excavation and backfill for temporary power to construction trailers and new building by Electrical Contractor.
- Excavations and backfill for all building foundations including interior wall foundations by General Contractor.

- .
- S. The Sitework Contractor shall provide temporary fencing at the perimeter of the entire site, fence to be 6' high. At the construction entrances, lockable gates with driven posts shall be installed. A man gate shall be provided for workers to enter when walking from parking lot A2. Additional fencing as required for excavations that are part of this Contract. All fencing shall be complete with signage stating Danger Construction Zone, Hard Hats Required, Check in at CM Office, etc.
- T. This Contractor shall include all costs for shift work, overtime, and extended hours necessary to complete the work pursuant to the Milestone Schedule in their Base Bid.
- U. This Contractor shall clean Sherman Drive of materials from the site as needed or as directed by the Construction Manager.

2.2 POURED IN PLACE SITE CONCRETE

Furnish and install, in strict accordance with Drawings and Specifications, and in general includes the following Work:

- A. This Contractor shall furnish and install all site concrete including precast concrete (except for light pole bases, transformer pads and concrete included in other Contracts), as indicated on the Contract Documents.
- B. This Contractor shall provide all concrete reinforcing required to complete their Work and in general includes, but is not limited to, reinforcing bars, wire mesh, and accessories, i.e., chairs, high chairs, spacers, screws, dowels, wire for tying, and other miscellaneous components. Bend or burn existing dowels in the field if required to proceed or tie in with your Work. No compensation will be made for additional reinforcing, concrete, formwork, shoring, demolition, removal, etc., due to improper materials or installation. Redesign and inspection costs due to improper installation will be borne by the Contractor.
- C. This Contractor shall provide all underpinning as indicated or required for a complete installation of this Contractor's Work.
- D. The site concrete shall be completed prior to paving. This schedule shall be subject to change as per site conditions, field progress, and at the discretion of Construction Manager.

2.3 BITUMINOUS PAVING

Furnish and install, in strict accordance with Drawings and Specifications, and in general includes the following Work:

- A. This Contractor shall saw cut all existing pavement edges abutting new pavement.
- B. This Contractor will provide barricades, traffic control, and flag persons during paving operations.
- C. If tolerances are exceeded or if Work completed is not in accordance with the Contract Documents, this Contractor shall remedy the entire situation by removing and refinishing surfaces at no additional cost to the Owner.

BID PACKAGE No. 3 – Contract #H2455703

ROOFING CONSTRUCTION

REFERENCE DIVISIONS:

- 0 – Bidding and Contract Requirements
- 1 – General Requirements
- All Contract Drawings and Specifications

REFERENCE SPECIFICATION SECTIONS:

- Division 6: 061000 as it pertains to this contract
- Division 7: 072100, 072700, 075423, 077100, 077200, 077600 and 079200 as it pertains to this contract

REFERENCE DRAWINGS:

- All Contract Drawings listed in the Project Manual

ALLOWANCES:

- Refer to Specification Section 012100 of Project Manual

ALTERNATES:

- Refer to Specification Section 012300 Alternates of the Project Manual

UNIT PRICES: (Used for both Change Order adds and deducts)

- Refer to Specification Section 012200 Unit Prices if applicable

ROOFING CONSTRUCTION

3.1 GENERAL REQUIREMENTS

Furnish and install in strict accordance with Drawings and Specifications and in general include the following:

- A. This Contractor shall furnish, but is not necessarily limited to, all labor, materials, equipment, supervision, scaffolding, layout, hoisting, trucking, submittals, shop drawings, etc., as necessary to perform Work as indicated on the Contract Documents.
- B. This Contractor shall also provide, but is not necessarily limited to, all Work indicated in the Specifications for divisions 00, 01, and all Contract Drawings listed along with related Work in Electrical, HVAC and Plumbing Drawings and Specifications
- C. This Contractor shall include general housekeeping of light debris. This contractor shall collect and dispose of all their debris daily into dumpsters provided under this contract. Include timely removal of all debris, trash, and rubbish accumulated by this Contractor. This Contractor shall clean their Work areas daily or as directed by the Construction Manager.
- D. This Contractor shall comply with all OSHA safety requirements with special emphasis on the fall protection standards.
- E. This Contractor shall complete this Work in accordance with the Milestone Schedule included in the Specifications. It is to be understood that the weather will have an effect on the progress of this Work; it is equally expected that this Contractor will be responsible to work all overtime required to complete this Work by the Milestone Dates.
- F. This Contractor shall clean deck of dust, dirt, debris, snow, sleet, slush, ice, and foreign materials. Starting of application constitutes acceptance of surfaces to be covered as satisfactory.
- G. This Contractor shall coordinate application of roofing materials with Work contiguous by other trades. This coordination shall include, but not limited to, dumpster placement, dumpster relocation, material deliveries, material storage, etc.
- H. This Contractor shall repair or replace any damages to adjacent property or other trades' Work for which this Contractor is responsible the damages. This Contractor shall adequately protect all walks, pavement, curbs, etc. which are to be crossed by their equipment. This Contractor shall make all repairs to surfaces damaged during their Work. This includes, but is not limited to, repair of all site

conditions associated with this Work. The repairs will include, but not limited to, walks, pavement, curbs, lawns, landscaping, and other site features.

- I. This Contractor shall cooperate in all respects to facilitate Construction Manager's, Architect's, and/or Owner's inspection and examination of the Work. This shall include providing access for monitoring the Work and inspections.
- J. Pre-Roofing Conference – this Contractor shall arrange a pre-roofing conference with Construction Manager, Architect, and Manufacturer's Representative, not less than 30 days before application of roofing is to be started, to discuss Construction Procedures, Specifications, job and surface readiness, materials storage, and protections arrangements. No roofing shall be applied prior to this meeting.
- K. The manufacturer of the roofing system shall specifically approve this Contractor as an approved/certified applicator for the roofing and flashing system. This same manufacturer shall be the party that will warranty the water tightness of the roof. Prior to the award of the Roofing Contract, this Contractor shall submit a letter from the manufacturer to the Architect stating that This Contractor is approved/certified as an applicator of that roofing system.

3.2 ROOFING

Furnish and install in strict accordance with Drawings and Specifications and in general include the following:

- A. This Contractor shall inspect all surfaces to be covered; roof deck surfaces shall be sound, smooth, and dry. Notify the Architect and Construction Manager in writing of and conditions that could adversely affect the installation, warranty, or life span of the roof system. Starting of application constitutes acceptance of surfaces to be covered as satisfactory.
- B. It is the intent for this Contractor to provide all roofing, metal flashing, protection mats, walkway membrane, felts, scuppers, copings, soffits, fascia, insulation, wood blocking, fasteners, adhesive, sheet metal fascia and trim, counter flashing, expansion assemblies, sealants, etc., for the complete installation of the roofing systems identified in the Contract Documents and/or required by the manufacturer for warranty compliance.
- C. This Contractor shall furnish and install all roof blocking, including blocking for parapets, roof expansion joints, fascia, equipment curbs by others, etc., as required for a complete installation. The complete installation includes miscellaneous blocking not shown on the drawing but required for complete installation or good construction practice. The blocking for the roof curbs shall

include leveling as necessary for the installation of the roof curbs, and all fasteners.

- D. All flashing of vents, pipes, conduits, curbs, walls, etc. are the responsibility of this Contractor. The roof system shall include, but not be limited to, roofing, insulation, sheathing, etc. The penetration includes all components necessary for the opening. This will include, but not limited to, roof membrane, insulation, blocking, sheathing, etc. Roof deck penetrations are by the Contractor requiring them. This Contractor shall furnish and install blocking as required for fastening of curbs supplied by other Contractors. Structural frames by General Contractor.
- E. This contractor shall be required to provide, install and remove temporary protection on roof curbs prior to units being set in place.

BID PACKAGE No. 4 – Contract #H2455704

FIRE PROTECTION

REFERENCE DIVISIONS:

- 0 – Bidding and Contract Requirements
- 1 – General Requirements
- All Contract Drawings and Specifications

REFERENCE SPECIFICATION SECTIONS:

- Division 6: 061000 as it pertains to this contract
- Division 7: 079200 as it pertains to this contract
- Division 21: Entire Division

REFERENCE DRAWINGS:

- All Contract Drawings listed in the Project Manual

ALLOWANCES:

- Refer to Specification Section 012100 of Project Manual

ALTERNATES:

- Refer to Specification Section 012300 Alternates of the Project Manual

UNIT PRICES: (Used for both Change Order adds and deducts)

- Refer to Specification Section 012200 Unit Prices if applicable

FIRE PROTECTION

4.1 GENERAL REQUIREMENTS

Furnish and install in strict accordance with Drawings and Specifications and in general include the following:

- A. Furnish and install all labor, materials, supervision, equipment, scaffolding, design, layout, deliveries, trucking, hoisting, rigging, shop drawings, submittals, and all other items related and required to complete all fire protection Work in accordance with the Contract Documents and all applicable codes having jurisdiction.
- B. This contractor shall have expertise in the performance of the Work for this trade and assures all systems will be complete, functional and installed in accordance with the best practices as outlined in the Specifications The Scope of Work includes, but is not limited to the following:
 - a. This contractor shall design, furnish, and install the hydraulically designed automatic sprinkler system as shown on the contract documents. This contractor to provide a complete system in every respect and ready for operation as described in the contract documents.
 - b. Contractor should note that many areas of the building have exposed ceilings, all work must of the highest quality.
 - c. This contractor shall include all fixtures, equipment, piping, valves, gauges, pumps, identifications, hangers, trim, sprinkler heads, test stations, fire connections, final connections, and related Work as set forth in the Construction Documents.
 - d. This contractor shall carefully review the requirements as defined in the Specifications and provide the necessary design and equipment for a fully addressable fire protection system as described. If a discrepancy is found between the Specifications or required by Code, the more stringent requirement will be implemented at no additional cost to the Owner.
 - e. This contractor shall coordinate the design and installation of the sprinkler system with all other trades involved in the project so that each system may be installed without conflict.
 - f. This contractor shall furnish all sleeves, inserts, anchor bolts, supports, stands, etc. as required for this Work. All sleeves passing through fire rated barriers shall be properly firesafed by this Subcontractor with an U.L. approved system. If piping is installed prior to the erection of walls, a

loose sleeve shall be installed around pipe in close proximity for setting by mason or carpenter. All sleeves passing through fire rated barriers shall be properly firesafed by this Contractor. U.L. approved systems, i.e. 1, 2 and 4-hour ratings. Shall be submitted and approved prior to application.

- g. This contractor shall include all labor for the complete testing and commissioning of all fire protection systems and related electrical systems including incremental testing as required by the schedule. This contractor shall include a minimum of (8) hours on site operational instruction and maintenance instruction for the Owner's staff. Instructions must be scheduled with Construction Manager. Contractor must generate meeting minutes signed off by the Construction Manager and Owner Representative to satisfy this requirement.
- C. All pipe, whether loose or installed, shall be protected to prohibit the contamination by foreign material. If proper protection is not enforced, an independent cleaning Subcontractor shall be employed by the Construction Manager and the costs for said cleaning will be borne by the Fire Protection Subcontractor.
- D. Installation of backflow preventers and/or check valves shall be per New York State Department of Health and Upper Mohawk Valley Regional Water Board Authority Guidelines. This contractor shall provide backflow preventers per the Contract Documents and the local authorities having jurisdiction. Certified reports to be issued on completion.
- E. This contractor shall include all testing, certificates, and other documentation required in their base bid.
- F. This contractor shall furnish and install all electrical work/components associated with the fire suppression system.
- G. This contractor shall provide all required rough-ins and connections to all equipment supplied by this contract.
- H. This contractor shall take part in the coordination of its work with all the affected trades. Wall penetrations drawings shall be submitted to the other prime contractors not later than five days prior to wall erection.
- I. This contractor shall provide all tie-ins as required and as shown on the Contract Drawings. All tie ins shall be coordinated with the Construction Manager.
- J. This contractor shall contact and make all arrangements and pay all fees and

obtain all necessary permits with Utility Companies having jurisdiction in order to schedule any shut downs, disconnection's or relocations. Schedule any such occurrences at least 48 hours in advance with the Construction Manager.

- K. All motors and controllers specified to be factory mounted and wired shall be purchased with equipment. Field installation of equipment controls and wiring specified to be "factory mounted" will not be allowed.
- L. Where miscellaneous electrical devices and other components are to be supplied to the other prime contractors, this contractor is responsible for forwarding a copy of a signed receipt to the Construction Manager of the equipment
- M. This contractor shall furnish and install labeling throughout all areas of the contract. This contractor shall furnish and install all pipe labeling, color coding, and/or painting for all fire suppression components installed by this contractor.
- N. This contractor shall take part in the coordination of its work with all the affected trades and shall sign-off on the Contractor's coordinated Drawings. Wall penetration drawings shall be submitted to the other prime contractors no later than five days prior to wall erection.
- O. This contractor must install his work in accordance with the Coordination Drawings at no additional cost to the Owner. No additional compensation will be made for extra offsets and/or piping or retrofit work due to improper component location.
- P. This contractor shall take special care in verifying with the electrical trade that this equipment matches the characteristics of the power being supplied. The Electrical Contractor is similarly bound.
- Q. The HVAC/Mechanical contractor shall prepare background drawings to be used as the basis for coordination drawings in all areas or as determined by the Construction Manager. These drawings shall be completed by a qualified draftsman whose credentials shall be submitted on Notice to Proceed and approved prior to Contract execution. All Architectural features shall be detailed clearly, i.e., permanent casework, interior columns, partitions, finish ceiling and roof elevations, etc. as well as fire protection work. The Fire Protection Contractor shall overlay their work on the coordination drawings and participate in coordination meetings, as required by the Construction Manager to resolve all conflicts and determine locations and elevations. Once complete and signed off, this contractor will submit dimensioned wall and slab penetration drawings and pad drawing. No material installations will be allowed to begin without approved coordination drawings.
- R. This contractor shall submit to the Construction Manager a "Fire Protection Equipment Procurement Report" 2 weeks after Contractor is notified of award.

This Contractor shall list all equipment items, which are being purchased, Drawing submittals, sample, etc., for a complete composite report. The report shall be resubmitted to the Construction Manager with updated information weekly until such time as the Construction Manager notifies the Contractor that only bi-monthly or monthly reports are required.

- S. The Fire Protection Drawings are schematic in nature and are not intended to show every offset and detail. The Contractor will make adequate provisions in their bid to accommodate the actual conditions without additional cost to the Owner.
- T. This contractor shall identify all above ceiling equipment that will require access. Coordinate architecturally placed access doors with points of mechanical systems requiring that access.
- U. Equipment furnished by this contractor shall be factory painted and field protected until acceptance by the Owner. If protection has not been provided or maintained, the material will be refinished, repaired or replaced at the discretion of the Construction Manager and at no cost to the Owner.
- V. This contractor shall provide all required rough-ins and connections to all equipment supplied by this contract.

BID PACKAGE No. 5 – Contract # H2455705

Plumbing

REFERENCE DIVISIONS:

0 – Bidding and Contract Requirements
1 – General Requirements
All Contract Drawings and Specifications
All Addendas

REFERENCE SPECIFICATION SECTIONS:

Division 03: 033000 as it pertains to the work of this contract
Division 07: 078400 and 079200 as it pertains to the work of this contract
Division 22: Entire division
Division 31: As it pertains to the work of this contract
Division 33: As it pertains to the work of this contract

REFERENCE DRAWINGS:

All Contract Drawings listed in the Project Manual

ALLOWANCES:

Refer to Specification Section 012100 of Project Manual

ALTERNATES:

Refer to Specification Section 012300 of Project Manual, if applicable

UNIT PRICES: (Used for both Change Order adds and deducts)

Refer to Specification Section 012200 Unit Prices, if applicable

PLUMBING CONSTRUCTION

5.1 GENERAL REQUIREMENTS

Furnish and install in strict accordance with Drawings and Specifications and in general include the following:

- A. This Contractor's Work includes, but shall not be limited to, all Division 00, 01, and applicable specification section as listed on prior page and as shown on the Drawings and described in the Specifications. This Contractor shall also provide, but not be limited to all related Work on all Drawings as listed in Project Manual.
- B. This Contractor represents he has expertise in the performance of Work for this trade and assures all systems to be complete, functional installed in accordance with the best practices consistent with premium quality material and workmanship.
- C. This Contractor shall furnish and install all sleeves, inserts, anchor bolts, etc. as required for this Work of this Contact. If piping is installed prior to the wall construction, a loose sleeve shall be installed around pipe in close proximity for setting by Mason or Carpenter.
- D. All sleeves and penetrations installed by this Contractor that pass through fire rated barriers shall be properly firesafed by this Contractor. U.L. approved systems, i.e., 1, 2 and 4-hour ratings. This Contractor shall submit for approval prior to application.
- E. Contractor should note that many areas of the building have exposed ceilings, all work must be of the highest quality.
- F. This Contractor shall protect all pipe, whether loose or installed, to prohibit the contamination by foreign material in an acceptable manner. If proper protection has not been enforced, an Independent Cleaning Contractor shall be employed by this Contractor to clean systems in a manner acceptable to the Architect and Construction Manager at no cost to the Owner.
- G. This Contractor shall contact and make all arrangements and pay all fees and obtain all necessary permits with Utility Companies having jurisdiction in order to schedule any shutdowns, disconnections or relocations. This Contractor shall schedule any such occurrences at least 48 hours in advance with Construction Manager and Owner.
- H. All motors and controllers specified to be factory mounted and wired shall be purchased with equipment. Field installation of equipment controls and wiring specified to be "factory mounted" will not be allowed.
- I. This Contractor is responsible for forwarding a copy of pertinent information for devices and components that are to be supplied by this Contractor that require coordination and/or installation by others. This Contractor shall receive a signed receipt for their records.
- J. All fixtures must be tested, certified (if required), and operational per phasing plan and Construction Schedule.
- K. Installation and testing of backflow preventers shall be per New York State Department of Health guidelines and Local Authorities Having Jurisdiction.

- L. Certain items of equipment furnished by this Contractor may be eligible for rebates of energy efficient equipment from the utility company, i.e., pumps and motors. This Contractor shall cooperate with the Owner and the Construction Manager in securing these rebates for the Owner, which may include providing duplicate invoices from manufacturers to verify equipment types, efficiencies, etc.
- M. The Plumbing Drawings are schematic in nature and are not intended to show every offset and detail. This Contractor will make adequate provisions in their bid to accommodate the actual conditions without additional cost to the Owner.
- N. This Contractor shall identify all above ceiling equipment that will require access. This is in addition to any specification requirements for tags, labels, etc., shop drawings should also highlight these areas for the Architect/Engineer's review. In addition, this Contractor shall notify, in writing, the Construction Manager and Architect/Engineer of all the areas where equipment maintenance access is difficult. Coordinate architecturally placed access doors with points of mechanical systems requiring that access.
- O. This Contractor shall furnish, install, and maintain adequate protection of components and equipment that is factory finished until substantial completion and acceptance by the Owner. If protection has not been provided or maintained, the material will be refinished, repaired or replaced at the discretion of the Architect and/or Construction Manager and at no cost to the Owner.
- P. This Contractor shall layout all roof penetrations for vent piping, etc. and is responsible for cutting of roof deck. All roofing, flashing, pipe boots, etc. shall be provided and installed by the Roofing Contractor.
- Q. This Contractor shall have the chlorination of the domestic water system performed by an Independent Contractor per the Contract Documents and the Local Authorities Having Jurisdiction. Certified reports to be issued on completion. Disposal of the chlorine/water solution is the responsibility of this Contractor. A method of disposal must be submitted and approved prior to the chlorination procedure. This Contractor shall include all costs for chlorination and testing in their base bid.
- R. This Contractor shall include all labor, materials, tools, etc. for the complete testing and commissioning of all plumbing and related electrical systems including incremental testing as required by the Schedule, and include, in the base bid, a minimum of 24 hours on site operation and maintenance instruction. Instructional sessions must be scheduled, and Contractor generated meeting minutes signed-off by the Construction Manager and Owner Representative to satisfy this requirement.
- S. This Contractor shall set all floor drains and cleanouts in a bed of concrete or permanently fastened, in a manner acceptable to the Architect, prior to concrete slab placement. It is this Contractor's responsibility to monitor all drains and clean outs during the concrete pours to be sure that the finished product remains in the correct elevation and alignment. Any corrective work (cutting and patching of concrete and/or finishes) will

be the responsibility of this contract at no cost to the Owner.

- T. This Contractor shall provide labor, tools, and incidental materials for a complete installation of items furnished by others required for the work of this Contract.
- U. This Contractor shall be responsible for all concrete equipment pads necessary for the Work of this Contract. This Contractor shall provide all concrete required for the installation of work of this Contract, unless specifically noted in the Contract Documents as being provided by others. This Contractor shall submit design mix for approval prior to pouring of any concrete.
- V. This Contractor shall submit to the Construction Manager a "Plumbing Equipment Procurement Report" within 2 weeks after Contractor is notified of award. This Contractor shall list all equipment items that are being purchased, drawing submittals, sample, etc., for a complete composite report. The report shall be resubmitted to the Construction Manager with updated information weekly until the Construction Manager notifies this Contractor that only bi-monthly or monthly reports are required.
- W. This Contractor is responsible for the installation and testing of all new storm, domestic water, and sanitary piping below the concrete slab within the building foundation and extending 5' outside building exterior. Excavation and backfill for under slab piping to be the responsibility of the Site Contractor, layout of excavations is the responsibility of the Plumbing Contractor.

5.2 COORDINATION

Furnish and install in strict accordance with Drawings and Specifications and in general include the following:

- A. This Contractor shall take part in the coordination of its work with all the affected trades and shall sign-off on This Contractor's Coordinated Drawings. This Contractor shall distribute wall penetration drawings, through the Construction Manager, for coordination with the work of other Prime Contractors.
- B. This Contractor must coordinate their Work in accordance with the Work of the other trades at no additional cost to the Owner. No additional compensation will be made for extra offsets and/or piping or retrofit work due to improper component location or failure to coordinate the plumbing work with that of the other Contractors.
- C. This Contractor shall take special care in verifying with the electrical trade that this equipment matches the characteristics of the power being supplied.
- D. This Contractor shall provide all required rough-ins and connections to all equipment. This equipment shall include equipment provided by others.
- E. This Contractor shall include all costs for shift work, overtime, and extended hours necessary to complete the Work pursuant to the Milestone Schedule in their Base Bid.
- F. This Contractor shall make all final plumbing and gas connections to components and items provided by other Contractors that require plumbing connections. Final

connections shall include miscellaneous components necessary to make the final connections. This Contractor shall coordinate their work with the rough-ins of all other Contractors.

- A. The HVAC Contractor shall prepare Background Drawings to be used as the basis for Coordination Drawings in all areas or as determined by the Construction Manager. These drawings shall be completed by a qualified draftsman whose credentials shall be submitted on Notice to Proceed and approved prior to the Contract Execution. All Architectural features shall be detailed clearly, i.e., permanent casework, interior columns, partitions, finish ceiling and roof elevations, etc., as well as all fire protection work. The Plumbing and Electric Contractors shall overlay their work on the Coordination Drawings and participate in Coordination Meetings, as required by the Construction Manager to resolve all conflicts and determine locations and elevations. Once complete and signed-off, this Contractor will submit dimensioned wall and slab penetration drawings and pad drawings. No material installations will be allowed to begin without approved coordination drawings.
- H. Installation of piping and equipment overhead in areas that are to remain exposed structure and be painted to be closely coordinated to ensure the painter does not have to keep revisiting to paint additional items.

BID PACKAGE No. 6 – Contract #H2455706

MECHANICAL

REFERENCE DIVISIONS:

0 – Bidding and Contract Requirements
1 – General Requirements
All Contract Drawings and Specifications
All Addendas

REFERENCE SPECIFICATION SECTIONS:

Division 3: 033000 as it pertains to the work of this contract
Division 7: 078400 and 079200 as it pertains to the work of this contract
Division 31: As it pertains to the work of this contract
Division 23: Entire division

REFERENCE DRAWINGS:

All Contract Drawings listed in the Project Manual

ALLOWANCES:

Refer to Specification Section 012100 of Project Manual

ALTERNATES:

Refer to Specification Section 012300 of Project Manual, if applicable

UNIT PRICES: (Used for both Change Order adds and deducts)

Refer to Specification Section 012200 Unit Prices, if applicable

MECHANICAL CONSTRUCTION

6.1 GENERAL REQUIREMENTS

Furnish and install in strict accordance with Drawings and Specifications and in general include the following:

- A. This Contractor's Work includes, but shall not be limited to, all Division 00, 01, and applicable specification section as listed on prior page and as shown on the Drawings and described in the Specifications. This Contractor shall also provide, but not be limited to all related Work on all Drawings as listed in Project Manual.
- B. This Contractor shall also provide, but not be limited to all related work on all Drawings listed in the Project Manual.
- C. All pipe and cut openings shall be protected to prohibit the contamination of foreign material in a manner acceptable to the Construction Manager and the Owner. If proper protection has not been enforced, an Independent Cleaning Contractor shall be employed by this Contractor to clean systems in a manner acceptable to the Construction Manager and the Owner at no cost to the Owner. This includes protection for all new Work.
- D. This Contractor shall include all labor for the complete testing and Startup of all HVAC and Temperature Controls and related Electrical Systems including incremental testing as required by the Specifications, and include in the Base Bid a minimum of 40 hours on site operation and maintenance instruction. Instructional sessions must be scheduled with meeting minutes generated by this Contractor and signed-off by the Owners Representative and Construction Manager to satisfy this requirement. This contractor will be required to work with the independent commissioning agent and be required to make all corrections requested by same.
- E. This Contractor shall perform a thorough cleaning of all areas designated as mechanical rooms, fan rooms and boiler rooms to ensure that all material and construction debris have been removed in preparation for final cleaning by General Contractor.
- F. Certain items of equipment furnished by this Contractor may be eligible for rebates of energy efficient equipment from the utility company, i.e., motors, air-cooled condensing units, rooftop units. This Contractor shall cooperate with the Owner and the Construction Manager in securing these rebates for the Owner, which may include providing duplicate invoices from manufactures to verify equipment types, efficiencies, etc.
- G. Equipment furnished by this Contractor shall be factory finished, and field protected until acceptance by the Owner. If protection has not been provided or maintained, the material will be refinished, repaired, or replaced at the discretion of the Construction Manager and at no cost to the Owner.
- H. All motors and controllers specified to be factory mounted and wired shall be purchased with equipment. Field installation of equipment controls and wiring specified to be

“factory mounted” will not be allowed. Where miscellaneous electrical devices are to be supplied to the Electrical and Special Systems Subcontractor, this Contractor is responsible for forwarding a copy of the signed receipt for the equipment to the Construction Manager.

- I. This Contractor shall take special care in verifying with the electrical trade that their equipment matches the characteristics of the power being supplied.
- J. The Drawings are schematic in nature and are not intended to show every offset and detail. This Contractor will make adequate provisions in their bid to accommodate the actual conditions without additional cost to the Owner.
- K. This Contractor shall identify all above ceiling equipment that will require access. This is in addition to any specification requirements for tags, labels, etc. Shop Drawings should also highlight these areas for the Architect/Engineer's review. In addition, the Subcontractors shall notify the Construction Manager and Architect/Engineer of all areas where equipment maintenance access is difficult. Coordinate architecturally placed access doors with points of mechanical systems requiring that access. This Contractor shall furnish and install all access doors within components (access doors within the ductwork assemble, etc) provided by this Contractor.
- L. All concrete required for the installation of work of this Contract, including patching, thrust blocks, and housekeeping pads, shall be provided by this Contractor, unless specifically noted in the Contract Documents as being provided by others. Submit design mix for approval prior to pouring of any concrete.
- M. This Contractor responsible for furnishing and installation of all wiring, devices and panels required for the specified HVAC Control system. All wiring must be in conduits being that most areas do not receive ceilings. This shall include all devices and wiring required for various lab exhaust systems.
- N. All notes referring to the “Mechanical Contractor” shall mean the “HVAC”
- O. This Contractor, unless otherwise indicated, shall provide supports (primed and painted) for all equipment provided under this Contract. All equipment supports shall be in accordance with the manufacturer's installation instructions and/or as approved by the Architect/Engineer.
- P. This Contractor shall submit to the Construction manager an “HVAC Equipment Procurement Report” within 2 weeks after Contractor is notified of award. This Contractor shall list all equipment items that are being purchased, Drawing Submittals, Sample, etc., for a complete composite report. The report shall be resubmitted to Construction Manager with updated information weekly until such time as Construction Manager notifies this contractor that only bi-monthly or monthly reports are required.
- Q. This Contractor shall provide and maintain protection for all their Work, equipment, piping, components, etc. during and after installation, including, but not limited to, the use of barricades, signage, kraft paper, plastic, plywood, etc. until the Owner takes beneficial

occupancy.

- R. This Contractor shall provide all trucking, hauling, rigging, hoisting, cranes, etc. as required to complete the Work of this Contract.
- S. Contractor should note that many areas of the building have exposed ceilings, all work of the highest quality.

6.2 COORDINATION

Furnish and install in strict accordance with Drawings and Specifications and in general include the following:

- A. This Contractor shall provide Coordination Drawings for all areas or as determined by the Construction Manager. These drawings shall be completed by a qualified draftsman whose credentials shall be submitted on Notice to Proceed and approved prior to the Contract execution. All Architectural features will be detailed clearly, i.e., permanent casework, interior columns & beams, partitions, finish ceiling and roof elevations, etc., as well as all HVAC Work. The Plumbing and Electrical Contractors shall overlay their Work on the Coordination Drawings and participate in Coordination Meetings, as required to resolve all conflicts, and determine locations and elevations. Once complete and signed-off, this Contractor will submit dimensioned wall and slab penetration drawings and pad drawings. No material installations will be allowed to begin without approved coordination drawings.
- B. This Contractor shall take part in the coordination of its work with all the affected trades and shall sign-off on this Contractor's coordination drawings. The Coordination Drawings shall be completed within thirty (30) days of Contract Award and coordinate with the wall erection and Project Schedule. Wall penetration Drawings shall be submitted to the Construction Manager no later than five (5) days prior to wall erection.
- C. This Contractor must install their Work in accordance with the Coordinated Drawings at no additional cost to the Owner. No additional compensation will be made for extra offsets and/or piping or retrofit work due to improper component location.
- D. This Contractor shall furnish and install all louvers for the entire project that are associated with the Work of this Contractor. This Contractor shall coordinate the opening with the Contractor responsible for the wall construction.
- E. This Contractor shall provide all layouts for roof penetrations required by this Contract; this includes identification and marking the roof deck. This Contractor is responsible to cut the roof deck.
- F. This Contractor shall include the furnishing and installing of all sleeves, inserts, anchor bolts, etc. as required for this Work. Provide sleeves in a timely manner to General Contractor for openings in concrete, walls and masonry for installation. If piping is installed prior to the erection of walls, a loose sleeve shall be installed around pipe in

close proximity for setting by others. All sleeves and sheet metal ductwork passing through fire rated barriers shall be properly firesafed by this Contractor. U.L. approved systems, i.e., 1, 2 and 4-hour ratings. Shall be submitted and approved prior to application.

- G. This Contractor shall protect the roof when working on the roof. The protection shall include, but not be limited to, the use of plywood. This Contractor shall furnish and layout all HVAC equipment roof curbs for all roofs. Curb installation and flashing by Roofing Contractor. This Contractor shall place the curbs on the roof. This Contractor shall coordinate the placement of the curb with the Roofing Contractor.
- H. This Contractor shall make all final connections as necessary, to equipment furnished by others. Final connections shall include miscellaneous components necessary to make the final connections. This Contractor shall coordinate their Work, included but not limited to, the rough-ins with the other Prime Contractors.
- I. This Contractor represents he has expertise in the performance of Work for this trade and assures all systems to be complete, functional installed and in accordance with the best practices consistent with premium quality material and workmanship.
- J. This Contractor shall include all costs for shift work, overtime, and extended hours necessary to complete the work pursuant to the Milestone Schedule in their Base Bid.
- K. Installation of piping and equipment overhead in areas that are to remain exposed structure and be painted to be closely coordinated to ensure the painter does not have to keep revisiting to paint additional items.

BID PACKAGE No. 7 – Contract #H2455707

Electrical

REFERENCE DIVISIONS:

0 – Bidding and Contract Requirements
1 – General Requirements
All Contract Drawings and Specifications
All Addendas

REFERENCE SPECIFICATION SECTIONS:

Division 3: 033000 as it pertains to the work of this contract
Division 7: 078400 and 079200 as it pertains to the work of this contract
Division 26: Entire Division,
Division 31: As it pertains to the work of this contract
Division 32: As it pertains to the work of this contract

REFERENCE DRAWINGS:

All Contract Drawings listed in the Project Manual

ALLOWANCES:

Refer to Specification Section 012100 of Project Manual

ALTERNATES:

Refer to Specification Section 012300 of Project Manual, if applicable

UNIT PRICES: (Used for both Change Order adds and deducts)

Refer to Specification Section 012200 Unit Prices, if applicable

ELECTRICAL CONSTRUCTION

7.1 GENERAL REQUIREMENTS

Furnish and install in strict accordance with Drawings and Specifications and in general include the following:

- A. This Contractor's Work includes, but shall not be limited to, all Division 00, 01, and applicable specification section as listed on prior page and as shown on the Drawings and described in the Specifications. This Contractor shall also provide, but not be limited to all related Work on all Drawings as listed in Project Manual.
- B. This Contractor shall also provide, but not be limited to all related work on all Drawings listed in the Project Manual.
- C. This Contractor shall furnish and install all labor, materials, supervision, equipment, scaffolding, layout, deliveries, trucking, hoisting, rigging, shop drawings, submittals, and all other items related and required to complete all Electrical, Communications, Electronic Safety/Security, and Special Systems Work in accordance with the Contract Documents and all applicable codes having jurisdiction.
- D. This Contractor shall have expertise in the performance of Work for this trade and assures all systems to be complete, functional installed in accordance with the best practices consistent with premium quality material and workmanship.
- E. This Contractor shall include the furnishing and installing of all sleeves, inserts, anchor bolts, etc. as required for this Work. If conduit is installed prior to the erection of walls, a loose sleeve shall be installed around conduit in close proximity for setting by Mason or Carpenter.
- F. All sleeves passing through fire rated barriers shall be properly firesafed by this Contractor. This Contractor shall submit and approve all U.L. approved systems (i.e. 1, 2 and 4-hour ratings) prior to application.
- G. This Contractor shall notify the Construction Manager and Architect/Engineer of all the areas where equipment maintenance access is difficult. Coordinate Architecturally placed access doors with points of electrical systems requiring that access.
- H. This Contractor shall be responsible for all temporary power from the temporary pole to be placed by National Grid. This includes providing and installing the required panel and transformer at the pole location per the temporary power one line diagram. Power to the Construction Manager's trailer and connections as required to power all equipment in the trailer. Provide and install conduit and wire to provide power to the building, this includes conduit that is to come from the pole below grade to come up in ME106 and continue to the Penthouse to power the required temporary panel and transformer. From the panel in the penthouse, it is expected that panels will be required throughout the building as construction progresses, the panel locations are expected to be ME105, ME110, LL101, ME202 along with the panel in the Penthouse ME200. No holes are to be permitted in the

CLT Deck for temporary services. With permanent power not expected until late in the project, this Contractor will be responsible to install power to the elevator equipment from the temporary service during elevator installation and removal of same at the appropriate time. Any temporary power set-ups must comply with the requirements of all codes and agencies having jurisdiction. All excavations and backfill for temporary electric is the responsibility of the Electrical Contractor.

- I. This Contractor shall be responsible for all excavations and backfill required for all work related to reworking and rerouting of existing site lighting as noted on E010, C103 and elsewhere in this summary to include removal of existing conduit no longer in use.
- J. This Contractor shall be responsible for all excavations and backfill for new electrical inside and outside the building footprint to include but not limited to the work shown on E011, Electrical excavation for new 4" communications conduits begins at the manhole alongside the new dumpster pad, from this point to the Academic building the Site Contractor will be responsible for excavations, backfill and restoration. All conduits, handholes and foundation penetrations by this Contractor.
- K. Where miscellaneous electrical devices are to be supplied to this Contractor from other trades, this Contractor is responsible for forwarding a copy of a signed receipt to Construction Manager.
- L. This Contractor shall protect all conduits, whether loose or installed, prohibit the contamination of foreign material in a manner acceptable to Construction Manager. If proper protection has not been enforced, the Construction Manager shall employ an Independent Cleaning Contractor to clean systems and backcharge the amount from this Contractor's Contract Amount.
- M. This Contractor shall submit to the Construction Manager an "Electrical Equipment Procurement Report" within 2 weeks after Contractor notified of award. This Contractor shall list all equipment items that are being purchased. Drawing submittals, sample, etc., for a complete composite report. The report shall be resubmitted to the Construction Manager with updated information weekly until the Construction Manager notifies this Contractor that only bi-monthly or monthly reports are required.
- N. This Contractor shall provide all required rough-ins and connections for all divisions listed in the project manual and components shown on the Contract Drawings. This installation shall furnish and install all miscellaneous components necessary so the equipment functions.
- O. Contractor should note that many areas of the building have exposed ceilings, all work must be in conduits with work of the highest quality.
- P. This Contractor responsible for all work required to add required lighting in the new Salt Barn.

7.2 COORDINATION

Furnish and install in strict accordance with Drawings and Specifications and in general include the following:

- A. This Contractor shall take part in the coordination of its Work with all the affected trades and shall sign-off on this Contractor's Coordinated Drawings. Wall penetration drawings shall be submitted no later than five (5) days prior to wall erection. This Contractor shall detail all lighting fixtures, panels with associated clearances, duct banks, bus duct, conduit racks, and all individual conduits 1½" and larger on the coordination drawings.
- B. This Contractor must install their Work in accordance with the Coordinated Drawings at no additional cost to the Owner. No additional compensation will be made for extra offsets and/or piping or retrofit work due to improper component location.
- C. This Contractor shall take special care in verifying with all trades that their equipment matches the characteristics of the power being supplied.
- D. The Electrical Drawings are schematic in nature and are not intended to show every offset and detail. This Contractor will make adequate provisions in their bid to accommodate the actual conditions without additional cost to the Owner, i.e. wiring any undesignated homerun to the closet respective panel.
- E. This Contractor shall identify all above ceiling equipment that will require access. This is in addition to any Specification requirements for tags, labels, etc. Shop Drawings should also highlight these areas for the Architect/Engineer's review. In addition, this Contractor shall notify Construction Manager and Architect/Engineer of all the areas where equipment maintenance access is difficult. Coordinate Architecturally placed access doors with points of electrical systems requiring that access.
- F. All motors and controllers specified to be factory mounted and wired shall be purchased with equipment. Field installation of equipment controls and wiring specified to be "factory mounted" will not be allowed. Where miscellaneous electrical devices are to be supplied, this Contractor is responsible for forwarding a copy of the signed receipt for the equipment to the Construction Manager.
- G. Any equipment furnished by this Contractor that is factory painted shall be protected until acceptance by the Owner. If protection has not been provided or maintained, the material will be refinished, repaired, or replaced at the discretion of Construction Manager and at no cost to the Owner.
- H. This Contractor shall coordinate their Work for the fire alarm system with the other Prime Contractors.
- I. This Contractor shall include all labor, materials, tools, etc. for the complete testing and start up of all electrical systems and include, in the base bid, a minimum of 40 hours on site operation and maintenance instruction. Instructional sessions must be scheduled and this contractor shall generate meeting minutes, signed-off by the Construction

Manager and Owner Representative, to satisfy this requirement. This contractor will be required to work with the independent commissioning agent and be required to make all corrections requested by same.

- J. This Contractor shall coordinate with local Utility Company, Construction Manager, and Owner, for shutdowns, relocations, or disconnection/re-connections. Coordinate any required shutdowns at least 48 hours in advance. This Contractor shall include any Utility Company fees associated with the shutdowns, relocations, or disconnection/re-connections. Include all premium time required to make such terminations, disconnections, or reconnections as required by the schedule.
- K. This Contractor, shall furnish and install all concrete required for the Work of this contract, including housekeeping pads, transformer pads, light pole bases, duct banks, manholes, etc., unless specifically noted in the Construction Documents as provided by others. Refer to Division 03 for concrete requirements. This Contractor shall submit design mix for approval prior to the placement of any concrete.
- L. This Contractor shall protect and maintain protection, for their Work, during and after installation, including, but not limited to, the use of barricades, kraft paper, plastic, plywood, etc. until the Owner takes beneficial occupancy. This Contractor shall repair or replace any item damaged resulting from inadequate protection at no cost to the Owner or Construction Manager.
- M. The HVAC Contractor shall prepare background drawings to be used as the basis for coordination drawings in all areas or as determined by the Construction Manager. This Contractor shall overlay their Work on the Coordination Drawings and participate in coordination meetings, as required to resolve all conflicts, and determine locations and elevations. Once complete and signed off, this Contractor will submit dimensioned wall and slab penetration drawings and pad drawings.
- N. This Contractor required to perform work necessary to remove existing site lighting within the construction zone and reroute circuits to keep all remaining site lighting active.
- O. This Contractor shall include all costs for shift work, overtime, and extended hours necessary to complete the work pursuant to the Milestone Schedule in their Base Bid.
- P. Installation of conduits and equipment overhead in areas that are to remain exposed structure and be painted to be closely coordinated to ensure the painter does not have to keep revisiting to paint additional items.

SECTION 011111

UNIFORM SAFETY STANDARDS

PART 1 - GENERAL

1.0 Related Requirements Specified Elsewhere

1. Summary of Work: Section 011100

1.1 CERTIFICATE OF OCCUPANCY

- A. The occupied portion of any building shall always comply with the minimum requirements necessary to maintain a certificate of occupancy.

1.2 SAFETY AND SECURITY STATEMENT

- A. General safety and security standards for construction projects.
 1. All construction materials shall be stored in a safe and secure manner in locations approved by Construction Manager
 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 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.

1.3 EXITING PLAN

- A. An exiting plan shall be provided so that exits will be maintained at all times during the construction period in conformance with the New York State Building Code.

1.4 FUMES

- A. The contractor shall be responsible for the control of chemical fumes, gases, and other contaminants produced by welding, gasoline or diesel engines, roofing, paving, painting, etc. to ensure they do not enter any of the adjacent building air intakes.

1.5 OFF-GASSING

- 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.

PART 2 - NOT USED

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SECTION 012100

ALLOWANCES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Include in the Base Bid a Lump Sum Contingency Allowance as indicated.
- B. The overhead and profit for the allowance shall be included in the Base Bid and are not part of the allowances.
- C. The contingency allowance shall be used only upon written authorization of the Architect and the Owner's Representative.
- D. **Labor Rate Worksheets, must be turned in for each trade, per title, showing per hour rate to be used in all time and material work and proposals.**
- E. At the closeout of the Project, monies remaining in the Contingency Allowance will be credited to the Owner by Change Order.

1.2 ALLOWANCES

- A. Contract H2455701 – General Construction
 - 1. Included in the Base Bid is the sum of Two Hundred Thousand Dollars (\$200,000.00) to cover the actual cost of Work resulting from unforeseen conditions discovered during the progress of the Work and for work beyond the scope of the Contract Documents.
 - 2. Final Cleaning Allowance: Included in the Base Bid is the sum of Thirty Thousand Dollars (\$30,000) to cover the cost of hiring a professional cleaning service to perform final cleaning at final project completion.
- B. Contract H2455702 – Sitework Construction
 - 1. Included in the Base Bid is the sum of Two Hundred Thousand Dollars (\$200,000.00) to cover the actual cost of Work resulting from unforeseen conditions discovered during the progress of the Work and for work beyond the scope of the Contract Documents.
- C. Contract H2455703 – Roofing Construction
 - 1. Included in the Base Bid is the sum of Thirty Thousand Dollars (\$30,000.00) to cover the actual cost of Work resulting from unforeseen conditions discovered during the progress of the Work and for work beyond the scope of the Contract Documents.
- D. Contract H2455704 – Fire Protection Construction
 - 1. Included in the Base Bid is the sum of Thirty Thousand Dollars (\$30,000.00) to cover the actual cost of Work resulting from unforeseen conditions discovered during the progress of the Work and for work beyond the scope of the Contract Documents.

E. Contract H2455705 – Plumbing Construction

1. Included in the Base Bid is the sum of Forty Thousand Dollars (\$40,000.00) to cover the actual cost of Work resulting from unforeseen conditions discovered during the progress of the Work and for work beyond the scope of the Contract Documents.

F. Contract H2455706 – Mechanical Construction

2. Included in the Base Bid is the sum of Two Hundred Thousand Dollars (\$200,000.00) to cover the actual cost of Work resulting from unforeseen conditions discovered during the progress of the Work and for work beyond the scope of the Contract Documents.

G. Contract H2455707 – Electrical Construction

1. Included in the Base Bid is the sum of Two Hundred Thousand Dollars (\$200,000.00) to cover the actual cost of Work resulting from unforeseen conditions discovered during the progress of the Work and for work beyond the scope of the Contract Documents.
2. Security Allowance: Included in Base Bid is the sum of Fifty Thousand Dollars (\$50,000.00) for the access control system components and associated programming. Component installation, and all associated wiring and conduit shall be included in the base bid. The Owner shall select the access control system vendor; all work shall be coordinated to provide a complete system installation. Unspent allowance dollars shall be credited back to the County via change order.

SECTION 01 22 00

UNIT PRICES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Measurement and payment - unit prices.

1.02 MEASUREMENT AND PAYMENT

- A. Authority: Measurement methods are delineated in the individual specification sections and outlined below.
- B. The Construction Manager will take measurements and compute quantities accordingly. Provide and assist in the taking of measurements.
- C. Unit Quantities: Quantities and measurements indicated below are for base bid. If adjustments are directed, actual quantities provided will determine payment.
- D. Payment Includes: Full compensation for required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work, overhead and profit.

1.03 UNIT PRICES

A. CONTRACT NO. H2455701 - GENERAL CONSTRUCTION

1. UNIT PRICE NO. G1, PENETRATION IN WOOD BEAM:

Description: Provide and install (1) 3" diameter penetration in a wood beam as detailed on architectural drawings in addition to those shown on Reflected Ceiling Plans. NOTE: (10) additional penetrations to be included in the base bid.

Unit of Measurement: Per penetration (lump sum)

2. UNIT PRICE NO. G2, PLUG FOR PENETRATION IN WOOD BEAM:

Description: Provide and install (1) wood plug for beam penetration shown on drawing but not utilized for services. NOTE: (100) wood plugs to be included in the base bid.

Unit of Measurement: Per wood plug (lump sum)

3. UNIT PRICE NO. G3, REMEDIAL FLOOR COATING:

Description: Installation of remedial floor coating per Section 09 05 61.

Unit of Measurement: Per square foot, installed

4. UNIT PRICE NO. G4, AGGREGATE PIER SOIL MODULUS TESTING:

Description: Perform Soil Modulus Testing of aggregate pier as described in Specification Section 31 66 13.

Unit of Measurement: Per aggregate pier, NOTE: Soil Modulus Testing of (2) aggregate piers to be included in the base bid.

5. UNIT PRICE NO. G5, ADDITIONAL AGGREGATE PIER:

Description: Install additional Aggregate Piers constructed during the same mobilization as authorized by the Owner and as described in Specification Section 31 66 13.

Unit of Measurement: Per linear foot of aggregate pier.

6. UNIT PRICE NO. G6, VIBRATION MONITORING:

Description: Provide vibration monitoring as described in Specification Section 31 66 13.

Unit of Measurement: Per Day (after day 1).

B. CONTRACT NO. H2455702 – SITEWORK

1. UNIT PRICE NO. L1, UNDERCUTTING

Description: Undercutting where unsatisfactory soils are discovered. This includes excavation, removal and haul away of unsuitable material, backfill and compaction with suitable granular material as specified in Section 311201. **Note: The Base Bid includes 200 (two-hundred-) CY of Undercutting.**

Unit of Measurement: Per cubic yards, installed

2. UNIT PRICE NO. L2, SOIL STABILIZATION FABRIC:

Description: Woven soil stabilization fabric furnished and installed as described in Section 321201.

Unit of Measurement: Per cubic yards, installed

3. UNIT PRICE NO. L3, STANDARD CONCRETE SIDEWALK:

Description: Furnish and install new 5-inch depth standard sidewalk(s) as described in Section 321301 and as detailed. This includes excavation and removals for placement of standard concrete walks.

Unit of Measurement: Per square foot, installed

4. UNIT PRICE NO. L4, STORM WATER MANAGEMENT TRENTCH:

Description: 4" storm water management trench (SMT) piping, filter fabric and drainage stone, furnished and placed as described in Section 334001. This includes trenching and removals.

Unit of Measurement: Per linear foot, installed

5. UNIT PRICE NO. L5, MEDIUM DUTY ASPHALT:

Description: Medium-duty asphalt, stabilization fabric and stone subbase as described in Section 321201 and as detailed on the plans. This includes excavation and removals for placement of medium-duty asphalt.

Unit of Measurement: Per square yard, installed

6. UNIT PRICE NO. L6, HEAVY DUTY ASPHALT:

Description: Heavy-duty asphalt, stabilization fabric and stone subbase as described in Section 321201 and as detailed on the plans. This includes excavation and removals for placement of heavy-duty asphalt.

Unit of Measurement: Per square yards, installed

7. UNIT PRICE NO. L7, ASPHALT SEALING:

Description: Asphalt sealing of existing parking lots, including cleaning the surface, crack repair and sealing with asphalt emulsion pavement sealer as specified in section 321201 and as detailed on the plans.

Unit of Measurement: Per square yard, sealed

8. UNIT PRICE NO. L8, ASPHALT PAVEMENT LINE STRIPING:

Description: Asphalt pavement line striping of existing parking lots, including cleaning the surface and painting parking stalls and other pavement markings as specified in section 321201 and as detailed on the plans.

Unit of Measurement: Per parking space

C. CONTRACT NO. H2455707 – ELECTRICAL

1. UNIT PRICE NO. E1. FIXTURE TYPE L5C

Description: Provide fixture type L5C, complete with 25'-0" of 2-#12 plus 1-#12 ground in ½" electrical metallic tubing.

Units of Measurement: Per each fixture, installed

2. UNIT PRICE NO. E2. FIXTURE TYPE L7C

Description: Provide fixture type L7C, complete with 25'-0" of 2-#12 plus 1-#12 ground in ½" electrical metallic tubing.

Units of Measurement: Per each fixture, installed

3. UNIT PRICE NO. E3. FIXTURE TYPE L8B

Description: Provide fixture type L8B, complete with 25'-0" of 2-#12 plus 1-#12 ground in ½" electrical metallic tubing.

Units of Measurement: Per each fixture, installed

4. UNIT PRICE NO. E4. EMERGENCY LIGHTING RELAY, ELR-1

Description: Provide emergency lighting relay, ELR-1, complete with 50'-0" of 2-#12 plus 1-#12 ground in ½" electrical metallic tubing.

Units of Measurement: Per each relay, installed

5. UNIT PRICE NO. E5. OCCUPANCY SENSOR, OS-5

Description: Provide occupancy sensor, OS-5, complete with 50'-0" of conductors, including associated system programming.

Units of Measurement: Per each sensor, installed

6. UNIT PRICE NO. E6. DUPLEX RECEPTACLE

Description: Provide duplex receptacle, complete with 25'-0" of 2-#12 plus 1-#12 ground in ½" electrical metallic tubing.

Units of Measurement: Per each receptacle, installed

7. UNIT PRICE NO. E7. PHOTOELECTRIC SMOKE DETECTOR

Description: Provide photoelectric smoke detector, complete with 50'-0" of conductors ½" electrical metallic tubing, including all associated system programming.

Units of Measurement: Per each detector, installed

8. UNIT PRICE NO. E8. OUTLET ASSEMBLY

Description: Provide data outlet assembly, complete with 150'-0" of Cat 6 conductors and 15'-0" of ½" electrical metallic tubing, including associated termination and testing.

Units of Measurement: Per each assembly, installed

9. UNIT PRICE NO. E9. DUAL DATA OUTLET ASSEMBLY

Description: Provide dual data outlet assembly, complete with 300'-0" of Cat 6 conductors and 15'-0" of ½" electrical metallic tubing, including associated termination and testing.

Units of Measurement: Per each assembly, installed

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

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SECTION 012900
SCHEDULE OF VALUES - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 012100 "Allowances" for procedural requirements governing the handling and processing of allowances.
 - 2. Section 012200 "Unit Prices" for administrative requirements governing the use of unit prices.
 - 3. Section 011100 Summary of work
 - 4. Section 013119 Project Meetings
 - 5. Section 013216 Construction Schedules

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with continuation sheets.
 - b. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to the Construction Manager at earliest possible date, but no later than fourteen days before the date scheduled for submittal of initial Applications for Payment.

- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide labor and material breakdown for each Specification Section.
1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Name of Construction Manager.
 - d. Architect's project number.
 - e. Contractor's name and address.
 - f. Date of submittal.
 2. Arrange schedule of values consistent with format of AIA Document G703.
Include line item breakdowns of general conditions for the following:
 1. Project Administration
 2. Performance and Payment Bonds
 3. Field Supervision and Layout
 4. Temporary Facilities
 5. Insurance/Bonds
 6. Project Closeout
 7. Project Record Documents
 8. Cleaning-Up
 9. Owner Training, if applicable
 10. Alternates – labelled separately and broken out by labor and materials
 11. Allowances – Separate G703 for allowance, unless otherwise notified.
 12. Unit Prices – Separate G703 for unit price allowance unless otherwise notified.
 3. Arrange schedule of values to indicate:
 - a. H Account Number must be shown on cover sheet of AIA
 - b. SOV to be broken out by Labor and Materials for each item
 - c. Alternates are to labelled and broken out separately
 - 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.
 4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents, in CSI format.
 5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 6. Allowances/Unit Price Allowances: Provide a separate line item in the schedule of values for each allowance.

7. 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.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and Construction Manager 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.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement. Certified payroll must accompany each payment request for all contractors and subcontractors.
- C. Payment Application Times: Submit Application for Payment to Construction Manager by the 27th of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.
 1. Submit "pencil copy" of Application for Payment by the 20th of the month for review and approval by Construction Manager. Pencil copy review may be held pending receipt of all preconstruction documents including submittals.
- D. Application for Payment Forms: Use AIA Document G702/CMA and AIA Document G703 as form for Applications for Payment. Oneida County Voucher will apply and must be submitted with each application.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Non-notarized forms will be returned without action.
 1. Entries shall match data on the schedule of values and Contractor's construction schedule.
 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 any Approved Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- 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.
 - a. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials. Owner may require supporting photographs for additional backup.
 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.

3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- G. Transmittal: Submit typed electronic format for each Application for Payment to Construction Manager, all required certified payroll from prime and subcontractors working for that period must be included. Also include lien releases, if required by Owner.
 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- H. Waivers of Mechanic's Lien, if required by Owner: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
 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 executed waivers of lien on forms acceptable to Owner.
- I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
 1. List of subcontractors and suppliers, with contact information.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).
 4. Certificates of insurance and insurance policies.
 5. Performance and payment bonds.
 6. Copy of Contractors Safety Program/Manual
 7. Labor Rate Worksheets – See Section 2 – Page 6
 8. Equipment Procurement Schedules
- J. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Balance of Certified Payroll
 3. Evidence of punchlist completion.
 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. Compliance with Labor Rates
 10. Evidence that all verbal and written instructions/instruction sessions required by the contract have been completed.
 11. Signed materials and equipment list of any required extra stock has been turned over to the Owner.
 12. Evidence that claims have been settled.
 13. All other documentation that may be required by this contract.

2.0 LABOR RATE BREAKDOWNS

- 2.1 For each Labor Classification employed or for which employment is anticipated, submit a detailed breakdown of the components of the Total Hourly Rate on the form to be provided by Architect/Construction Manager.
- 2.2 Furnish separate pages for each time period for which labor rates are effective.
- 2.3 Calculations on the labor rate breakdown shall reflect actual costs and shall be in accordance with Contract Requirements. Hourly Rates shown on the Labor Rate Breakdown shall be the basis upon which charges for approved time and material work is charged

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

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SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Submit, to the Architect, shop drawings, product data and samples required by the specification sections.
- B. **Attached is the Submittal Cover Sheet that is to be copied, filled out, attached to each item submitted, and returned to the Architect.**
- C. Complete all submittals **(60)** days after Notice to Proceed.

1.02 SHOP DRAWINGS

- A. Original drawings, prepared by Contractor, Subcontractor, supplier or distributor, which illustrate some portion of the work showing fabrication, layout, setting or erection details.
 - 1. Identify details by reference to sheet and detail numbers shown on shop drawings.
 - 2. Sheet size, multiple of 8-1/2 by 11 inches, not to exceed size of contract drawings when unfolded.
 - 3. Photographic reproductions of contract drawings will not be accepted as shop drawings and will be rejected.

1.03 PRODUCT DATA

- A. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts and other standard descriptive data.
 - 1. Modify product data to delete information which is not applicable to project.
 - 2. Supplement standard to provide additional information applicable to project.
 - 3. Clearly mark data to identify applicable materials, products or models.
 - 4. Show dimensions and clearances required.
 - 5. Submit Material Safety Data Sheets (MSDS) for all materials.

1.04 FORM OF SUBMISSION

- A. Shop Drawings and Product Data shall be submitted **electronically** to the Architect in Adobe Acrobat (pdf) Format to: submittals@marchassoc.com.
- B. Samples and Color Charts shall be delivered to the Architect in the required quantities. **Finishes will not be selected from scanned copies.**
- C. When it is necessary to compile data from different sources, data shall be compiled into one (1) pdf file.

- D. When it is necessary to scan paper documents, scans must be clean and legible. Contractors are urged to use a color scanner when necessary.

1.05 CONTRACTOR RESPONSIBILITIES

- A. Do not start or install work requiring submittals until submittals meeting Contract Requirements have been returned to the Contractor.
- B. Review, approve, stamp and sign submittals prior to submission to Architect.
- C. Verify: Field measurements and field construction criteria.
- D. Contractor's responsibility for errors and omissions in submittals is not relieved by Architect's review of submittals.
- E. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Architect's review of submittals unless Architect gives written acceptance of the specific deviations.
- F. Notify Architect in writing, at time of submission, of deviations in submittals from requirements of Contract Documents.
- G. After Architect's review, Contractor is to distribute copies of submittals to parties requiring same for coordination of work.
- H. Make required copies for distribution of shop drawings and product data that have been stamped and signed by the Architect.

1.06 SUBMISSION REQUIREMENTS

- A. Schedule submission to allow 10 working days for review.
- B. Submit number of samples specified.
- C. Submittals shall include:
 - 1. Date and revision dates.
 - 2. Architect project title and number.
 - 3. The names of:
 - a. Architect.
 - b. Contractor.
 - c. Subcontractor.
 - d. Supplier.
 - e. Manufacturer.
 - 4. Identification of product.
 - 5. Relation to adjacent structure of materials.
 - 6. Field dimensions, clearly identified as such.
 - 7. Technical Specification section number.
 - 8. Applicable standards.
 - 9. A blank space, 4 x 4 inches, for the Architect's review stamp.
 - 10. Identification of deviations from Contract Documents.

11. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements and compliance with Contract Documents.
 - a. Submittals without Contractor's stamp will be returned without being reviewed.
- D. Shop Drawing Submittal Cover Sheet
 1. Attach submittal cover sheet, with all blanks filled in for each shop drawing, product data, and sample.

1.07 RESUBMISSION REQUIREMENTS

- A. Shop Drawings
 1. Revise initial drawings as required and resubmit as specified for initial submittal.
 2. Indicate on drawings changes which have been made other than those requested by the Architect.
- B. Product Data and Samples: Submit new data and samples as required for initial submittal.

1.08 CONTRACTOR'S DISTRIBUTION OF SUBMITTALS

- A. Distribute copies of shop drawings and product data which carry the Architect's stamp to:
 1. Contractor's file.
 2. Job site file.
 3. Record Document file.
 4. Other Contractors, as required for coordination.
 5. Subcontractors, as required for coordination.
- B. Distribute samples as directed by Architect.

1.09 ARCHITECT

- A. Review design concept of Project.
- B. Review of separate items does not constitute review of an assembly in which item functions.
- C. Stamp and initial or sign certifying to review of submittal.
- D. Explanation of Architect's Stamp
 1. NO EXCEPTION TAKEN (NET): No corrections, no marks.
 2. MAKE CORRECTIONS NOTED (MCN): Minor amount of corrections; all items can be fabricated at Contractor's risk without further correction; checking is complete and all corrections are obvious without ambiguity.
 3. REVISE AND RESUBMIT (R&R): Minor amount of corrections; noted items must not be fabricated without further correction; checking is not complete; details of items noted by checker are to be further clarified; items not noted to be corrected can be fabricated at Contractor's risk under this stamp.

4. REJECTED: Drawings are rejected as not in accordance with the Contract, too many corrections, or other justifiable reason. The drawing must be corrected and resubmitted. No items are to be fabricated under this stamp.
5. SUBMIT SPECIFIED ITEM (SSI): Item is not as specified. Submit named manufacturer.

E. Return submittals to Contractor for distribution.

1.10 SUBMITTALS REQUIRED FOR REVIEW

- A. The following is the Submittal Cover Sheet to be attached to the required submittals. Contractor is responsible for reviewing each section to determine required submittals.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

* * * * *

ATTACHMENT

SUBMITTAL COVER SHEET

Contractor: _____

Address: _____

Phone: _____

Email: _____



MARCH
ASSOCIATES
ARCHITECTS & PLANNERS, PC

258 Genesee Street, Suite 300 • Utica, New York 13502
315.733.3344 • marchassoc.com

Email submittals directly to: submittals@marchassoc.com

Name of Project: **ONEIDA COUNTY DPW / Mohawk Valley Community College – Science and Technology Building**
New Construction

MARCH No.: **23000**

Type of Submittal: (Check) *Is this a resubmittal?* ☐ Yes Submission Date: _____

☐ Shop Drawing	☐ Schedule	☐ Sample
☐ Product Data	☐ Certificate	☐ Color Sample
☐ Test Report	☐ Warranty	☐ _____
☐ _____	☐ _____	☐ _____

DESCRIPTION:

PRODUCT NAME: _____

MANUFACTURER: _____

ADDRESS: _____

SUBCONTRACTOR/
SUPPLIER: _____

REFERENCES:

SPEC. SECTION NO. _____ DRAWING NO(S): _____

PARAGRAPH: _____ RM. OR DET. NO(S): _____

ARCHITECT REVIEW STAMP

NO EXCEPTION TAKEN ☐ MAKE CORRECTIONS NOTED ☐

REJECTED ☐ REVISE AND RESUBMIT ☐

SUBMIT SPECIFIED ITEM ☐

Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Notations are subject to the requirements of the plans and specifications. Contractor is responsible for dimensions which shall be confirmed and correlated at the job site; Fabrication processed and techniques of construction; Coordination of his work with that of all other trades and the satisfactory performance of his work.

Date: _____ By: _____

MARCH ASSOCIATES – UTICA, NY

CONTRACTORS APPROVAL STAMP:

Architects Remarks:

MARCH OFFICE USE: Date Rec'd: _____

MARCH Log # _____

SECTION 013119

PROJECT MEETINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Related Requirements Specified Elsewhere
 - 1. Summary of Work: Section 011100.
 - 2. Construction Schedules: Section 013216
- B. Construction Manager: Schedule and administer progress meetings.
 - 1. Prepare agendas.
 - 2. Make physical arrangements for meetings.
 - 3. Preside at meetings.
 - 4. Record minutes; include significant proceedings and decisions.
 - 5. Distribute copies of minutes to participants.
 - 6. Furnish copies of minutes to parties in attendance.
- C. Architect will attend meetings to ascertain that Work is expedited consistent with Contract Documents and construction schedule.

1.2 PRE-CONSTRUCTION MEETING

- A. Schedule within seven (7) days after award of contract.
- B. Attendance:
 - 1. Oneida County Representative.
 - 2. Mohawk Valley Community College Representative.
 - 2. Architect.
 - 3. Construction Manager
 - 4. Contractors' representative including Project Superintendent.
- C. Minimum Agenda
 - 1. Introduction.
 - 2. Record documents.
 - 3. Use of Premises
 - a. Field office and storage area.
 - b. Owner's requirements.
 - 4. Distribute and discuss:
 - a. List of major subcontractors.
 - b. Tentative Construction Schedule.
 - 5. Designation of responsible personnel for coordination of work.
 - 6. Major equipment deliveries and priorities.
 - 7. Change Order procedure.
 - 8. Distribution of Contract Documents.
 - 9. Shop drawings, product data, and samples.

10. Clean-up procedures.
11. Location and time for progress meetings.
12. Review of initial Construction Schedule.
13. Additional work procedures

1.3 PROGRESS MEETINGS

- A. Schedule for regular meetings will be set up at the pre-construction meeting. Meetings will be held every two weeks or more frequently, as the work requires. See General Summary for additional information.
- B. Location and time of meetings will be determined at the pre-construction meeting.
- C. Attendance
 1. Construction Manager.
 2. Oneida County Representative.
 3. Mohawk Valley Community College Representative.
 4. Architect.
 5. Contractors Project Manager
 6. Contractors' Project Superintendent.
 7. Subcontractors pertinent to agenda.
- D. Minimum Agenda
 1. Review minutes of previous meeting.
 2. Contractors to provide schedules showing work completed Last Two Weeks and for work to be completed the Next Two Weeks.
 3. Contractors to provide updated Construction Schedule
 2. Review and note field observations, problems and decisions.
 3. Identify present problems and resolve.
 4. Plan work progress during next work period and its effect on related work of others.
 5. Review shop drawings and submittal schedules.
 6. Review proposals and change order status.
 7. Review status of construction schedule.
 8. Coordinate occupancy arrangements and access requirements with Owner.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

* * * * *

SECTION 013200

MATERIAL AND EQUIPMENT

1.0 PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Products.
- B. Transportation and Handling.
- C. Storage and Protection.
- D. Product Options.
- E. Substitutions (See Submittals Section)
- F. Systems Demonstration.
- G. Testing, Adjusting and Balancing of Systems.
- H. Material Safety Data Sheets.

1.2 RELATED REQUIREMENTS

- A. Section 013300 - Submittals: Submittal of manufacturer's certificates.
- B. Section 017700: Project Closeout.

1.3 PRODUCTS

- A. Products include material, equipment and systems.
- B. Comply with Specifications and referenced standards as minimum requirements.
- C. Components required to be supplied in quantity within a Specification Section shall be the same manufacturer and type, and shall be interchangeable.
- D. Do not use materials and equipment removed from existing structure, except as specifically required or allowed by Contract Documents.
- E. The term "Provide" shall mean to furnish and install and connect ready for intended use.

1.4 PRODUCT LABELS

- A. When materials or equipment are specified to conform to ASTM, Federal or other reference specifications, the materials delivered to the site shall bear the manufacturer's printed labels stating that the materials meet the requirements of such referenced specifications.
- B. In addition, submit per Section 013300, written certification that such materials or equipment meet the requirements of such referenced specifications.

1.5 MANUFACTURER'S INSTRUCTIONS

- A. When the Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including copies to the Architect and to the Owner's Representative.
- B. Maintain one set of complete instructions at the job site during installation and until completion.
- C. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.
- D. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with the Architect for further instructions.
- E. Do not proceed with work without clear instructions.

1.6 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of products in accordance with the construction schedule. Coordinate deliveries to avoid conflict with the work and conditions at the site.
- B. Deliver products in undamaged condition in manufacturer's original containers or packaging with identifying labels intact and legible. Immediately upon delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, that products are properly protected and undamaged and that quantities are correct.
- C. Transport and handle materials and equipment in such a manner as to prevent their damage.
- D. Provide workmen and equipment available to receive and unload products delivered to the site. Do not deliver or have delivered, any products to this site unless such forces are available. Employees of the Owner are directed not to accept deliveries for the Contractor.

1.7 STORAGE AND PROTECTION

- A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weathertight enclosures; maintain within temperature and humidity ranges required by manufacturer's instruction.
 - 1. Flammable liquids shall be stored outside the building approximately 200 feet away) in approved storage trailer.
 - 2. Use of noxious materials: Provide Owner 24-hour prior notification of installation or application of products which emit fumes or noxious odors.
- B. For exterior storage of fabricated products, place on blocking, skids or pallets above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.

- C. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.
- D. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.
- E. Provide substantial coverings as necessary to protect installed products from damage, from traffic and subsequent construction operation. Remove when no longer required.

1.8 PRODUCT OPTIONS

- A. Submit to the Architect and Owner a complete list of the major products proposed to be used in accordance with Section 013300. Identify each product by the Specification Section and paragraph requiring product, name of manufacturer and the installing Contractor or Subcontractor.
- B. Product Options:
 - 1. Where products are specified by reference standards or by description only; select any product meeting those standards or description.
 - 2. Where product is specified by naming only one manufacturer due to its unique characteristics: Use product specified or submit product substitution (via substitution request form) that has been submitted per Section 013300, "Product Substitutions," Paragraph 1.6.
 - 3. Where products are specified by "or equal", or by naming several products or manufacturers, select any one of the products or manufacturers named which complies with the Specifications, or submit request for approval of substitution per Section 01350, Paragraph 1.4 through 1.7, as the situation requires.

1.9 SYSTEMS DEMONSTRATION

- A. Verify equipment has been inspected and put into operation and that the equipment and systems are fully operational.
- B. Demonstrate operation and maintenance of equipment and systems to Owner's personnel two weeks prior to date of final inspection. For equipment requiring seasonal operation, perform instructions for other seasons within six months.
- C. Use operation and maintenance manuals as basis of instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed upon time, at equipment location.
- E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instructions.

1.10 TESTING, ADJUSTING AND BALANCING SYSTEMS

- A. Prior to start of work, submit names of the organizations proposed to perform these services. Designate managerial responsibilities for coordination of entire testing, adjusting and balancing.
- B. Fifteen days prior to Substantial Completion, submit three copies of final reports. Submit reports of testing, adjusting, and balancing which is postponed due to seasonal, climatic, occupancy, or other reasons beyond Contractor's control, promptly after execution of those services.
 - 1. Submit three copies of Final Report separately for each facility/building.
- C. Comply with procedural standards of certifying association under whose standards service will be performed.
- D. Notify Architect and Construction Manager three days prior to beginning of operations.
- E. Accurately record data for each step.
- F. Report to Architect any defects or deficiencies not noted during performance of services.

1.11 MATERIAL SAFETY DATA SHEETS (MSDS)

- A. The Contractor shall comply with "Right to Know" requirements of Chapter 551 of Laws of New York, 1980, concerning notification of the use of toxic substances.
- B. Any product or substance installed or used by the Contractor or its subcontractors which is listed in Sub-Part Z of OSHA Part 1910 Title 29 of Federal Regulations entitled "Toxic and Hazardous Substances" shall be identified to the Owner by the Contractor's submission of a standard Material Safety Data Sheet.
- C. Submit a manufacturer's standard form (OSHA 20) to the Owner, with a copy to the Architect and CM, to advise of the use of such material during the period before the material is brought on site.
 - 1. Distribute copies to each other Contractor on site.
 - 2. Distribute copies to own subcontractors at site.
 - 3. Distribute copy to the Owner's Representative, who shall keep and maintain an active file on site.
- D. Each Contract: Maintain a full set of MSDS and a copy of a Hazard Communication (Right-to-Know) Book at each site.

2.0 PART 2 – PRODUCTS – (Not applicable)

3.0 PART 3 – EXECUTION – (Not Applicable)

END OF SECTION 013200

SECTION 01 3216

CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.11 RELATED SECTIONS/REQUIREMENTS

- A. Summary of Work: Section 011100
- B. Applications for Payment: Section 012976

1.02 DESCRIPTION

- A. Prepare and submit to the Construction Manager the Construction Schedule at Pre-Construction Meeting.

Payment Applications may be withheld if this information is not received as required.

1.03 SUBMITTALS

- A. Submit initial schedule at pre-construction meeting.
 - 1. Construction Manager, Architect and Owner will review schedule and return reviewed copy within 5 days after receipt.
 - 2. Re-submit schedule within 5 days after return of reviewed copy.
- B. The Construction Schedule shall be completed and approved prior to submission of the first payment application.

1.04 CONSTRUCTION SCHEDULE DESCRIPTION

- A. Before the Work is started, prepare a sequential list of work items, which constitutes the Work on the project. Schedule shall allow ample time for completion of Work prior to the contract completion date.

1.05 CONTENT OF SCHEDULE

- A. A complete sequence of construction activity.
- B. Dates for beginning, and completion of each element of Work.
- C. The construction schedule shall be a bar chart schedule, divided into units based on the various work of section described in the Divisions of the Contract Documents. The bar chart shall show the various sub-divisions of such work. This Construction Schedule shall show time of shop drawing submittal, with reasonable time for approval, and shall show schedule for completion of each unit of work in increments of ten percent (10%).
- D. The Construction Manager shall incorporate schedules from each Prime Contractor into a single project master schedule that will be used to gauge progress. The schedule will be updated as needed throughout the project.

1.06 UPDATING

- A. CM will Update the schedule to show all changes occurring since previous distribution of schedule.

- B. Indicate progress of each activity.
- C. Include:
 - 1. Actual progress to date, indicated by a vertical line through the Category of Work.
 - 2. Major changes in scope.
 - 3. Activities modified since previous updating.
 - 4. Revised projection due to changes.
- D. Prior to each progress meeting each Prime Contractor will provide a progress report since last meeting and look ahead to the next, if at any meeting a Contractor has fallen behind the their schedule, a written explanation why they have fallen behind may be requested along with a written plan how they will regain the time to get back on schedule. The owner reserves the right to withhold payment until such time as the Contractor is determined to be back on schedule. Any additional labor required to make up lost time will be used without additional cost to the Owner. Approved delays for changes in the work will be recognized as extending this Construction Schedule, but such items as delays due to resubmitting of shop drawings, will not be approved as cause for an adjustment to the construction schedule.

1.07 DISTRIBUTION

- A. Oneida County DPW
- B. Mohawk Valley Community College
- C. Construction Manager
- B. Architect
- C. Contractors as required for coordination of Work.
- D. Job site files.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 3217

USE OF PREMISES

PART 1 – GENERAL

1.01 RELATED SECTIONS/REQUIREMENTS

- A. Summary of Work: Section 011100

1.02 DESCRIPTION

- A. Contractor shall comply with Owner occupancy, public use, and phasing requirements.
- B. Contractor shall limit his use of the premises for Work and for storage, to allow for:
 - 1. Work by other Contractors
 - 2. Owner occupancy
 - 3. Public use
- C. Contract Limits: Contractor shall limit his operations including storage of materials and prefabrication to areas within the Contract Limit Lines unless otherwise permitted by the Construction Manager at the Owner's option.
- D. Contractor shall coordinate the use of premises with the Owner and Construction Manager and shall move at his own expense any stored Products under Contractor's control, including excavated material, which interfere with operations of the Owner or separate contractors.
- E. Contractor shall obtain and pay for the use of additional storage or work areas needed for operations.
- F. Contractor shall assume full responsibility for the protection and safekeeping of Products under this Contract stored on the site and shall cooperate with the Construction Manager to insure security for the Owner's property.

1.03 AREA AVAILABLE FOR CONTRACTOR'S USE

- A. The Contractor shall confine his operations to those portions of the Owner's property, and to the right-of-ways or easements, temporary or permanent, acquired or designated for the work of the Contract as shown on the Drawings. Private property adjacent the Site shall not be entered upon or used by the Contractor for any purpose without the written consent of the Owner thereof. A copy of such consent shall be filed with the Construction Manager.

1.04 TRAVEL NOT OBSTRUCTED

- A. The Contractor shall not needlessly hinder or inconvenience travel on any public or private way, nor shall he wholly obstruct same without written permission of the Owner. If he is permitted to obstruct a traveled way, the Contractor shall provide plain and appropriately worded signs and adequate barricades and lighting announcing such obstruction at the nearest cross streets, and at each end of the obstructed portion, direct traffic to and along an approved detour.

END OF SECTION

SECTION 01 45 33

CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes: Requirements for Code-Required Special Inspections and Procedures. The Owner shall employ one Special Inspection Manager and one or more Special Inspectors to provide inspections during construction.
- 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 Documents requirements.
 - 1. Requirement for the contractor to provide quality control services required by Architect or Authorities having jurisdiction are not limited by provisions of this section.

1.02 DEFINITIONS

- A. Approved Agency: An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved.
 - 1. Independent: An approved agency shall be objective and competent. The agency shall also disclose possible conflicts of interest so that objectivity can be confirmed.
 - 2. Equipment: An approved agency shall have adequate equipment to perform required tests. The equipment shall be periodically calibrated.
 - 3. Personnel: An approved agency shall employ experienced personnel educated in conducting, supervising and evaluating tests and/or inspections.
- B. Special Inspection, Continuous: The full-time observation of work requiring special inspection by an approved Special Inspector who is present in the area where the work is being performed.
- C. Special Inspection, Periodic: The part-time or intermittent observation of work requiring special inspection by an approved Special Inspector who is present in the area where the work has been or is being performed and at the completion of the work.
- D. Quality Assurance Service: Activities, actions and procedures performed before and during execution of the work to guard against defects and deficiencies and ensures that proposed construction complies with requirements.
- E. Special Inspection Manager: Special Inspection Manager collects, Review for completeness and distributes special inspection reports to the Code Enforcement Official, the Engineer/Architect of Record and the Construction Manager. The Special Inspection Manager shall schedule and coordinate work of the Special Inspectors with the Contractors.
- F. Code Enforcement Official: Authority Having Jurisdiction.

1.03 REGULATORY REQUIREMENTS

- A. Copies of Regulations: Obtain copies of the following regulations and retain at the project site to be available for reference by parties who have a reasonable need.
 - 1. Chapter 17 – “Special Inspections and Tests” of the 2020 Building Code of New York State (BCNYS), November 2019.
- B. Building Permit Requirement: The permit applicant shall submit a statement of special inspections prepared by the registered design professional in responsible charge as a condition for permit issuance.

1.04 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.
1. ACI International (ACI)
 - a. ACI 318/318R (2005) Building Code Requirements for Structural Concrete and Commentary.
 - b. ACI 530-530.1 (2005) Building Code Requirements for Masonry Structures and Specifications for Masonry Structures.
 2. American Institute of Steel Construction (AISC)
 - a. AISC (1989) Manual of Steel Construction – Allowable Stress Design.
 3. American Society for Testing and Materials (ASTM)
 - a. ASTM A435-90 (2001) Straight Beam Ultrasonic Examination of Steel Plates.
 - b. ASTM A 615 (2004a) Deformed and Plain Billet-steel Bars for Concrete Reinforcement.
 - c. ASTM A 898-91 (2001) Straight Beam Ultrasonic Examination of Rolled Steel Structural Shapes.

1.05 QUALITY ASSURANCE

- A. Professional Engineer Qualifications: A Professional Engineer who is legally qualified to practice in the State of New York and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
- B. Special Inspector: Provide a Special Inspector at the work site for each of the areas of responsibilities, specified below, who shall assist and report to the Special Inspection Manager, Owner, Engineer/Architect of Record and the Construction Manager and who shall have no duties other than their assigned quality control duties. Special Inspectors are required to be physically present at the construction site to perform the phases of control and prepare documentation for each definable feature of work in their area of responsibility at the frequency specified.

The Special Inspector shall be a qualified person who shall demonstrate competence, to the satisfaction of the code enforcement official, for inspection of the particular type of construction or operation requiring special inspection. Special Inspectors shall satisfy the minimum qualification requirements outlined in Table 1704.1 of the Building Code of New York State, Chapter 17 and as outlined below and shall be engaged for the activities indicated.

1. Requirement for Special Inspectors shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade union jurisdictional settlements and similar conventions.
2. Concrete:
 - a. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.
 - b. Personnel performing laboratory tests shall be ACI certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I.
 - c. Testing Agency laboratory supervisor shall be an ACI certified Concrete Laboratory Testing Technician, Grade II.

3. Smoke Control Systems:
 - a. Personnel conducting field tests shall be qualified in fire protection engineering, mechanical engineering and certification as air balancer certified by AABC Test and Balance Technician.
4. Structural Steel: Registered Structural Engineer, (P.E.) in New York State with a minimum of 5-years experience.
5. Welding:
 - a. Personnel conducting field tests shall be qualified as Certified Welding Inspector (CWI) according to AWS QC1 or an equivalent certification program.

1.06 SPECIAL INSPECTIONS

- A. Scheduling Inspections: The Contractor shall notify the On-Site Owner's Representative, Agent or Construction Manager at least 24 hours in advance of the time when the Work that requires testing or inspecting will be performed.
- B. Inspection of Fabricators: Where fabrication of structural, load-bearing or lateral load-resisting members or assemblies is being conducted on the premises of a fabricator's shop, special inspection of the fabricated items shall be performed during fabrication and as required elsewhere in The Building Code of New York State (BCNYS).

Fabrication and implementation procedures. The Special Inspector shall verify that the fabricator maintains detailed fabrication and quality control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to approved construction documents and referenced standards. The Special Inspector shall review the procedures for completeness and adequacy relative to the code requirements for the fabricator's scope of work.

Exception: Special inspections of a fabricator will not be required where the fabricator is approved and registered as follows:

1. As defined in Section 1704.2.5 of the BCNYS ("Special Inspection of fabricated items"), Special Inspections during fabrication as required by Section 1704.2.5 are not required where the fabricator maintains approved detailed fabrication and quality control procedures that provide a basis for control of the workmanship and the fabricator's ability to conform to the approved construction documents and the BCNYS. Approval shall be based upon review of fabrication and quality control procedures and periodic inspection of fabrication practices by the approved Special Inspector / Codes Enforcing Officer (CEO).
 2. Special Inspections are not required where the fabricator is registered and approved in accordance with Section 1704.2.5.1 ("Fabricator Approval") of the BCNYS. Special Inspections during fabrication are not required where the work is done on the premises of a fabricator registered and approved to perform such work without special inspections. Approval shall be based upon review of the fabricator's written procedural and quality control manuals and periodic auditing of fabrication practices by an approved agency. At completion of fabrication, the approved fabricator shall submit a certificate of compliance to the Owner or the owner's authorized agent for submittal to the building official as specified in Section 1704.5 of the BCNYS stating that the work was performed in accordance with approved construction documents.
- C. Steel Construction: The special inspections for steel elements of buildings and structures shall be as required by Section 1704 and Section 1705.2 of The Building Code of New York State and the attached Schedule of Code-Required Special Inspections and Procedures.
 1. Exceptions: Special inspection of the steel fabrication process shall not be required where the fabrication process for the entire building or structure does not include any welding, thermal cutting or heating operation of any kind. In such cases, the fabricator shall be required to submit a detailed procedure for material control that demonstrates the fabricator's ability to maintain suitable records and procedures such that, at any time during the fabrication process, the material specification, grade and

mill test reports for the main stress-carrying elements are capable of being determined. Mill test reports shall be identifiable to the main stress-carrying elements when required by the approved construction documents.

- D. Structural Steel: Special Inspections and non-destructive testing of structural steel elements in buildings, structures and portions thereof shall be in accordance with Section 1705.2.1 of the referenced BCNYS, the quality assurance inspection requirements of AISC 360 and the attached Schedule of Code-Required Special Inspections and Procedures.
 - 1. Exceptions: Special inspection railing systems composed of structural steel elements shall be limited to welding inspection of welds at the base of cantilevered rail posts.
- E. Welding inspections shall be in compliance with AWS D1.1 and the attached Schedule of Code-Required Special Inspections and Procedures. The basis for welding inspector qualifications shall be AWD D1.1.
- F. Concrete Construction: The special inspections and verifications for concrete construction shall be as required by Section 1705.3 and Table 1705.3 of The Building Code of New York State and the attached Schedule of Code-Required Special Inspections and Procedures.
- G. Masonry Construction: Masonry construction shall be inspected and evaluated in accordance with the requirements of Section 1705.4 of The Building Code of New York State and the attached Schedule of Code-Required Special Inspections and Procedures.
- H. Wood Construction: Wood construction shall be inspected and evaluated in accordance with the applicable requirements of The Building Code of New York State and the attached Schedule of Code-Required Special Inspections and Procedures.
- I. Soils: The special inspections for existing site soil conditions, Ground Improvements, fill placement and load bearing requirements shall be as required by Section 1705.6 and Table 1705.6 and Section 1705.8 of The Building Code of New York State, the "Referenced Geotechnical Information and Reports" listed in Specification Section 31 20 00 (Building Earth Moving); Testing requirements listed in Specification Section 31 66 13 (Aggregate piers) and the attached Schedule of Code-Required Special Inspections and Procedures. The approved soils report (if available) and the requirements contained within the Contract Documents shall be used to determine compliance.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 STATEMENT OF SPECIAL INSPECTIONS

- A. Refer to attached form "Statement of Code-Required Special Inspections and Procedures" at the end of this section.
- B. Refer to attached "Schedule of Code-Required Special Inspections and Procedures" at the end of this section.

3.02 SPECIAL INSPECTION REPORTS

- A. Report Requirement: Special Inspectors shall keep records of inspections. The Special Inspector shall furnish inspection reports to the Special Inspection Manager. The Special Inspection Manager shall furnish reports to the Code Enforcement Official, Owner, to the Engineer/Architect in responsible charge and to the Construction Manager.
 - 1. Reports shall indicate that work inspected was done in conformance to approved construction documents. As a minimum, the content of the special inspection reports shall be in accordance with Section 1705 of The Building Code of New York State.

2. Discrepancies shall be brought to the immediate attention of the contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the Code Enforcement Official and to the Engineer/Architect in responsible charge prior to the completion of that phase of the work.
- B. Weekly Reports: On the first day of each week, the Special Inspector shall notify the Special Inspections Manager of any and all deficiencies identified within the previous week. The Special Inspections Manager shall notify all affected parties, including, but not limited to, the Contractor, the A/E and the on-site Owner's Representative or Agent.
- C. Monthly Report: On the first day of each month, the Special Inspector shall furnish to the Special Inspection Manager five copies of the combined progress reports of the special inspector's observations. The Special Inspection Manager shall furnish five reviewed copies to the Code Enforcement Official and to the Engineer/Architect of responsible charge. These progress reports shall list all special inspections of construction or reviews of testing performed during that month, note all uncorrected deficiencies, and describe the corrections made both to these deficiencies and to previously reported deficiencies.
1. Each monthly report shall be signed by all special inspectors who performed special inspection of construction or reviewed testing during that month, regardless of whether they reported any deficiencies.
 2. Each monthly report shall be signed by the Contractor.
- D. Final Report: At completion of construction, each Special Inspector shall prepare and sign a final report attesting that all work they inspected and all testing and test reports they reviewed were completed in accordance with the approved construction documents and that deficiencies identified were satisfactorily corrected.
1. The Special Inspector shall submit a combined final report containing the signed final reports to the Special Inspection Manager.
 2. The Special Inspection Manager shall submit the combined final report to the Code Enforcement Official, Owner and to the Engineer/Architect in responsible charge.
 3. The Contractors shall sign the combined final report attesting that all final reports of Special Inspectors that performed work to comply with these construction documents are contained therein, and that the Contractor has reviewed and approved all of the individual inspector's final reports.
 4. Refer to attached form "Report of Code-Required Special Inspections and Procedures" attached at the end of this section.

END OF SECTION

ATTACHMENTS

CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

STATEMENT OF CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

Name of Project: Mohawk Valley Community College
Science & Technology Building

Address or Legal Description: Mohawk Valley Community College
1101 Sherman Drive
Utica, New York 13501

Owner's Name: Mohawk Valley Community College

Authority having Jurisdiction:
Reviewer:

I, _____ as the Owner (contractors may not employ the special inspector),
certify that I will be responsible for employing the special inspector(s) as required by the Building Code of
New York State Section 1704 for the construction project located at the site listed above.

Signed: _____

I, _____ as the Architect of Record,
certify that I have prepared the following special inspections program as required by the Building Code of
New York State Section 1704 for the construction project located at the site listed above.

Printed Name: _____

Seal:

Signature: _____ Date: _____

LIST OF WORK REQUIRING SPECIAL INSPECTIONS

(SEE ATTACHED SCHEDULE)

CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES REPORT FORM

REPORT TYPE:

- ☐ Continuous
☐ Periodic
☐ Final

WORK MATERIAL INSPECTED:

PROJECT NAME:

Address or Legal Description:

Owner's Name:

Phone:

Fax:

APPROVED INSPECTION AGENCY:

Address:

Phone:

Fax:

AUTHORITY HAVING JURISDICTION:

Address:

Phone:

Fax:

ENGINEER/ARCHITECT OF RECORD:

Address:

Phone:

Fax:

STATEMENT OF CONFORMANCE:

Discrepancies:

1. None _____
 - a. Contractor Review:
 - b. Contractor Signature:
 - c. Contractor Correction:

Outstanding Discrepancies:

1. None _____
 - a. Authority having Jurisdiction Review:
 - b. Registered Design Professional Review:

END OF FORM

SCHEDULE OF CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES									
Inspection Required	Material/Work to be Inspected	Scope of Inspection	Inspection Frequency	Reference Standard	Report Type	BCNYS Section	Inspector Qualifications	Approved Agency	
(See Legend of Bldgs Below)									
INSPECTION OF FABRICATORS									
NOTE 1: See Specification Section 01 45 33, Paragraph 1.06 for Additional Information regarding "Exception" requirements for Inspection of Fabricators.									
Yes (See Note 1)	Inspections of fabricated load bearing members and assemblies for BOTH Steel AND Wood Construction	On premise inspection of fabricated items	Continuous	NA	Inspection Report	1704.2.5, 1705.2	Per Chapter 17	See Legend Below	
Yes (See Note 1)	Fabricators detailed fabrication and quality control procedures for BOTH Steel AND Wood Construction	Review fabricator's fabrication and quality control procedures to ensure capability to perform required work	Continuous - Prior to fabrication of each fabrication run	NA	Inspection Report	1704.2.5, 1705.2	Per Chapter 17	See Legend Below	
Yes (See Note 1)	Fabricator Approval - for BOTH Steel AND Wood Construction	Review and approval of fabricator's written procedural and quality control manuals. Obtain fabricator's Certification of Compliance	Review and approval prior to fabrication; Certificate of compliance for each fabrication run	NA	Inspection report with attached Certificate of Compliance	1704.2.5, 1705.2	Per Chapter 17	See Legend Below	
STEEL CONSTRUCTION - Includes any Steel Components / Connections in the Wood Framed Head Building									
Yes	-	Material verification of high-strength bolts, nuts and washers	Verify identification markings conform to ASTM standards specified in the approved Construction Documents	Periodic	Applicable ASTM material specification; AISC 360, Section A3.3	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Material verification of high-strength bolts, nuts and washers	Manufacturer's certificate of compliance required	Periodic	Applicable ASTM material specification; AISC 360, Section M2.5	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Inspection of high-strength bolting	Bearing-type connections	Periodic	AISC 360 Section M2.5, N5, N5.6	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Inspection of high-strength bolting	Slip-critical connections	Continuous and/or Periodic - see AISC 360 Section N5.6	AISC 360 Section M2.5, N5, N5.6	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Material verification of structural steel	Verify identification markings conform to ASTM standards specified in the approved Construction Documents	Periodic	ASTM A6 or ASTM A568	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Material verification of structural steel	Manufacturer's certificate of compliance required	Periodic	ASTM A6 or ASTM A568	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below

SCHEDULE OF CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES									
Inspection Required		Material/Work to be Inspected	Scope of Inspection	Inspection Frequency	Reference Standard	Report Type	BCNYS Section	Inspector Qualifications	Approved Agency
(See Legend of Bldgs Below)									
Yes	-	Material verification of weld filler materials	Verify identification markings conform to AWS standards specified in the approved Construction Documents	Periodic	AISC 360 Section A3.5, N5, N5.4	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Material verification of weld filler materials	Manufacturer's certificate of compliance required	Periodic	AISC 360 Section A3.5, N5	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Inspection of welding: Structural steel	Complete and partial penetration groove welds	Continuous	AWS D1.1	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Inspection of welding: Structural steel	Multi-pass fillet welds	Continuous	AWS D1.1	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Inspection of welding: Structural steel	Single-pass fillet welds greater than 5/16"	Continuous	AWS D1.1	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Inspection of welding: Structural steel	Single-pass fillet welds less than or equal to 5/16"	Periodic	AWS D1.1	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Inspection of welding: Structural steel	Floor and roof deck welds	Periodic	AWS D1.3	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Inspection of welding: Reinforcing steel to existing steel	Verification of weldability of reinforcing steel to existing steel	Periodic	AWS D1.3	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Inspection of steel frame joint details for compliance with approved construction documents	Details such as bracing and stiffening	Periodic	NA	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Inspection of steel frame joint details for compliance with approved construction documents	Member locations	Periodic	NA	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Inspection of steel frame joint details for compliance with approved construction documents	Application of joint details at each connection	Periodic	NA	Inspection Report	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Steel fabrication process not utilizing any welding, thermal cutting or heating operation of any kind	Verification of fabricators compliance with requirements of BCNYS 1705.2	Periodic	NA	Statement of Verification	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Verify use of periodic inspections for single pass fillet welds not exceeding 5/16" in size	Verification of materials, welding procedures and qualification of welders	Prior to the start of work and for each welder	NA	Statement of Verification	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Verify use of periodic inspections for floor and roof deck welding	Verification of materials, welding procedures and qualification of welders	Prior to the start of work and for each welder	NA	Statement of Verification	1704, 1705.2	Per Chapter 17	See Legend Below

SCHEDULE OF CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES									
Inspection Required		Material/Work to be Inspected	Scope of Inspection	Inspection Frequency	Reference Standard	Report Type	BCNYS Section	Inspector Qualifications	Approved Agency
(See Legend of Bldgs Below)									
-	No	Verify use of periodic inspections for welded sheet steel form cold-formed steel framing members such as studs and joists	Verification of materials, welding procedures and qualification of welders	Prior to the start of work and for each welder	NA	Statement of Verification	1704, 1705.2	Per Chapter 17	See Legend Below
Yes	-	Verify use of periodic inspections for welding of stairs and railing systems	Verification of materials, welding procedures and qualification of welders	Prior to the start of work and for each welder	NA	Statement of Verification	1704, 1705.2.1	Per Chapter 17	See Legend Below
CONCRETE CONSTRUCTION									
Yes	-	Concrete testing	Absence of test data	NA	Ch. 3, ACI 318	Statement of Conformance	1705.3, Table 1705.3	Per Chapter 17	See Legend Below
Yes	-	Concrete reinforcement	Inspection of reinforcing steel and placement	Periodic - Prior to each concrete placement	Per BCNYS Table 1705.3	Inspection Report	1705.3, Table 1705.3	Per Chapter 17	See Legend Below
Yes	-	Bolts and other embedded inserts	Inspect bolts to be installed in concrete prior to and during placement of concrete	Continuous - prior to each concrete placement Continuous - During concrete placement	Per BCNYS Table 1705.3	Inspection Report	1705.3, Table 1705.3	Per Chapter 17	See Legend Below
Yes	-	Design Mix	Verify use of required design mix	Periodic	Per BCNYS Table 1705.3	Inspection Report	1705.3, Table 1705.3	Per Chapter 17	See Legend Below
Yes	-	Concrete strength	Strength test	Continuous - See Project Manual and Reference Standard	ACI 318 ASTM C31, ASTM C39	Inspection Report	1705.3, Table 1705.3	Per Chapter 17	See Legend Below
Yes	-	Sampling and testing of fresh concrete	Sampling fresh concrete and performing slump, air content tests, field temperature and strength test specimen preparation	Continuous - See Project Manual and Reference Standard	Per BCNYS Table 1705.3	Inspection Report	1705.3, Table 1705.3	Per Chapter 17	See Legend Below
Yes	-	Concrete placement	Inspection of concrete placement for proper application technique	Continuous	Per BCNYS Table 1705.3	Inspection Report	1705.3, Table 1705.3	Per Chapter 17	See Legend Below
Yes	-	Concrete curing	Inspection for maintenance of specified curing temperature and technique	Periodic	Per BCNYS Table 1705.3	Inspection Report	1705.3, Table 1705.3	Per Chapter 17	See Legend Below
Yes	-	Isolated concrete footings	Concrete construction special inspections in accordance with BCNYS 1705.3	Refer to Special Inspection Schedule	NA	NA	1705.3, Table 1705.3	Per Chapter 17	See Legend Below

SCHEDULE OF CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES									
Inspection Required		Material/Work to be Inspected	Scope of Inspection	Inspection Frequency	Reference Standard	Report Type	BCNYS Section	Inspector Qualifications	Approved Agency
(See Legend of Bldgs Below)									
Yes	-	Continuous concrete footings supporting walls	Concrete construction special inspections in accordance with BCNYS 1705.3	Refer to Special Inspection Schedule	NA	NA	1705.3, Table 1705.3	Per Chapter 17	See Legend Below
Yes	-	Nonstructural concrete slabs on ground (grade)	Concrete construction special inspections in accordance with BCNYS 1705.3	Refer to Special Inspection Schedule	NA	NA	1705.3, Table 1705.3	Per Chapter 17	See Legend Below
Yes	-	Concrete foundation walls	Concrete construction special inspections in accordance with BCNYS 1705.3	Refer to Special Inspection Schedule	NA	NA	1705.3, Table 1705.3	Per Chapter 17	See Legend Below
-	No	Concrete patios, driveways and sidewalks, on grade (ground)	Concrete construction special inspections in accordance with BCNYS 1705.3	Refer to Special Inspection Schedule	NA	NA	1705.3, Table 1705.3	Per Chapter 17	See Legend Below
Yes	-	Inspection of Formwork	Inspect formwork for shape, location and dimensions of the concrete member being formed in accordance with BCNYS Table 1705.3	Periodic	NA	NA	1705.3, Table 1705.3	Per Chapter 17	See Legend Below
MASONRY CONSTRUCTION - GENERAL									
Yes	-	Engineered masonry in Risk Category I, II & III facilities	Masonry construction special inspections in accordance with BCNYS 1705.4	Refer to Special Inspection Schedule	TMS 402 / ACI 530/ ASCE 5 and TMS 602 / ACI 530.1/ ASCE 6	--	1705.4	Per Chapter 17	See Legend Below
MASONRY CONSTRUCTION - LEVEL 1									
Yes	-	Site prepared mortar	Verify proportions of site prepared mortar to ensure compliance	Periodic	ACI 530.1/ASCE 6 /TMS 602: 2.6A	Inspection Report	1705.4	Per Chapter 17	See Legend Below
Yes	-	Mortar joints	Verify construction of mortar joints to ensure compliance	Periodic	ACI 530.1/ASCE 6 /TMS 602: 3.3B	Inspection Report	1705.4	Per Chapter 17	See Legend Below
Yes	-	Reinforcement and connectors	Verify location of reinforcement and connectors to ensure compliance	Periodic	ACI 530.1/ASCE 6 /TMS 602: 3.4, 3.6A	Inspection Report	1705.4	Per Chapter 17	See Legend Below
Yes	-	Structural elements	Inspect to verify size and location of structural elements	Periodic	ACI 530.1/ASCE 6 /TMS 602: 3.3G	Inspection Report	1705.4	Per Chapter 17	See Legend Below

SCHEDULE OF CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES									
Inspection Required		Material/Work to be Inspected	Scope of Inspection	Inspection Frequency	Reference Standard	Report Type	BCNYS Section	Inspector Qualifications	Approved Agency
(See Legend of Bldgs Below)									
Yes	-	Masonry anchors	Inspect to verify type, size and location, including other details of anchorage of masonry to structural members, frames or other construction	Periodic	ACI 530/ASCE 5 /TMS 402: 1.2.2(e), 2.1.4, 3.1.6	Inspection Report	1705.4	Per Chapter 17	See Legend Below
Yes	-	Masonry reinforcing	Inspect to verify specified size, grade and type of reinforcing	Periodic	ACI 530/ASCE 5 /TMS 402: 1.12 ACI 530.1/ASCE 6 /TMS 602: 2.4, 3.4	Inspection Report	1705.4	Per Chapter 17	See Legend Below
Yes	-	Protection of masonry	Inspect to verify protection of masonry during cold weather (temperature below 40 °F) or hot weather (temperature above 90 °F)	Periodic	ACI 530.1/ASCE 6 /TMS 602: 1.8	Inspection Report	1705.4	Per Chapter 17	See Legend Below
Yes	-	Grout space	Inspect prior to grouting to verify grout space is clean	Periodic	ACI 530.1/ASCE 6 /TMS 602: 3.2D	Inspection Report	1705.4	Per Chapter 17	See Legend Below
Yes	-	Reinforcement and connectors	Inspect prior to grouting to verify placement of reinforcement and connectors	Periodic	ACI 530/ASCE 5 /TMS 402: 1.12 ACI 530.1/ASCE 6 /TMS 602: 3.4	Inspection Report	1705.4	Per Chapter 17	See Legend Below
Yes	-	Grout	Inspect prior to grouting to verify proportions of site prepared grout	Periodic	ACI 530.1/ASCE 6 /TMS 602: 2.6B	Inspection Report	1705.4	Per Chapter 17	See Legend Below
Yes	-	Mortar joints	Inspect prior to grouting to verify construction of mortar joints	Periodic	ACI 530.1/ASCE 6 /TMS 602: 3.3B	Inspection Report	1705.4	Per Chapter 17	See Legend Below
Yes	-	Grout placement	Grout placement shall be verified to ensure compliance with code and Construction Document Provisions	Continuous	ACI 530.1/ASCE 6 /TMS 602: 3.5	Inspection Report	1705.4	Per Chapter 17	See Legend Below
Yes	-	Test specimen/prism	Observe the preparation of required grout specimens, mortar specimens and/or prism specimens to ensure compliance	Continuous	ACI 530.1/ASCE 6 /TMS 602: 1.4	Inspection Report	1705.4	Per Chapter 17	See Legend Below
Yes	-	Compliance verification	Compliance with required inspection provisions of the Contract Documents and the approved submittals shall be verified	Periodic	ACI 530.1/ASCE 6 /TMS 602: 1.5	Inspection Report	1705.4	Per Chapter 17	See Legend Below

SCHEDULE OF CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES									
Inspection Required	Material/Work to be Inspected		Scope of Inspection	Inspection Frequency	Reference Standard	Report Type	BCNYS Section	Inspector Qualifications	Approved Agency
(See Legend of Bldgs Below)									
WOOD CONSTRUCTION									
Yes	-	REFER TO "STEEL CONSTRUCTION" INSPECTIONS SCHEDULE FOR ALL STEEL ELEMENTS USED AS PART OF THE HEAD BUILDING WOOD CONSTRUCTION							
Yes	-	Fabrication process of prefabricated wood structural elements and assemblies	Compliance with required inspection provisions of the "Inspection of Fabricators" Section of this Schedule, Contract Documents and the approved submittals shall be verified	Periodic	Contract Documents	Inspection Report	1704.6, 1704.2	Per Chapter 1704	See Legend Below
SOILS - Including Ground Improvement System (Aggregate Piers and Load Transfer Platforms)									
Yes	-	Site Preparation	Inspect to verify that the site has been prepared in accordance with approved soils report and Contract Documents	Periodic - Prior to placement of any fills or construction work	Contract Documents	Inspection Report	1705.6, Table 1705.6	Per Chapter 17	See Legend Below
Yes	-	Confirm site soil conditions/soil bearing capacity	Observe site conditions to confirm site soil conditions and soil bearing capacity are adequate and consistent with approved soil report and Contract Documents	Periodic - Prior to fill or foundation work	Contract Documents	Inspection Report	1705.6, Table 1705.6	Per Chapter 17	See Legend Below
Yes	-	Verify Excavations	Inspect to verify that the excavations are extended to proper depths and have reached proper bearing material in accordance with approved soils report and Contract Documents	Periodic - During Excavation and Prior to placement of any fills or construction work	Contract Documents	Inspection Report	1705.6, Table 1705.6	Per Chapter 17	See Legend Below
Yes	-	Prior to placement of controlled fill, confirm site soil conditions / soil bearing capacity / subgrade preparation	Prior to placement of controlled fill material, observe site conditions and subgrade to verify site soil conditions and soil bearing capacity consistent with approved soil report and Contract Documents	Continuous - Prior to placement of compacted Fill or foundation work	Contract Documents	Inspection Report	1705.6, Table 1705.6	Per Chapter 17	See Legend Below

SCHEDULE OF CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES									
Inspection Required		Material/Work to be Inspected	Scope of Inspection	Inspection Frequency	Reference Standard	Report Type	BCNYS Section	Inspector Qualifications	Approved Agency
(See Legend of Bldgs Below)									
Yes	-	Classification and Testing of Controlled Fill Materials	Perform classifications and testings to verify that controlled fill materials meet requirements of approved soil report and Contract Documents	Periodic - During placement and compaction of the fill material and in accordance with Specificaitons	Contract Documents	Inspection Report	1705.6, Table 1705.6	Per Chapter 17	See Legend Below
Yes	-	Placement of Fill	Inspect to verify the use of proper materials, densities and lift thicknesses during placement and compaction of controlled fill materials meet requirements of approved soil report and Contract Documents	Continuous - During placement and compaction of the soil/fill material. Perform 1 In-Place Field Density (IPFD) Test per 2500 square feet of lift or 30 linear feet of trench or 30 linear feet of wall per lift side.	Contract Documents	Inspection Report	1705.6, Table 1705.6	Per Chapter 17	See Legend Below
Yes	-	Ground Improvement System	Observe Test Aggregate Pier Installation and Static Load Testing (Soil Modulus Test) of Aggregate Piers (See Referenced CME Geotechnical Report 28107B-01-0224, Section 5.2.3)	Continuous - During test of Aggregate Piers installation and load testing; performed by the Inspecting Professional Geotechnical Engineer (IPGE)	Contract Documents - Spec Section 31 66 13 (Aggregate Piers) and Notes on Structural Contract Drawings.	Inspection Report	1705.8 & ASTM D-1143	Per Chapter 17	See Legend Below
Yes	-	Ground Improvement System	Inspection of Production Aggregate Piers (See Referenced CME Geotechnical Report 28107B-01-0224, Section 5.2.4)	Continuous - During during Installation of Production Aggreagte Piers; performed by the Inspecting Professional Geotechnical Engineer (IPGE)	Contract Documents - Spec Section 31 66 13 (Aggregate Piers) and Notes on Structural Contract Drawings.	Inspection Report	1705.8	Per Chapter 17	See Legend Below

SCHEDULE OF CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES									
Inspection Required		Material/Work to be Inspected	Scope of Inspection	Inspection Frequency	Reference Standard	Report Type	BCNYS Section	Inspector Qualifications	Approved Agency
(See Legend of Bldgs Below)									
Yes	-	Ground Improvement System	Examine and Approve Load Transfer Platform (LTP) subgrade prior to placement of LTP material.	Continuous - During excavation for LTP installation; performed by the Inspecting Professional Geotechnical Engineer (IPGE)	Contract Documents - Spec Section 31 66 13 (Aggregate Piers) and Notes on Structural Contract Drawings.	Inspection Report	1705.8	Per Chapter 17	See Legend Below
Yes	-	Ground Improvement System	Witness Load Transfer Platform (LTP) installation; conduct in-place density testing; approve bearing surface for footing and slab construction.	Continuous - During installation of LTP; performed by the Inspecting Professional Geotechnical Engineer (IPGE)	Contract Documents - Spec Section 31 66 13 (Aggregate Piers) and Notes on Structural Contract Drawings.	Inspection Report	1705.8	Per Chapter 17	See Legend Below
SPRAYED FIRE-RESISTANT MATERIALS									
-	No	-	-	-	-	-	-	-	-
WALL PANELS AND VENEERS									
-	No	Exterior architectural wall panels for buildings assigned to Seismic Design Category E or F	Inspect to verify anchorage and compliance with requirements of the Contract Documents	Periodic	NA	Inspection Report	1704.10, 1616.3	Per Chapter 1704	See Legend Below
-	No	Interior architectural wall panels for buildings assigned to Seismic Design Category E or F	Inspect to verify anchorage and compliance with requirements of the Contract Documents	Periodic	NA	Inspection Report	1704.10, 1616.3	Per Chapter 1704	See Legend Below
-	No	Veneers for buildings assigned to Seismic Design Category E or F	Inspect to verify anchorage and compliance with requirements of the Contract Documents	Periodic	NA	Inspection Report	1704.10, 1616.3, 1704.5	Per Chapter 1704	See Legend Below
EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)									
-	No	-	-	-	-	-	-	-	-
SMOKE CONTROL									
-	No	-	-	-	-	-	-	-	-
OTHER									
-	No	-	-	-	-	-	-	-	-

SCHEDULE OF CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES								
Inspection Required	Material/Work to be Inspected	Scope of Inspection	Inspection Frequency	Reference Standard	Report Type	BCNYS Section	Inspector Qualifications	Approved Agency
(See Legend of Bldgs Below)								
LEGEND OF APPROVED SPECIAL INSPECTION AGENCIES								
I.D.	AGENCY/CONTACT PERSON			ADDRESS/PHONE/FAX NUMBER				
A	CME Associates, Inc. Attn: Neil Zurn			6035 Corporate Drive, East Syracuse, NY 13057 P: (315) 701-0522 F: (315) 701-0526				
B	Atlantic Testing Laboratories, Ltd. Attn: William J. Bell, CWI, CET			301 St. Anthony Street, Utica, NY 13501 P: 315-735-3309 F: 315-735-0742				
C	Quality Inspection Services, Inc. Attn: Ian Richardson			6730 Myers Road, E. Syracuse, NY 13057 P: 518-899-3230				
D	Terracon Consultants - NY, Inc Attn: Mike McHenry, Materials Dept. Manager			30 Corporate Circle, Suite 201, Albany, NY 12203 P: 518-266-0310				

SECTION 01 5000

TEMPORARY FACILITIES

PART 1 – GENERAL

1.01 DESCRIPTION

A. RELATED SECTIONS/REQUIREMENTS

1. Summary of Work: Section 011100

B. Each Contractor shall provide temporary facilities as required for the completion and protection of the work of their Contract throughout the construction period unless otherwise indicated.

C. Each Contractor shall pay costs for providing, maintaining, moving and removing temporary facilities unless otherwise indicated.

PART 2 - PRODUCTS

2.02 TEMPORARY WATER

A. GC will make water available by utilizing an existing hydrant with a metered connection. Each Contractor shall provide additional hoses and piping as required.

B. Prime Contractors shall provide potable water for drinking purposes for all personnel on the site.

2.03 FIRE PROTECTION

A. Each contractor is to provide and maintain portable fire extinguishers in each area where work is being performed. Number to conform to applicable codes.

B. Fire Extinguishers: Multi-purpose (ABC) dry chemical.

C. UL labeled.

D. Take all necessary precautions to insure against fire during construction and be responsible that the area within contract limit is kept orderly and clean on a daily basis.

1. No fires shall be built on the premises nor shall open flame devices of any kind be employed within the building except for field welding with supervised fire watch.

2.04 TEMPORARY PARKING/STAGING

A. Park and stage materials only in areas designated by the Construction Manager.

B. On site parking be limited.

1. Parking for each Prime Contractor Superintendent will be available inside the construction fence. Other workers will be required to park in Lot A2 and walk to the site.

2.05 STORAGE

- A. Storage Trailer space will be made available inside the construction fence, the number of storage trailers will be limited.

2.06 TEMPORARY FENCE

- A. Enclosure Fence: The Sitework Contractor shall install temporary protective fencing around the site and as required for excavations and work areas outside the Perimeter fence.
 - 1. Fencing location shall be coordinated with the Construction Manager.
 - 2. Fence shall be a substantial heavy-duty chain-link type fence (6'-0") six feet high with driven posts in grass locations. Provide entrance gates and doors of similar chain link construction with driven posts and locks at locations and sized as shown on logistics drawing. The fence shall be maintained in good repair at all times while it remains in place at the project site. A well painted or well galvanized appearance will be required at all times with no rusty areas. The fence shall be removed when it is no longer required and as directed by the Architect and Construction Manager.
 - 3. Maintain security by limiting number of keys and restricting distribution to authorized personnel.

2.07 DUST PROTECTION

- A. Each Contractor shall erect and maintain dust proof protection whenever operations will produce dust and dirt that will filter through the building into finished areas.
- B. All Contractors shall follow all Regulations regarding Silica Dust when cutting Silica containing materials, all cutting is to be completed using water to mitigate dust.

2.08 TEMPORARY ELECTRIC/LIGHTING: Refer to Section 0111000, Site and Electrical Summaries.

2.09 TEMPORARY HEATING: Refer to Section 0111000, General, General Construction and Electrical Construction Summaries and Sections 01 51 23 Temporary Heating, Cooling and Ventilating , 01 51 13 Temporary Electricity.

2.10 SANITARY FACILITIES

- A. The General Contractor will provide sufficient Sanitary facilities to include temporary toilets and hand wash facilities for use by all Contractors and personnel. Comply with regulations and health codes for the type, number, location, operation and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs. Coordinate locations with Construction Manager. See General Summary.
 - 1. Provide toilet tissue, hand sanitizer, paper towels, and similar disposable materials for each facility. Provide covered waste containers for used material.
 - 2. The area of sanitary facilities shall not be used for loitering and shall be pumped and cleaned weekly by the General Contractor.
- B. Toilets: The General Contractor shall install self contained toilet units. Shield toilets to ensure privacy. Use of pit type privies will not be permitted.
 - 1. Provide separate facilities for all male and female personnel.
 - 2. Provide separate Handicap accessible facility for the Construction Management field office.

2.11 CONSTRUCTION MANAGERS FIELD OFFICE

A. Field Office:

- 1.) The General Construction Contractor shall provide and pay for (1) temporary site office trailer for the use of the Construction Manager, including delivery and removals. The temporary office shall consist of a 12' x 60' office trailer in excellent condition, blocking & leveling, (2) sets of stairs and complete skirting of the trailer shall be included. Maintenance and service of the temporary office and all systems for the entire duration of the project shall be included.

B. Furnishings:

- 1.) The General Construction Contractor shall provide (3) plan tables, (3) desks, (3) office chairs, (1) 4' x 14' table, (24) folding chairs, (1) lateral four (4) drawer file cabinet, and (2) four drawer file cabinets. The lateral file cabinet will remain the property of the Owner upon completion.

A. Equipment:

- 1.) The General Construction Contractor shall provide (1) combination printer/scanner/copier/fax machine, Brother MFC-9840 CDW or equal. Maintenance of all supplies (toner, paper, etc) shall be included for the duration of the project.
- 2.) The General Construction Contractor shall provide (1) water cooler with hot and cold water capability. Water refills and cups shall be included for the duration of the project.

2.12 UTILITIES AT CONSTRUCTION MANAGERS SITE OFFICE

- 1.) The Electrical Contractor shall furnish, install and remove power, internet and communications to the Construction Managers site office, including all excavation, backfill, conduit, cable, disconnects, terminations, devices, panels, etc. The communication/data will be provided to (4) separate work stations, and allow internet access.

PART 3 - EXECUTION

3.01 GENERAL

- A. Install all temporary facilities in accordance with applicable codes.
- B. Maintain temporary facilities throughout the construction period.
- C. Remove temporary facilities when they are no longer required or when directed by the Architect and Construction Manager.
- D. Notification of all utility interruptions is to be received by the Owner in writing 72 hours prior to interruption.

END OF SECTION

SECTION 01 51 13

TEMPORARY ELECTRICITY

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Section 01 29 73 - Schedule of Values.
- B. Section 01 50 00 - Temporary Facilities and Controls.
- C. Section 01 51 23 - Temporary Heating, Cooling, and Ventilating.

1.02 DESCRIPTION OF SYSTEM

- A. Service Required: The Electrical Contractor shall provide temporary electric power for items listed throughout the construction period, so that power can be secured at any desired point with no more than a 100 (30.00m) foot extension.
 - 1. Provide power from panelboards for miscellaneous tools and equipment used in the construction work.
 - a. Provide distribution as indicated in Section 01 50 00.
 - b. Provide circuit breaker protection for each outlet, using Ground Fault Interrupting circuit breakers.
 - 2. Lighting for safe and adequate working conditions throughout.
 - a. Maintain 15 foot candles throughout all occupied spaces per OSHA Standards.
 - b. Use at least 100 watt lamps or equivalent.
 - 3. Power for testing and checking equipment.
 - 4. Task lighting is the responsibility of the contractor requiring such.
 - 5. Power for Contractor's site office is the responsibility of the Contractor.
 - 6. Power for welding units is the responsibility of the contractor requiring such units.
- B. Capacity
 - 1. Provide and maintain adequate electrical service for construction use by all trades during the construction period at the locations necessary.
 - 2. Notify the power company if unusually heavy loads will be connected.
- C. Power Costs
 - 1. The County will pay for all costs of temporary electrical power for Items A.1, A.2, A.3, and A.4 used during construction.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

- A. Obtain permits as required by local governmental authorities.
- B. Comply with National Electrical Code, and applicable local codes and utility regulations.

1.04 USE OF PERMANENT SYSTEM

- A. The permanent electrical system may be used for construction purposes to prevent interference with safety and orderly progress of the work.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General Materials
 - 1. The materials may be new or used, but must be adequate in capacity for the purposes intended and must not create unsafe conditions or violate the requirements of applicable codes.
 - 2. At the Contractor's option, patented specialty materials may be used if UL approved.
- B. Conductors
 - 1. Use wire, cable or busses of appropriate type, sized in accordance with the National Electrical Code for the applied loads.
 - 2. Use only UL approved wire.

2.02 EQUIPMENT

- A. Provide appropriate enclosures for the environment in which used in compliance with NEMA Standards.

PART 3 - EXECUTION

3.01 GENERAL

- A. Install all work with a neat and orderly appearance.
- B. Make structurally sound throughout.
- C. Maintain to give continuous service and to provide safe working conditions.
- D. Modify service as job progress requires.

3.02 INSTALLATION

- A. Provide all required facilities, including conductors, conduits, raceways, fuses, switches, fixtures and lamps.

3.03 REMOVAL

- A. Remove all temporary equipment and materials completely upon completion of construction.
- B. Repair all damage caused by the installation and restore to satisfactory condition.

* * * * *

SECTION 01 51 23

TEMPORARY HEATING, COOLING, AND VENTILATING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Related Requirements Specified Elsewhere
 - 1. Section 01 21 00 – Allowances
 - 2. Section 01 29 73 - Schedule of Values.
 - 3. Section 01 50 00 - Temporary Facilities and Controls.
 - 4. Section 01 51 13 - Temporary Electricity.
- B. Definitions
 - 1. Enclosed: A building shall be considered enclosed when the exterior walls and the roof are completed sufficiently to exclude the elements constructed of permanent construction.

1.02 TEMPORARY HEAT

- A. Prior to the time a building is enclosed, temporary heat shall be provided by each Contractor, as required to accomplish the following:
 - 1. To protect their Work.
 - 2. To provide sufficient heat so that their personnel can accomplish the Work in accordance with the Contract Documents.
 - 3. To provide sufficient heat to maintain the construction schedule, as required by the Contract Documents.

1.03 PHASE I HEAT - BUILDING ENCLOSED - PERMANENT HEATING SYSTEMS NOT READY FOR OPERATION

- A. When a building addition is enclosed to the satisfaction of the Architect and Construction Manager, the General Contractor shall provide heat when necessary to protect and accomplish the Work in accordance with the Contracts.
 - 1. Furnish, operate, and pay for a sufficient number of heating units until the permanent heating system is available and is in use.
 - 2. The County will pay for the gas used.
 - 3. Furnish and operate heating units of an approved type. Units shall meet applicable laws, rules, and regulations.
 - 4. Vent units to the outside.
 - 5. Do not use electric heaters, open burning, or salamander type heating units.
 - 6. Maintain temperature between 45 degrees F and 55 degrees F, unless higher temperatures are required for the performance of and protection of the Work.
 - 7. Take precautions necessary to protect the Work from damage and to prevent hazardous conditions.
 - 8. Move, relocate, and adjust the heating units as required to protect the Work.
 - 9. Maintain strict supervision of operation of temporary heating and ventilating equipment.
 - a. Enforce conformance with applicable codes and standards.

- b. Enforce safe practices.
- c. Prevent abuse of services.
- d. Prevent damage to finishes.

1.04 PHASE II HEAT - BUILDINGS ENCLOSED - PERMANENT HEATING SYSTEM OPERABLE

- A. When the permanent heating system is completed, and with the approval of the Architect and Owner, the permanent heating system may be used. The Mechanical Contractor is responsible for the operation and maintenance of the system.
- B. Each Contractor shall complete all Work necessary to receive heating elements or units and all other Work so that the equipment necessary for temporary heat can be installed.
- C. The Mechanical Contractor shall clean, maintain and replace fixtures, test, and otherwise prepare the permanent system for use for Phase II heat.
- D. The Plumbing Contractor shall furnish and maintain permanent or temporary water connections required for operation of equipment for temporary heat. The Plumbing Contractor shall bear the cost of providing and maintaining both permanent and temporary connections and removing temporary connections when no longer required.
- E. The Electrical Contractor shall furnish and maintain all permanent or temporary electric wiring required for operation of the permanent heating system. The Electrical Contractor shall bear the cost of providing and maintaining temporary and permanent wiring and removing temporary wiring when no longer required.

1.05 USE OF PERMANENT SYSTEM

- A. When the permanent heating system is used, the following shall be performed:
 - 1. The Mechanical Contractor shall place said system in perfect working order and in new condition (including filter replacements) prior to the Owner's acceptance of the project.
 - 2. Temporary filter fabric shall be installed on all system inlets. Fabric shall be changed when dirty.
- B. The period of guarantee of the system will commence at the time of Substantial Completion.

1.06 VENTILATION

- A. General: Prevent hazardous accumulations of dust, fumes, mists, vapors, or gases in areas occupied during construction.
 - 1. Each Contractor shall provide local exhaust ventilation to prevent harmful dispersal of hazardous substances into atmosphere of occupied areas.
 - 2. Dispose of exhaust materials in a manner that will not result in harmful dispersal of hazardous substances into atmosphere of occupied areas.
 - 3. Ventilate storage spaces containing hazardous or volatile materials.
- B. Provide adequate ventilation for:
 - 1. Curing installed materials.

2. Dispersal of humidity.
 3. Ventilation of temporary sanitary facilities.
- C. Duration of Operations
1. For Personnel:
 - a. At all times personnel occupy an area, when subject to hazardous accumulations of harmful elements.
 - b. Continue operation of ventilation and exhaust system for a time after cessation of work process to assure removal of harmful elements.
 2. For Curing Installed Materials: As required by specification section for respective materials.
 3. For Humidity Dispersal: As needed to provide suitable ambient conditions for work.

1.07 RESPONSIBILITY

- A. The General Contractor shall be responsible for damage during the period when Phase I temporary heat is required by the Contract. The Mechanical Contractor shall be responsible during the period of Phase II for damage due to the use of said equipment, including, but not limited to, damage such as stains, smudges, soot, or fire, shall repair or replace damaged material in a manner satisfactory to the Architect and Owner.
- B. The Contractor or Contractor(s), causing delay in moving to the next heating phase, shall pay the remainder of the costs for heating, until the next heating phase starts. If more than one Contractor is responsible for delay, such cost shall be prorated as determined by the Architect and Construction Manager.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

* * * * *

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. General product requirements.
- B. Re-use of existing products.
- C. Transportation, handling, storage and protection.
- D. Product option requirements.
- E. Substitution limitations and procedures.
- F. Procedures for Owner-supplied products.
- G. Maintenance materials, including extra materials, spare parts, tools, and software.

PART 2 - PRODUCTS

2.01 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.
- B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
- C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.
- D. Reused Products: Reused products include materials and equipment previously used in this or other construction, salvaged and refurbished as specified.

2.02 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.
- B. Where all other criteria are met, Contractor shall give preference to products that:
 - 1. Are extracted, harvested, and/or manufactured closer to the location of the project.
 - 2. Have longer documented life span under normal use.
 - 3. Result in less construction waste.

- C. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include lugs for terminal box.
- D. Cord and Plug: Provide minimum 6 foot (2 m) cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

2.03 ACCEPTABLE MANUFACTURERS

- A. Acceptable Manufacturers: The lists of manufacturers in the various sections are names of manufacturers believed to be capable of supplying one or more of the items specified in that section. The lists are not intended to limit competition, and products of other manufacturers may be submitted as equivalent products. The lists do not mean that every product of listed manufacturer is acceptable as meeting the specification requirements for quality.
- B. Products Specified by Performance, Reference Standards or Description Only: Use any product meeting those standards or description.
- C. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers listed and meeting all specifications, or an equivalent product. An equivalent product shall be defined as any product that meets all specified performance and aesthetic criteria but for which the manufacturer is not named. The Architect shall determine equivalency during the submittal review process.
- D. Substitutions: A substitution shall be defined as a product of a different composition but with similar performance characteristics. Example: the specifications call for a poured synthetic floor and the contractor proposes a rolled rubber floor in its place.

2.04 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver and place in location as directed; obtain receipt prior to final payment.

PART 3 - EXECUTION

3.01 SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.
- B. Substitutions will not be considered after Award of Contracts except as follows:
 - 1. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor because of strikes, lockouts, bankruptcies, or discontinuance of manufacturer.

- C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- D. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 - 5. Will reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.
 - 6. Contractor requesting substitution shall bear any additional costs to all parties due to his substitution.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. Substitution Submittal Procedure:
 - 1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - 3. The Architect will notify Contractor in writing of decision to accept or reject request.

3.02 OWNER-SUPPLIED PRODUCTS

- A. Owner's Responsibilities:
 - 1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
 - 2. Arrange and pay for product delivery to site.
 - 3. On delivery, inspect products jointly with Contractor.
 - 4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
 - 5. Arrange for manufacturers' warranties, inspections, and service.
- B. Contractor's Responsibilities:
 - 1. Review Owner reviewed shop drawings, product data, and samples.
 - 2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
 - 3. Handle, store, install and finish products.
 - 4. Repair or replace items damaged after receipt.

3.03 TRANSPORTATION AND HANDLING

- A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- B. Transport and handle products in accordance with manufacturer's instructions.
- C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
- F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.04 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- G. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- H. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- I. Prevent contact with material that may cause corrosion, discoloration, or staining.
- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

ATTACHMENT

SUBSTITUTION REQUEST



Contractor: _____

Address: _____

Phone: _____ Fax: _____

Date Requested: _____

258 Genesee Street, Suite 300 • Utica, New York 13502
315.733.3344 • marchassoc.com

Name of Project: **Oneida County DPW, Mohawk Valley Community College, Science and Technology Building,
New Construction**
MARCH Associates Project No: 23000

REFERENCES:

SPEC. SECTION NO. _____ DRAWING NO(S): _____

PARAGRAPH _____ ROOM OR DET. NO(S): _____

This product is being proposed in lieu of _____
(NAME SPECIFIED PRODUCT)

PROPOSED SUBSTITUTION:

PRODUCT NAME: _____

MANUFACTURER: _____

ADDRESS: _____

☐ ACCEPTED	☐ ACCEPTED AS NOTED
☐ NOT ACCEPTED	☐ RECEIVED TOO LATE
☐ BID AS EQUIVALENT – WILL REVIEW AS SUBMITTAL	

Reviewed By: _____ Date: _____

Architects Remarks: _____

SECTION 01 7329

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 DESCRIPTION

A. RELATED SECTIONS/REQUIREMENTS

1. Summary of Work: Section 011100.

B. Cutting and patching covers adjustments to, and necessary reworking of, elements of construction in both new and existing work. The following definitions for cutting and patching apply to this Contract.

1. **Cutting:** Physical modification of construction work, both new and existing, or removal of existing or installed materials, including excavating and earthwork.
2. **Patching:** Restoration or replacement and installation of construction material, both new and existing, including finishing, patching, excavations and compaction of backfilling. Each prime contractor is responsible for his own cutting and patching as required to perform his work unless otherwise noted.

C. Execute cutting (including excavating), fitting or patching of work, required to:

1. Make several parts fit properly.
2. Uncover work to provide for installation of ill-timed work.
3. Remove and correct defective work.
4. Remove and correct work not conforming to requirements of Contract Documents.
5. Remove samples of installed work as specified for testing.
6. Install specified work in existing construction.
7. Remove existing construction.
8. Provide equipment, labor and incidentals necessary for cutting and patching as required for the installation of work in existing walls, floors and ceilings. Patching must match adjacent material and finish.

D. Coordination

1. Coordinate the installation of the Work to avoid cutting and patching in new construction.

E. In addition to contract requirements, upon written instructions of the Architect:

1. Uncover work to provide for Architect's observation of covered work.
2. Remove samples of installed materials for testing.
3. Remove work to provide for alterations of existing work.

- F. Do not endanger work by cutting or altering work or any part of it.

1.02 SUBMITTALS

- A. Prior to cutting which affects structural safety of project, submit written notice to the Architect requesting consent to proceed with cutting, including:
1. Identification of project.
 2. Description of affected work.
 3. Necessity for cutting.
 4. Affect on other work, on structural integrity of project.
 5. Description of proposed work. Designate:
 - a. Scope of cutting and patching.
 - b. Contractor and trades to execute work.
 - c. Products proposed to be used.
 - d. Extent of refinishing.
 6. Alternatives to cutting and patching.
 7. Designation of party responsible for cost of cutting and patching.
- B. Should conditions of work, or schedule, indicate change of materials or methods, submit written recommendation to the Architect, including:
1. Conditions indicating change.
 2. Recommendations for alternative materials or methods.
 3. Submittals as required for substitutions.
- C. Submit written notice to the Architect designating time the work will be uncovered, to provide for observation.

1.3 PAYMENT FOR COSTS

- A. Costs caused by ill-timed or defective work, or work not conforming to Contract Documents, including costs for additional service of the Construction Manager, Architect or Engineer will be paid for by the party responsible for ill-timed, rejected or non-conforming work.

PART 2 - PRODUCTS

2.01 MATERIALS FOR REPLACEMENT OF WORK REMOVED

- A. Comply with specifications for type of work to be done.
- B. Match existing adjoining materials in existing construction.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Inspect existing condition of work, including elements subject to movement or damage during removal of adjacent materials.
- B. After uncovering work, inspect conditions affecting installation of new products.

3.02 PREPARATION: PRIOR TO CUTTING

- A. Provide shoring, bracing and support as required to maintain structural integrity of project.
- B. Provide protection for materials on adjacent surfaces.
- C. Provide protection when work will be exposed to the elements.

3.03 PERFORMANCE

- A. Execute fitting and adjustment of products to provide finished installation to comply with specified tolerances and finishes.
- B. Restore work which has been cut or removed. Provide new products to complete work in accordance with requirements of Contract Documents.
- C. Refinish entire surfaces as necessary to provide an even finish:
 - 1. Continuous Surfaces: to nearest intersections.
 - 2. Assembly: entire refinishing.
- D. Fill and patch openings and holes in existing construction when bolts, piping, ducts, conduit and other penetrating items are removed to match adjacent construction.

END OF SECTION

SECTION 017400

CLEANING UP

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Related Requirements Specified Elsewhere
 - 1. Summary of Work: Section 011100
- B. All contractors are to maintain premises and public properties free from accumulations of waste, debris, and rubbish caused by all operations. Dispose of or secure loose materials and debris that can be blown around in the wind.
- C. At completion of work, remove waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all sight exposed surfaces; leave project clean and ready for occupancy.
- D. Remove all overspray caused by construction operations from adjacent construction, surfaces and vehicles.

1.2 SAFETY REQUIREMENTS

- A. Standards: Maintain project in accord with safety and insurance standards.
- B. Hazards Control
 - 1. Store volatile wastes in covered metal containers and remove from premises daily.
 - 2. Prevent accumulation of wastes, which create hazardous conditions.
 - 3. Provide adequate ventilation during use of volatile or noxious substances.
- C. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 - 1. Do not burn or bury rubbish and waste materials on project site.
 - 2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - 3. Do not dispose of wastes into streams or waterways.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

PART 3 - EXECUTION

3.1 DURING CONSTRUCTION – Each Prime Contractor shall:

- A. Execute daily cleaning to ensure that building, grounds and public properties are maintained free from accumulations of waste materials and rubbish. Weekly joint clean up to be performed by all Prime Contractors.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- C. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.
- D. Utilize containers provided by the General Contractor, for collection of waste materials debris, and rubbish. Roofing and Site Contractors must provide their own dumpsters for their debris. Contractors are not to use Owner's bins or dumpster.

3.2 FINAL CLEANING

- A. Each Contractor shall:
 - 1. Execute final cleaning prior to Substantial Completion.
 - a. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.
 - 2. Use cleaning materials that are nonhazardous.
 - 3. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
 - 4. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
 - 5. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
 - 6. Clean filters of operating equipment.
 - 7. Clean debris from roofs, gutters, downspouts, and drainage systems.
 - 8. Clean site; sweep paved areas, rake clean landscaped surfaces.
 - 9. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.3 RUBBISH REMOVAL

- A. Each contractor shall comply with all Local, State & Federal Laws, Codes and Requirements regarding recycling and trash or rubbish removal.

SECTION 017700
PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. All closeout documentation and punchlist items shall be complete within (45) forty five working days of issuance of the final Certificate of Substantial Completion.
- B. Related Requirements Specified Elsewhere
 - 1. Allowances: Section 012100
 - 2. Schedule of Values: Section 012973
 - 3. Applications for Payment: Section 012976
 - 3. Cleaning Up: Section 017400
 - 4. Project Record Documents: Section 017839
 - 5. Operating & Maintenance Manuals: Section 017823
 - 6. Warranties and Bonds: Section 017833

1.2 SUBSTANTIAL COMPLETION

- A. Contractor
 - 1. Submit written notice to the Construction Manager and Architect that Project, or designated portion of Project, is Substantially Complete.
 - 2. Include in the notice a list of major items still to be completed.
- B. Architect will make an inspection after receipt of notice, together with Owner's Representative.
- C. Should Architect consider that Work is substantially complete:
 - 1. Architect shall prepare and issue a Certificate of Substantial Completion, AIA G704, complete with signatures of Owner and Contractor, accompanied by a list of items to be completed or corrected.
 - 2. Owner Occupancy of Project or Designated Portion of Project:
 - a. Contractor shall:
 - 1) Perform final cleaning in accordance with Section 017400
 - b. Owner will occupy Project, under provisions stated in Certificate of Substantial Completion.
 - 3. Contractor shall complete work listed for completion or correction within designated time.
- D. Should Architect consider that Work is not substantially complete:
 - 1. Architect shall immediately notify Contractor, in writing, stating reasons.

2. Contractor shall complete Work and send second written notice to the Architect, certifying that Project, or designated portion of Project, is Substantially Complete.

3. Architect will re-inspect Work.

1.3 FINAL INSPECTION

A. Contractor shall submit written certification that:

1. Contract Documents have been reviewed.
2. Project is completed and is in compliance with Contract Documents.
3. Equipment and systems have been tested in presence of Owner's Representative and are operational.

B. The Architect will make final inspection after receipt of certification.

C. Should Architect consider that Work is finally complete in accordance with requirements of Contract Documents, he shall request Contractor to make Project Closeout submittals.

D. Should the Architect consider that Work is not finally complete:

1. The Architect shall notify Contractor, in writing, stating reasons.
2. Contractor shall take immediate steps to remedy the stated deficiencies and send second written notice to the Architect certifying that Work is complete.
3. The Architect will re-inspect Work.

1.4 REINSPECTION COSTS/CLOSE OUT COSTS

A. Should the Construction Manager or Architect be required to perform services because of the failure to complete all closeout within the time frame described in this Specification Section. The Construction Manager and/or Architect will be compensated for additional services with a deduct from the final payment to the responsible Contractor.

B. Should the Architect be required to perform second inspections because of failure of the Work to comply with original certifications of the Contractor, the Owner will compensate the Architect or Engineer for additional services and deduct amount paid from final payment to responsible Contractor.

1.5 CLOSEOUT SUBMITTALS:

- A. Project Record Documents: Section 017839
- B. Operation & Maintenance Materials: Conform to requirements of individual technical sections. Section 017823
- C. Warranties and Bonds: Section 017833 and individual specifications.
- C. Deliver evidence of compliance with requirements of governing authorities.
- D. Deliver Certificate of Insurance for Products and Completed Operations.
- E. Submit a notarized statement that only non-asbestos materials were installed on this project.
- F. Signed receipts for all materials turned over to the Owner per individual specifications.

Distribution: (1) Hard Copy, (1) CD and (1) Thumb Drive to Oneida County
(1) Hard Copy, (1) CD and (1) Thumb Drive to MVCC

1.6 EVIDENCE OF PAYMENTS AND RELEASE OF LIENS

- A. Contractor's Affidavit of Payment of Debts and Claims: AIA G706.
- B. Contractor's Affidavit of Release of Liens: AIA G706A, with:
 - 1. Separate written releases of waivers of liens for subcontractors, suppliers, and others with lien rights against property of Owner, together with list of those parties as required by Owner.
 - 2. Contractor's written release or waiver of lien upon payment to the Contractor pursuant to New York State Lien Law.
- C. Consent of Surety to Final Payment: AIA G707.

1.7 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit final statement of accounting to Architect.
- B. Statement shall reflect all adjustments.
 - 1. Original Contract Sum.
 - 2. Additions and deductions resulting from:
 - a. Previous Change Orders.
 - b. Cash Allowances
 - c. Other Adjustments.
 - d. Deductions for Uncorrected Work.
 - e. Deductions for Re-inspection Payments.
 - 3. Total Contract Sum, as adjusted.
 - 4. Previous Payments.
 - 5. Sum remaining due.
- C. The Architect will prepare a final Change Order, reflecting approved adjustments to Contract Sum not previously made by Change Orders.

1.8 FINAL CERTIFICATION FOR PAYMENT

- A. The Architect will release final certificate when all close out requirements have been met and approved.
- B. Should final completion be materially delayed through no fault of Contractor, the Architect may issue a Semi-Final Certificate for Payment, in accordance with provisions of General Conditions.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

SECTION 017823

OPERATING AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 GENERAL

- A. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under the Contract per individual specification sections.
- B. Prepare operating and maintenance data as specified in this Section and as referenced in other sections of Specifications.
- C. Instruct Owner's personnel in the maintenance of products and in the operation of equipment and systems.
- D. Related Requirements Specified in Other Sections
 - 1. Shop Drawings, Product Data and Samples: Section 013300.
 - 2. Project Closeout: Section 017700.
 - 3. Project Record Documents: Section 017839.

1.2 QUALITY ASSURANCE

- A. Preparation of data shall be done by personnel:
 - 1. Skilled as a technical writer to the extent required to communicate essential data.
 - 2. Skilled as a drafter competent to prepare required drawings.

1.3 FORM OF SUBMITTALS – (1) hard copy, (1) CD and (1) Thumb Drive each to Owner & MVCC Unless additional copies requested by Owner.

- A. Prepare data in the form of an instructional manual for use by Owner's personnel.
- B. Format
 - 1. Size: 8-1/2 inch by 11 inch.
 - 2. Paper: 20 pound minimum, white, for typed pages.
 - 3. Text: Manufacturer's printed data, or neatly typewritten.
 - 4. Drawings
 - a. Reinforced punched binder tab, bind in with text.
 - b. Fold larger drawings to size of text pages.
 - 5. Provide tabbed divider for each separate product, or each piece of operating equipment.
 - a. Provide typed description of product and major component parts of equipment.
 - b. Provide indexed tabs.
 - 6. Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS."
 - a. List:

1. Title of Project.
2. Identity of general subject matter covered in the manual.

C. Binders

1. Commercial quality three-ring binders with durable and cleanable plastic covers.
2. Minimum Ring Size: 1 inch.
3. When multiple binders are used, correlate the data into related consistent groupings.

1.4 CONTENT OF MANUAL

A. Neatly typewritten table of contents for each volume, arranged in systematic order.

1. Contractor, name of responsible principal, address and telephone number.
2. List of each product required to be included, indexed to the content of each volume.
3. List, with each product, the name, address and telephone number of:
 - a. Installer.
 - b. Local source of supply for parts and replacement.
4. Identify each product by product name and other identifying symbols as described in Contract Documents.

B. Product Data

1. Include only those sheets which are pertinent to the specific product.
2. Mark each sheet to:
 - a. Clearly identify the specific product or part installed.
 - b. Clearly identify the data applicable to the installation.
 - c. Delete references to inapplicable information.

C. Drawings

1. Supplement product data with drawings as necessary to clearly illustrate:
 - a. Relations of component parts of equipment and systems.
 - b. Control and flow diagrams.
2. Coordinate drawings with Project Record Documents to assure correct illustration of completed installation.
3. Do not use Project Record Documents as maintenance drawings.

D. Written text, as required to supplement product data for the particular installation:

1. Organize in a consistent format under separate headings for different procedures.
2. Provide a logical sequence of instructions for each procedure.

E. Copy of each warranty, bond and service contract issued.

1. Provide information sheet for Owner's personnel, give:
 - a. Proper procedures in the event of failure.
 - b. Instances which might affect the validity of warranties or bonds.

1.5 MANUAL FOR MATERIALS AND FINISHES

A. Submit (1) copy of complete manual in final form.

- B. Content, for Materials and Finishes
 - 1. Manufacturer's data, giving full information on products.
 - a. Catalog number, size, composition.
 - b. Cautions against cleaning agents and methods which are detrimental to the product.
 - c. Recommended schedule for cleaning and maintenance.
- C. Content, for Moisture-Protection and Weather-Exposed Products
 - 1. Manufacturer's data, giving full information on products.
 - a. Applicable standards.
 - b. Chemical composition.
 - c. Details of installation.
 - 2. Instructions for inspection, maintenance and repair.
- D. Additional Requirements for Maintenance Data: The respective section of Specifications.

1.6 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Submit two copies of complete manual in final form.
- B. Content, for each unit of equipment and system, as appropriate:
 - 1. Description of unit and component parts.
 - a. Function, normal operating characteristics and limiting conditions.
 - b. Performance curves, engineering data and tests.
 - c. Complete nomenclature and commercial number of all replaceable parts.
 - 2. Operating Procedures
 - a. Start-up, break-in, routine and normal operating instruction.
 - b. Regulation, control, stopping, shut-down and emergency instruction.
 - c. Summer and winter operating instruction.
 - d. Special operating instructions.
 - 3. Maintenance Procedures
 - a. Routine operations.
 - b. Guide to "troubleshooting".
 - c. Disassembly, repair and reassembly.
 - d. Alignment, adjusting and checking.
 - 4. Servicing and Lubrication Schedule
 - a. List of lubricants required.
 - 5. Manufacturer's printed operating and maintenance instructions.
 - 6. Description of sequence of operation by control manufacturer.
 - 7. Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.
 - a. Predicted life of parts subject to wear.
 - b. Items recommended to be stocked as spare parts.

8. As-installed control diagrams by control manufacturer.
 9. Each Contractor's coordination drawings.
 - a. As-installed color coded piping diagrams.
 10. Charts of valve tag numbers, with the location and function of each valve.
 11. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
 12. Other data as required under pertinent sections of specifications.
- C. Content, for each Electronic System, as Appropriate
1. Description of System and Component Parts
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data and tests.
 - c. Complete nomenclature and commercial number of replaceable parts.
 2. Circuit Directories of Panelboards
 - a. Electrical service.
 - b. Controls.
 - c. Communications.
 3. As-installed color coded wiring diagrams.
 4. Operating procedures.
 - a. Routine and normal operating instruction.
 - b. Sequences required.
 - c. Special operating instruction.
 5. Maintenance Procedures
 - a. Routine operations.
 - b. Guide to "troubleshooting".
 - c. Disassembly, repair and reassembly.
 - d. Adjustment and checking.
 6. Manufacturer's printed operating and maintenance instructions.
 7. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
 8. Other data as required under pertinent sections of specifications.
- D. Prepare and include additional data when the need for such data becomes apparent during instruction of Owner's personnel.
- E. Additional Requirements for Operating and Maintenance Data: The respective sections of Specifications.

1.7 INSTRUCTION OF OWNER'S PERSONNEL

- A. Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in the operation, adjustment and maintenance of products, equipment and systems.
- B. Operating and maintenance manual shall constitute the basis of instruction.
 1. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

- C. Upon completion of instruction, obtain from the Owner, in writing, that his authorized personnel have been given operating and maintenance instruction for maintenance of products, equipment and systems installed on this project.
- D. Render additional instruction necessary for the operation of heating, ventilating and air conditioning systems during the first heating and cooling season after acceptance.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

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SECTION 017833

WARRANTIES AND BONDS

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, and each individual Technical Specification Sections apply to this Section.

1.2 SUMMARY

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers' standard warranties on products and special warranties.
 - 1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
 - 2. General closeout requirements are included in Section "Project Closeout."
 - 3. Specific requirements for warranties for the Work and products and installation that are specified to be warranted, are included in the individual Sections of Divisions 2 through 33.
 - 4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
- B. Disclaimers and Limitations
 - 1. Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.3 DEFINITIONS

- A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.4 WARRANTY REQUIREMENTS

- A. Related Damages and Loses
 - 1. When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty
 - 1. When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost

1. Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

D. Owner's Recourse

1. Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, right and remedies otherwise available under law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - a. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

- E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.5 SUBMITTALS

- A. Submit written warranties to the Architect/Engineer prior to the date certified for Substantial Completion. If the Architect/Engineer Certificate of Substantial Completion designates commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect/Engineer.
1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect/Engineer within fifteen days of completion of that designated portion of the Work.
- B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect/Engineer for approval prior to final execution.
- C. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or the Contractor and subcontractor, supplier or manufacturer. Submit a draft to the Owner through the Architect/Engineer for approval prior to final execution.
1. Refer to individual Sections of Division-2 through -16 for specific content requirements, and particular requirements for submittal of special warranties.
- D. Form of Submittal: At Final Completion compile (1) copy, (1) CD and (1) Thumb Drive of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual within your close out manuals.
- E. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.

2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES", the Project title or name, and the name of the Contractor.
- F. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

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SECTION 017839

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Related Requirements Specified Elsewhere
 - 1. Shop Drawings, Product Data and Samples: Section 013300.
 - 2. Project Close Out: Section 017700

1.2 MAINTENANCE OF DOCUMENTS

- A. Maintain, at job site, one copy of: Drawings are to be kept current with all changes and available for periodical reviews upon request.
 - 1. Contract Drawings
 - 2. Project Manual
 - 3. Addenda
 - 4. Approved Shop Drawings, Product Data and Samples
 - 5. Supplemental Instructions
 - 6. Change Orders
 - 7. Other Modifications to Contract
 - 8. Field Test Records
 - 9. Correspondence File
- B. Store documents in approved locations, apart from documents used for construction.
- C. Provide files and racks for storage of documents.
- D. Maintain documents in clean, dry, legible condition.
- E. Do not use record documents for construction purposes.
- F. Make documents available at all times for inspection by Construction Manager, Architect and Owner.
- G. File documents in accordance with Table of Contents of the Project Manual.

1.3 MARKING DEVICES

- A. Provide felt marking pen for marking, conforming to following color code:
 - 1. Red for Site and General Construction Work.
 - 2. Green for Mechanical, Fire Protection, and Electrical Construction Work.
 - 3. Black for all other written notations.

1.4 RECORDING

- A. Label each document "PROJECT RECORD" in 2 inch high printed letters.
- B. Keep record documents current.
- C. Contract Drawings
 - 1. Legibly mark to record actual construction:

- a. Field changes of dimension and detail.
 - b. Changes made by Supplemental Instructions or Change Order.
 - c. Details not on original Contract Drawings.
- D. Specifications and Addenda
 - 1. Legibly mark-up each section to record:
 - a. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
 - b. Changes made by Supplemental Instructions or Change Order.
 - c. Other matters not originally specified.
- E. Shop Drawings, Product Data, and Samples: Maintain as record documents. Legibly mark-up approved submittals to show changes made after review.

1.5 SUBMITTAL

- A. At the completion of project, (1) hard copy, (1) CD and (1) Thumb Drive each to Owner & MVCC Unless additional copies requested by Owner.
- B. Accompany submittal with transmittal letter, in duplicate containing:
 - 1. Date
 - 2. Project title and number
 - 3. Contractor's name and address
 - 4. Title and number of each record document
 - 5. Certification that each document as submitted is complete and accurate
 - 6. Signature of Contractor, or his authorized representative

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

SECTION 01 91 13
GENERAL COMMISSIONING REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Commissioning is intended to achieve the following specific objectives; this section specifies the Contractor's responsibilities for commissioning:
 - 1. Verify that the work is installed in accordance with Contract Documents and the manufacturer's recommendations and instructions, and that it receives adequate operational checkout prior to startup: Startup reports and Prefunctional Checklists executed by Contractor are utilized to achieve this.
 - 2. Verify and document that functional performance is in accordance with Contract Documents: Functional Tests executed by Contractor and witnessed by the Commissioning Authority are utilized to achieve this.
 - 3. Verify that operation and maintenance manuals submitted to Owner are complete: Detailed operation and maintenance (O&M) data submittals by Contractor are utilized to achieve this.
 - 4. Verify that the Owner's operating personnel are adequately trained: Formal training conducted by Contractor is utilized to achieve this.
- B. The Commissioning Authority directs and coordinates all commissioning activities; this section describes some but not all of the Commissioning Authority's responsibilities.
- C. The Commissioning Authority is employed by Owner.

1.02 SCOPE OF COMMISSIONING

- A. The following are to be commissioned:
- B. Elevating and conveying systems.
- C. Fire Protection Systems.
- D. Plumbing Systems:
 - 1. Water heaters.
 - 2. Laboratory gas systems.
 - 3. Compressed air systems.
 - 4. Welding gas systems.
- E. HVAC System, including:
 - 1. Major and minor equipment items.
 - 2. Piping systems and equipment.
 - 3. Ductwork and accessories.
 - 4. Terminal units.
 - 5. Control system.
 - 6. Sound control devices.
 - 7. Vibration control devices.
 - 8. Variable frequency drives.
- F. Special Ventilation:
 - 1. Fume hoods.
 - 2. Laboratory pressurization.
 - 3. Specialty fans.
 - 4. Point exhaust systems
- G. Integrated Automation.
- H. Electrical Systems:
 - 1. Power quality.
 - 2. Emergency power systems.

3. Uninterruptible power systems.
4. Lighting controls other than manual switches.
- I. Electronic Safety and Security:
 1. Security system, including doors and hardware.
 2. Fire and smoke alarms.
- J. Communications:
 1. Voice and data systems.
 2. Public address/paging.
- K. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.

1.03 RELATED REQUIREMENTS

- A. Section 01 77 00 - Project Closeout
- B. Section 01 78 23 Operating and Maintenance Data
- C. Section 01 78 39 Project Record Documents

1.04 REFERENCE STANDARDS

- A. CSI/CSC MF - Masterformat; 2016.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures; except:
 1. Make all submittals specified in this section, and elsewhere where indicated for commissioning purposes, directly to the Commissioning Authority, unless they require review by Architect; in that case, submit to Architect first.
 2. Submit one copy to the Commissioning Authority, not to be returned.
 3. Make commissioning submittals on time schedule specified by Commissioning Authority.
 4. Submittals indicated as "Draft" are intended for the use of the Commissioning Authority in preparation of Prefunctional Checklists or Functional Test requirements; submit in editable electronic format, Microsoft Word 2010 preferred.
 5. As soon as possible after submittals made to Architect are approved, submit copy of approved submittal to the Commissioning Authority.
- B. Product Data: If submittals to Architect do not include the following, submit copies as soon as possible:
 1. Manufacturer's product data, cut sheets, and shop drawings.
 2. Manufacturer's installation instructions.
 3. Startup, operating, and troubleshooting procedures.
 4. Fan and pump curves.
 5. Factory test reports.
 6. Warranty information, including details of Owner's responsibilities in regard to keeping warranties in force.
- C. Manufacturers' Instructions: Submit copies of all manufacturer-provided instructions that are shipped with the equipment as soon as the equipment is delivered.
- D. Startup Plans and Reports.
- E. Completed Prefunctional Checklists.
- F. Commissioning Issues Log:
 1. Construction observations.
 2. Supporting photographs.

1.06 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.07 COORDINATION

- A. The Commissioning Agent (CA) is hired by, and works for, the Owner. The CA direct and coordinates the commissioning activities. All members of the commissioning team shall work together to fulfill their contractual responsibilities and meet the objectives of the Contract Documents.
- B. The CA will work with the Contractors according to established protocols to schedule the commissioning activities. The Contractors shall integrate all commissioning activities into the approved progress schedule. All parties will address scheduling problems and make necessary notification and changes in a timely manner in order to expedite the commissioning process and maintain the approved progress schedule.

1.08 CONTRACTOR RESPONSIBILITIES

- A. The Contractor's commissioning responsibilities are as follows (all references apply to commissioned systems and equipment only):
 - 1. Construction and Acceptance Phase:
 - a. Attend the commissioning scoping meeting and other necessary meetings scheduled by the Owners Representative to facilitate the commissioning process.
 - b. Facilitate the coordination of the commissioning work by the CA and with the CA ensure that commissioning activities are being scheduled into the approved progress schedule.
 - c. Provide detailed manufacturer installation and start-up, operating, troubleshooting and maintenance procedures, factory test reports, and full warranty information, including all responsibilities of the Owner to keep the warranty in force. The installation, start-up and checkout materials that are actually shipped with the equipment and the actual field checkout sheet forms to be used by the factory or field technicians shall be submitted to the CA. The CA may request further documentation necessary for the commissioning process.
 - d. In each purchase order or subcontract written, include requirements for submittal data, O&M data, commissioning tasks and training.
 - e. Ensure that all subcontractors execute their commissioning responsibilities according to the Contract Documents and approved progress schedule.
 - f. Assist in the process of writing detailed test procedures by clarifying the operation and control of commissioned equipment.
 - g. Review test procedures to ensure feasibility, safety and equipment protection and provide necessary written alarm limits to be used during the tests.
 - h. Develop a full start-up and testing plan using manufacturer's start-up procedures and the prefunctional checklists from the CA for all commissioned equipment. Submit to the CA for review and approval prior to startup.
 - i. During the startup and initial checkout process, execute all portions of the prefunctional checklists for all commissioned systems and equipment. Verify that system installations include all ports, gages, thermometers, access doors, valves, etc., required for specified functional performance testing.
 - j. Provide all special tools and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment.
 - k. Perform and clearly document all completed startup and system operational checkout procedures, providing a copy to the CA.
 - l. Address incomplete Work before functional performance testing.
 - m. Provide skilled technicians to execute startup of equipment and to execute the functional performance tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem-solving.
 - n. Provide skilled technicians to perform functional performance testing under the direction of the CA for specified equipment. Provide Manufacturer's Representative

- as required and as specified in the Specification. Assist the CA in interpreting the monitoring data, as necessary.
- o. Correct deficiencies (differences between specified and observed performance) as directed by the Owner's Representative.
- p. Prepare O&M manuals according to the Contract Documents, including clarifying and updating the original sequences of operation to as-built conditions. Provide a copy of the O&M manuals and submittals of commissioned equipment to the CA for review and approval.
- q. Provide training as specified.
- r. Coordinate with equipment manufacturers to determine specific requirements to maintain the validity of the warranty.
- 2. Warranty Period:
 - a. Execute seasonal or deferred functional performance testing in accordance with the specifications.
 - b. Correct deficiencies and make necessary adjustments to O&M manuals and as-built drawings for applicable issues identified in any seasonal testing.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

- A. Provide all standard testing equipment required to perform startup and initial checkout and required Functional Testing; unless otherwise noted such testing equipment will NOT become the property of Owner.
- B. Calibration Tolerances: Provide testing equipment of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified. If not otherwise noted, the following minimum requirements apply:
 - 1. Temperature Sensors and Digital Thermometers: Certified calibration within past year to accuracy of 0.5 degree F and resolution of plus/minus 0.1 degree F.
 - 2. Pressure Sensors: Accuracy of plus/minus 2.0 percent of the value range being measured (not full range of meter), calibrated within the last year.
 - 3. Calibration: According to the manufacturer's recommended intervals and when dropped or damaged; affix calibration tags or keep certificates readily available for inspection.
- C. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.
- D. Dataloggers: Independent equipment and software for monitoring flows, currents, status, pressures, etc. of equipment.
 - 1. Dataloggers required to for Functional Tests will be provided by the Commissioning Authority and will not become the property of Owner.

PART 3 EXECUTION

3.01 COMMISSIONING PLAN

- A. Commissioning Authority has prepared the Commissioning Plan.
 - 1. Attend meetings called by the Commissioning Authority for purposes of completing the commissioning plan.
 - 2. Require attendance and participation of relevant subcontractors, installers, suppliers, and manufacturer representatives.
- B. Contractor is responsible for compliance with the Commissioning Plan.
- C. Commissioning Plan: The commissioning schedule, procedures, and coordination requirements for all parties in the commissioning process.

1. Commissioning will be phased (by floors, for example) to minimize the total construction time.
- D. Basis of Design Documentation (BOD): Detailed documentation of the functional requirements of the project; descriptions of the systems, components, and methods chosen to meet the design intent; assumptions underlying the design intent.
 1. Basis of Design Documentation is to be prepared by Architect.
- E. Commissioning Schedule:
 1. Submit anticipated dates of startup of each item of equipment and system to Commissioning Authority within 60 days after award of Contract.
 2. Re-submit anticipated startup dates monthly, but not less than 4 weeks prior to startup.
 3. Prefunctional Checklists and Functional Tests are to be performed in sequence from components, to subsystems, to systems.
 4. Provide sufficient notice to Commissioning Authority for delivery of relevant Checklists and Functional Test procedures, to avoid delay.

3.02 DOCUMENTATION IDENTIFICATION SYSTEM

- A. Give each submitted form or report a unique identification; use the following scheme.
- B. Type of Document: Use the following prefixes:
 1. Startup Plan: SP-.
 2. Startup Report: SR-.
 3. Prefunctional Checklist: PC-.
 4. Functional Test Procedure: FTP-.
 5. Functional Test Report: FTR-.
- C. System Type: Use the first 4 digits from CSI/CSC MF (Master Format), that are applicable to the system; for example:
 1. 2300: HVAC system as a whole.
 2. 2320: HVAC Piping and Pumps.
 3. 2330: HVAC Air Distribution.
- D. Component Number: Assign numbers sequentially, using 1, 2, or 3 digits as required to accommodate the number of units in the system.
- E. Test, Revision, or Submittal Number: Number each successive iteration sequentially, starting with 1.
- F. Example: PC-2320-001.2 would be the Prefunctional Checklist for equipment item 1 in the HVAC piping system, probably a pump; this is the second, revised submittal of this checklist.

3.03 STARTUP PLANS AND REPORTS

- A. Startup Plans: For each item of equipment and system for which the manufacturer provides a startup plan, submit the plan not less than 8 weeks prior to startup.
- B. Startup Reports: For each item of equipment and system for which the manufacturer provides a startup checklist (or startup plan or field checkout sheet), document compliance by submitting the completed startup checklist prior to startup, signed and dated by responsible entity.
- C. Submit directly to the Commissioning Authority.

3.04 PREFUNCTIONAL CHECKLISTS

- A. A Prefunctional Checklist is required to be filled out for each item of equipment or other assembly specified to be commissioned.
 1. No sampling of identical or near-identical items is allowed.
 2. These checklists do not replace manufacturers' recommended startup checklists, regardless of apparent redundancy.
 3. Prefunctional Checklist forms will not be complete until after award of the contract; the following types of information will be gathered via the completed Checklist forms:

- a. Certification by installing contractor that the unit is properly installed, started up, and operating and ready for Functional Testing.
 - b. Confirmation of receipt of each shop drawing and commissioning submittal specified, itemized by unit.
 - c. Manufacturer, model number, and relevant capacity information; list information "as specified," "as submitted," and "as installed."
 - d. Serial number of installed unit.
 - e. List of inspections to be conducted to document proper installation prior to startup and Functional Testing; these will be primarily static inspections and procedures; for equipment and systems may include normal manufacturer's start-up checklist items and minor testing.
 - f. Sensor and actuator calibration information.
- B. Contractor is responsible for filling out Prefunctional Checklists, after completion of installation and before startup; witnessing by the Commissioning Authority is not required unless otherwise specified.
- 1. Each line item without deficiency is to be witnessed, initialed, and dated by the actual witness; checklists are not complete until all line items are initialed and dated complete without deficiencies.
 - 2. Checklists with incomplete items may be submitted for approval provided the Contractor attests that incomplete items do not preclude the performance of safe and reliable Functional Testing; re-submission of the Checklist is required upon completion of remaining items.
 - 3. Individual Checklists may contain line items that are the responsibility of more than one installer; Contractor shall assign responsibility to appropriate installers or subcontractors, with identification recorded on the form.
 - 4. If any Checklist line item is not relevant, record reasons on the form.
 - 5. Contractor may independently perform startup inspections and/or tests, at Contractor's option.
 - 6. Regardless of these reporting requirements, Contractor is responsible for correct startup and operation.
 - 7. Submit completed Checklists to Commissioning Authority within two days of completion.
- C. Commissioning Authority is responsible for furnishing the Prefunctional Checklists to Contractor.
- 1. Initial Drafts: Contractor is responsible for initial draft of Prefunctional Checklist where so indicated in Contract Documents.
 - 2. Provide all additional information requested by Commissioning Authority to aid in preparation of checklists, such as shop drawing submittals, manufacturers' startup checklists, and O&M data.
 - 3. Commissioning Authority may add any relevant items deemed necessary regardless of whether they are explicitly mentioned in Contract Documents or not.
 - 4. When asked to review the proposed Checklists, do so in a timely manner.
- D. Commissioning Authority Witnessing: Required for:
- 1. Each piece of primary equipment, unless sampling of multiple similar units is allowed by the commissioning plan.
 - 2. A sampling of non-primary equipment, as allowed by the commissioning plan.
- E. Deficiencies: Correct deficiencies and re-inspect or re-test, as applicable, at no extra cost to Owner.
- 1. If difficulty in correction would delay progress, report deficiency to the Commissioning Authority immediately.

3.05 FUNCTIONAL TESTS

- A. A Functional Test is required for each item of equipment, system, or other assembly specified to be commissioned, unless sampling of multiple identical or near-identical units is allowed by the final test procedures.
- B. Contractor is responsible for execution of required Functional Tests, after completion of Prefunctional Checklist and before closeout.
- C. Commissioning Authority is responsible for witnessing and reporting results of Functional Tests, including preparation and completion of forms for that purpose.
- D. Contractor is responsible for correction of deficiencies and re-testing at no extra cost to Owner; if a deficiency is not corrected and re-tested immediately, the Commissioning Authority will document the deficiency and the Contractor's stated intentions regarding correction.
 - 1. Deficiencies are any condition in the installation or function of a component, piece of equipment or system that is not in compliance with Contract Documents or does not perform properly.
 - 2. When the deficiency has been corrected, the Contractor completes the form certifying that the item is ready to be re-tested and returns the form to the Commissioning Authority; the Commissioning Authority will reschedule the test and the Contractor shall re-test.
 - 3. Identical or Near-Identical Items: If 10 percent, or three, whichever is greater, of identical or near-identical items fail to perform due to material or manufacturing defect, all items will be considered defective; provide a proposal for correction within 2 weeks after notification of defect, including provision for testing sample installations prior to replacement of all items.
 - 4. Contractor shall bear the cost of Owner and Commissioning Authority personnel time witnessing re-testing.
 - 5. Contractor shall bear the cost of Owner and Commissioning Authority personnel time witnessing re-testing if the test failed due to failure to execute the relevant Prefunctional Checklist correctly; if the test failed for reasons that would not have been identified in the Prefunctional Checklist process, Contractor shall bear the cost of the second and subsequent re-tests.
- E. Functional Test Procedures:
 - 1. Some test procedures are included in Contract Documents; where Functional Test procedures are not included in Contract Documents, test procedures will be determined by the Commissioning Authority with input by and coordination with Contractor.
 - 2. Examples of Functional Testing:
 - a. Test the dynamic function and operation of equipment and systems (rather than just components) using manual (direct observation) or monitoring methods under full operation (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure setpoint).
 - b. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc.
 - c. Systems are run through all the HVAC control system's sequences of operation and components are verified to be responding as the sequence's state.
 - d. Traditional air or water test and balancing (TAB) is not Functional Testing; spot checking of TAB by demonstration to the Commissioning Authority is Functional Testing.
- F. Deferred Functional Tests: Some tests may need to be performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site conditions; performance of these tests remains the Contractor's responsibility regardless of timing.

3.06 SENSOR AND ACTUATOR CALIBRATION

- A. Calibrate all field-installed temperature, relative humidity, carbon monoxide, carbon dioxide, and pressure sensors and gauges, and all actuators (dampers and valves) on this piece of

equipment shall be calibrated. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated.

- B. Calibrate using the methods described below; alternate methods may be used, if approved by Commissioning Authority and Owner beforehand. See PART 2 for test instrument requirements. Record methods used on the relevant Prefunctional Checklist or other suitable forms, documenting initial, intermediate and final results.
- C. All Sensors:
 - 1. Verify that sensor location is appropriate and away from potential causes of erratic operation.
 - 2. Verify that sensors with shielded cable are grounded only at one end.
 - 3. For sensor pairs that are used to determine a temperature or pressure difference, for temperature make sure they are reading within 0.2 degree F of each other, and for pressure, within tolerance equal to 2 percent of the reading, of each other.
 - 4. Tolerances for critical applications may be tighter.
- D. Sensors Without Transmitters - Standard Application:
 - 1. Make a reading with a calibrated test instrument within 6 inches of the site sensor.
 - 2. Verify that the sensor reading, via the permanent thermostat, gauge or building automation system, is within the tolerances in the table below of the instrument-measured value.
 - 3. If not, install offset, calibrate or replace sensor.
- E. Sensors With Transmitters - Standard Application.
 - 1. Disconnect sensor.
 - 2. Connect a signal generator in place of sensor.
 - 3. Connect ammeter in series between transmitter and building automation system control panel.
 - 4. Using manufacturer's resistance-temperature data, simulate minimum desired temperature.
 - 5. Adjust transmitter potentiometer zero until 4 mA is read by the ammeter.
 - 6. Repeat for the maximum temperature matching 20 mA to the potentiometer span or maximum and verify at the building automation system.
 - 7. Record all values and recalibrate controller as necessary to comply with specified control ramps, reset schedules, proportional relationship, reset relationship and P/I reaction.
 - 8. Reconnect sensor.
 - 9. Make a reading with a calibrated test instrument within 6 inches of the site sensor.
 - 10. Verify that the sensor reading, via the permanent thermostat, gauge or building automation system, is within the tolerances in the table below of the instrument-measured value.
 - 11. If not, replace sensor and repeat.
 - 12. For pressure sensors, perform a similar process with a suitable signal generator.
- F. Sensor Tolerances for Standard Applications: Plus/minus the following maximums:
 - 1. Watthour, Voltage, Amperage: 1 percent of design.
 - 2. Pressure, Air, Water, Gas: 3 percent of design.
 - 3. Air Temperatures (Outside Air, Space Air, Duct Air): 0.4 degrees F.
 - 4. Relative Humidity: 4 percent of design.
 - 5. Barometric Pressure: 0.1 inch of Hg.
 - 6. Flow Rate, Air: 10 percent of design.
 - 7. Flow Rate, Water: 4 percent of design.
 - 8. AHU Wet Bulb and Dew Point: 2.0 degrees F.
- G. Critical Applications: For some applications more rigorous calibration techniques may be required for selected sensors. Describe any such methods used on an attached sheet.
- H. Valve/Damper Stroke Setup and Check:

1. For all valve/damper actuator positions checked, verify the actual position against the control system readout.
 2. Set pump/fan to normal operating mode.
 3. Command valve/damper closed; visually verify that valve/damper is closed and adjust output zero signal as required.
 4. Command valve/damper to open; verify position is full open and adjust output signal as required.
 5. Command valve/damper to a few intermediate positions.
 6. If actual valve/damper position does not reasonably correspond, replace actuator or add pilot positioner (for pneumatics).
- I. Isolation Valve or System Valve Leak Check: For valves not associated with coils.
1. With full pressure in the system, command valve closed.
 2. Use an ultra-sonic flow meter to detect flow or leakage.

3.07 TEST PROCEDURES - GENERAL

- A. Provide skilled technicians to execute starting of equipment and to execute the Functional Tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem-solving.
- B. Provide all necessary materials and system modifications required to produce the flows, pressures, temperatures, and conditions necessary to execute the test according to the specified conditions. At completion of the test, return all affected equipment and systems to their pre-test condition.
- C. Sampling: Where Functional Testing of fewer than the total number of multiple identical or near-identical items is explicitly permitted, perform sampling as follows:
1. Identical Units: Defined as units with same application and sequence of operation; only minor size or capacity difference.
 2. Sampling is not allowed for:
 - a. Major equipment.
 - b. Life-safety-critical equipment.
 - c. Prefunctional Checklist execution.
 3. XX = the percent of the group of identical equipment to be included in each sample; defined for specific type of equipment.
 4. YY = the percent of the sample that if failed will require another sample to be tested; defined for specific type of equipment.
 5. Randomly test at least XX percent of each group of identical equipment, but not less than three units. This constitutes the "first sample."
 6. If YY percent of the units in the first sample fail, test another XX percent of the remaining identical units.
 7. If YY percent of the units in the second sample fail, test all remaining identical units.
 8. If frequent failures occur, resulting in more troubleshooting than testing, the Commissioning Authority may stop the testing and require Contractor to perform and document a checkout of the remaining units prior to continuing testing.
- D. Manual Testing: Use hand-held instruments, immediate control system readouts, or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make the "observation").
- E. Simulating Conditions: Artificially create the necessary condition for the purpose of testing the response of a system; for example apply hot air to a space sensor using a hair dryer to see the response in a VAV box.
- F. Simulating Signals: Disconnect the sensor and use a signal generator to send an amperage, resistance or pressure to the transducer and control system to simulate the sensor value.

- G. Over-Writing Values: Change the sensor value known to the control system in the control system to see the response of the system; for example, change the outside air temperature value from 50 degrees F to 75 degrees F to verify economizer operation.
- H. Indirect Indicators: Remote indicators of a response or condition, such as a reading from a control system screen reporting a damper to be 100 percent closed, are considered indirect indicators.
- I. Monitoring: Record parameters (flow, current, status, pressure, etc.) of equipment operation using dataloggers or the trending capabilities of the relevant control systems; where monitoring of specific points is called for in Functional Test Procedures:
 - 1. All points that are monitored by the relevant control system shall be trended by Contractor; at the Commissioning Authority's request, Contractor shall trend up to 20 percent more points than specified at no extra charge.
 - 2. Other points will be monitored by the Commissioning Authority using dataloggers.
 - 3. At the option of the Commissioning Authority, some control system monitoring may be replaced with datalogger monitoring.
 - 4. Provide hard copies of monitored data in columnar format with time down left column and at least 5 columns of point values on same page.
 - 5. Graphical output is desirable and is required for all output if the system can produce it.
 - 6. Monitoring may be used to augment manual testing.

3.08 OPERATION AND MAINTENANCE MANUALS

- A. See Section 01 77 00 Projec Closeout for additional requirements.
- B. Add design intent documentation furnished by Architect to manuals prior to submission to Owner.
- C. Submit manuals related to items that were commissioned to Commissioning Authority for review; make changes recommended by Commissioning Authority.
- D. Commissioning Authority will add commissioning records to manuals after submission to Owner.

END OF SECTION

SECTION 02 8400

REMOVAL AND DISPOSAL OF PCB WASTE

PART 1 GENERAL

1.01 DESCRIPTION

- A. This Section specifies the removal and disposal of PCB containing caulk (Bulk Product Waste defined by 40CFR761.62) and associated decontamination. Laboratory analysis has shown specific building caulk to contain PCBs in excess of 50 ppm. The extent of removal required under this contract is limited to the masonry caulk between the capstones of the Payne Hall cooling tower enclosure at Mohawk Valley Community College's Utica, NY campus. Capstones shall be removed during the work to facilitate complete PCB removals and eventual demolition, by others. Two caulking materials located between/adjacent to the capstones were determined to contain PCBs in excess of 50 ppm. A copy of the relevant survey report is attached.
- B. Approximate total quantity of caulk to be removed and disposed shall be determined and verified by the contractor. The PCB containing caulk was not determined to be an asbestos containing material.

1.02 WORK INCLUDED

- A. The Contractor shall furnish all labor, materials, supervision, construction tools, and equipment necessary to perform the work.
- B. Provide continuous on-site supervision by personnel knowledgeable in all aspects of hazardous waste removal and disposal.
- C. Provide and maintain environmental protective measures, equipment, and procedures at the work site.
- D. Provide and maintain personnel protective measures, equipment, and procedures at the work site.
- E. Package, transport, and dispose of all PCB containing/contaminated materials in accordance with applicable Federal, State, and local regulations.
- F. Contractor must satisfy himself as to quantities and conditions, and base his bid accordingly. Coordination of all removals with other trades, if necessary, shall be the responsibility of the Contractor.

1.03 REFERENCES

- A. The publications listed below are considered part of this specification to the extent referenced herein.

1. 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response
2. 40 CFR 761 Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce and Use Prohibitions
3. 49 CFR 171 General Information, Regulations, and Definitions
4. 49 CFR 173 Shippers - General Requirements for Shipments and Packagings
5. NYS Department of Environmental Conservation Standards, including but not limited to: Part 360, Part 364, Part 370, Part 371, Part 372, Part 373, and Part 375.

PART 2 SUBMITTALS

2.01 PRIOR TO CONSTRUCTION

- A. Prepare and submit, 15 calendar days prior to construction, the following:
 1. Evidence of employee training in accordance with 29 CFR 1910.120.
 2. PCB work plan describing methods, techniques, and phases of work associated with the removal of caulk and the cleaning of contaminated surfaces. Specific protection requirements shall be covered including the protection of workers and the environment.
 3. Names, qualifications, and applicable permits for each contractor involved in removing, transporting, storing, treating, and disposing of the wastes.
 4. List of handling equipment to be utilized in performing the work. Include all specific containment, containerization, and decontamination materials and products.
 5. Waste disposal plan including containerization, transportation, storage, and final disposal requirements for each type of waste generated during work on this project. Include copies of applicable permits and a copy of the form(s) used by the Contractor for maintenance of waste shipment records.
 6. Documentation certifying that all employees have received appropriate medical examinations and have successfully passed a fit test for the respirator to be worn. As a minimum, medical exams must be consistent with requirements in OSHA Regulation 1926.1101.
 7. A written Hazard Communication Program that complies with the OSHA Regulation 29 CFR 1910.1200. Material Safety Data Sheets (OSHA Form 174 or equivalent) for all chemicals used during work performed under this Section.

PART 3 EXECUTION

3.01 PROTECTION OF WORKERS AND THE ENVIRONMENT

- A. Protect workers and the environment from PCB hazards in accordance with the PCB Work Plan and, as a minimum, as specified herein.
- B. Provide worker decontamination facilities including showers. Provide PPE defined in the PCB Work Plan and ensure workers utilize PPE upon entering the PCB Control Area.
- C. Include provisions to ensure the airborne concentrations of PCBs do not exceed the OSHA PEL inside or outside the PCB Control Area.

3.02 PCB CONTROL AREA

- A. Establish a PCB Control Area to prevent entry of unauthorized persons. Provide temporary fencing and signs at all approaches to the PCB Control Area to warn unauthorized personnel such that they may take necessary precautions before entering the area.
- B. Allow adequate space for equipment, equipment decontamination, and temporary storage of waste materials.

3.03 CAULK REMOVAL

- A. Provide temporary protection to the tower enclosure and proximate areas such as sealing of openings and placement of dropcloths.
- B. Remove caulk from all joints between and proximate to capstones to bare substrate. Use of power tools to clean masonry surfaces is allowable provided tools are equipped with a HEPA vacuum attachment.
- C. Containerize immediately all caulk removed from the building in the containers to be used for transport and disposal.

3.04 EXCAVATION

- A. Not Used

3.05 DECONTAMINATION

- A. Solid surfaces on the building exterior shall be visually inspected to verify no residual caulk debris remains. Contractor shall then perform a washdown of these surfaces using detergent solution and brushes, rags, etc. Surfaces shall then be rinsed. Collect all wash and rinse water and treat as a contaminated material.
- B. Horizontal surfaces impacted by the removals shall be decontaminated using the EPA recommended "double wash and rinse" procedure. Contractor shall make all preparations necessary to collect wash solution and rinse water for proper treatment and disposal.

3.06 OWNER'S REPRESENTATIVE

- A. The Owner reserves the right to contract an independent firm to perform monitoring and sampling services. The firm will advise the Owner in matters pertaining to the work performed in accordance with this section and related specifications and requirements.
- B. Representatives of the Owner are authorized by the Owner to have free access to the PCB Control areas, to assist in interpretation of procedures, and to advise on provisions of the Contract Documents pertaining to the work.

- C. Duties performed by the Owner's Representative in advising the Owner on environmental health and safety matters does not relieve the Contractor's obligation to comply with all applicable health and safety regulations promulgated by the Federal, State, and local governments.
- D. The Owner's representative may perform post remediation sampling including wipe, bulk material, and soil as necessary to ensure each PCB Control area meets the required clearance levels following remediation and decontamination activities.

3.07 SAMPLING AND ANALYSIS

- A. Contractor is responsible for all sampling and analysis of waste, water, and contaminated materials (PPE) for determination of disposal requirements. A sampling plan, including laboratory credentials, shall be included in the Project Work Plan.

3.08 PROJECT CLOSEOUT

- A. Prior to the final payment, and before the issuance of a final certificate for payment in accordance with the provisions of the Contract Documents, Contractor shall comply with the requirements set forth herein.
- B. The work under this Section shall include but is not limited to the execution of the following principal items as they apply to Prime Contractors for Project Closeout:
 - 1. Submittal of all waste shipment record forms signed by the Contractor, transporter, and landfill operator for each shipment of waste.
 - 2. Submittal of the Contractor's project record including daily logs, work area sign in sheets, results of OSHA personal sampling, and results of sampling performed to determine waste characterization.
 - 3. Assurance, satisfactory to the Owner, that unsettled claims will be settled and that work not actually completed and accepted will be completed without any undue delay.
 - 4. Guarantees, Warranties and Bonds required by the General Conditions and any other extended guaranties or warranties stated in the Specifications.
 - 5. Temporary facilities, services, surplus materials, rubbish and similar appurtenances have been removed and/or the site restored.

END OF SECTION

Attachment A

Hazardous Materials Survey Report

June 15, 2023

Mr. Chris Crolus
March Associates, P.C.
258 Genesee Street, Suite 300
Utica, New York 13502

Re: Asbestos Sampling & Investigation for Design, Design, Bidding, and Construction Services for Payne Hall Cooling Tower Replacement – MVCC, Utica Campus

File: 708.6380

Dear Chris:

This letter and attachments represent Barton & Loguidice, D.P.C.'s (B&L's) report for the above-referenced project.

Introduction

B&L was retained by March Associates to perform a hazardous material survey in accordance with Oneida County's request for the Payne Hall Colling Tower Structure. The request included a survey of asbestos, lead-based paint (LBP), and polychlorinated biphenyls (PCB's). No other building areas are expected to be affected by the project.

The extent of our services was limited to the handling and removal of asbestos containing materials, potential LBP, and PCB containing caulk/sealants impacting the project.

Discussion and Results

Asbestos Sampling

Representative sampling was conducted throughout all accessible areas of the interior and exterior of the Cooling tower structure/enclosure. A duplicate set of suspect friable samples (miscellaneous material) was collected and submitted for analysis by polarized light microscopy (PLM) with dispersion staining. Friable samples were analyzed utilizing serial analysis. Duplicate sets of suspect non-friable organically bound (NOB) materials were collected and analyzed in accordance with New York State Department of Health requirements. NOBs are first subjected to an ashing and acid washing procedure to properly break down the material. The sample is then analyzed by PLM for asbestos content. If asbestos is found, the analysis is complete. However, a negative result must be confirmed by using transmission electron microscopy (TEM). All samples were analyzed by AmeriSci of New York, Inc. located in New York, New York.

Mr. Chris Crolus
March Associates
June 15, 2023
Page 2

The survey included the collection of one set of friable material samples and five NOB sample sets observed associated with the Cooling Tower and associated structure. Laboratory reports, sample chain-of-custody forms, and laboratory certifications are included in Appendix B. Material sample results are summarized in the table below:

Payne Hall Cooling Tower – Asbestos Sample Results					
Sample Number	Material Description	Estimated Quantity	Condition/ Friability	Lab Results (% Asbestos)	Material Location
DRYVIT-1-1,2	Off-white Dryvit material	N/A	N/A	NAD	Exterior brick wall facade
CAULK-2-1,2	Black door frame caulk	N/A	N/A	NAD	Around exterior door frames
CAULK-3-1,2	Gray cooling tower unit caulk	N/A	N/A	NAD	In between exposed cooling tower sections
SEAL-4-1,2	Gray pipe sealant	N/A	N/A	NAD	Applied around pipe joints
CAULK-5-1,2	Gray masonry caulk	N/A	N/A	NAD	In-between masonry capstones and brick wall repairs
CAULK-6-1,2	Off-white masonry caulk	N/A	N/A	NAD	In-between masonry capstones and brick wall repairs
NAD: No Asbestos Detected N/A: Not Applicable Trace: <1% asbestos by weight (considered non-asbestos containing)					

Of the suspect materials sampled, none were determined to contain asbestos by the laboratory analysis. Approximate asbestos sample locations are illustrated on the attached sketches. Applicable certifications for the work conducted are provided in Attachment A.

In accordance with NYSDOL Industrial Code Rule 56, materials determined to be asbestos containing must be removed by a licensed asbestos abatement contractor prior to renovation activities affecting them. This regulation also requires that a copy of this report be provided on site for all contractors to review during the work. Should unidentified or concealed materials be discovered during the work that were not addressed by this survey the owner and contractor will be liable to follow the procedures identified in ICR56.

Mr. Chris Crolus
March Associates
June 15, 2023
Page 3

Lead-Based-Paint Sampling

The lead-based paint characterization included the collection of four paint chip samples associated with the Cooling Tower/structure components. The paint sample results are summarized in the table below.

Payne Hall Cooling Tower Lead-Based Paint Sample Results						
Sample Number	Painted Component	Component Substrate	Color	Paint Condition	Location	Result (% lead)
Kingdom Road – Pump Station						
P-1	Wall facade	Dryvit	Off-white	Good	Exterior brick walls	<0.0039
P-2	Door and door frames	Metal	Black	Poor	Exterior door frames	<0.0046
P-3	Foundation of exterior walls	Concrete	Gray	Poor	Foundation of exterior walls	<0.0022
P-4	Pipes	PVC	Gray	Good	Pipes leading to cooling tower	<0.011

<: Less than the reporting/quantitation level.

In the table above, the samples collected have been listed along with the location, component, substrate, color, condition, and laboratory result. Sample locations are illustrated on the attached figures. Of the samples collected, none are considered lead-based paint by the U.S. Environmental Protection Agency (EPA – HUD) definition (greater than 0.5 % by weight). However, the Occupational Safety & Health Administration (OSHA) considers paint with any concentration of lead to fall under the OSHA Construction Standard for lead. Contractors disturbing lead-based or lead-containing paint must comply with this Standard cited in - 29 CFR 1926.62. Contractors must also comply with lead-based paint collection and disposal as required by the New York State Department of Environmental Conservation (DEC). The DEC requires that loose and peeling paint to be containerized and disposed of based on the results of a Toxicity Characteristic Leaching Procedure (TCLP) test. Collected paint chips cannot be disposed of directly as C&D waste.

PCB Sampling Results

Specific suspect building materials were collected and analyzed for PCB content. Suspect PCB samples were analyzed by Life Science Laboratories, Inc. located in East Syracuse, New York. A summary of the materials sampled and the results of the sampling are provided below.

Mr. Chris Crolus
March Associates
June 15, 2023
Page 4

Payne Hall Cooling Tower – Suspect PCB Sample Results		
Sample ID	Material Description	Results (PCB ppm)
CAULK-2	Black door frame caulk	<5 mg/kg
CAULK-3	Gray cooling tower unit caulk	<5 mg/kg
CAULK-5	Gray masonry caulk – between capstones	340 mg/kg
CAULK-6	Off-white masonry caulk – between capstones	2,800 mg/kg

mg/kg = part per million (ppm)

If PCBs are found in caulking at concentrations greater than 50 ppm at the time of disposal, then this material would be considered a PCB Bulk Product Waste and therefore regulated under TSCA. The results from the samples collected indicate **two caulk** materials are considered to be PCB regulated waste. *Should the project impact these materials, proper handling and disposal will be required.*

Laboratory reports and sample chain of custody are provided in Attachment B for the asbestos, lead in paint, and PCB material analysis.

If you have any questions or comments, please feel free to call us at (585)-325-7190.

Sincerely,

BARTON & LOGUIDICE, D.P.C.



Jeffrey D. Brandon
Industrial Hygienist

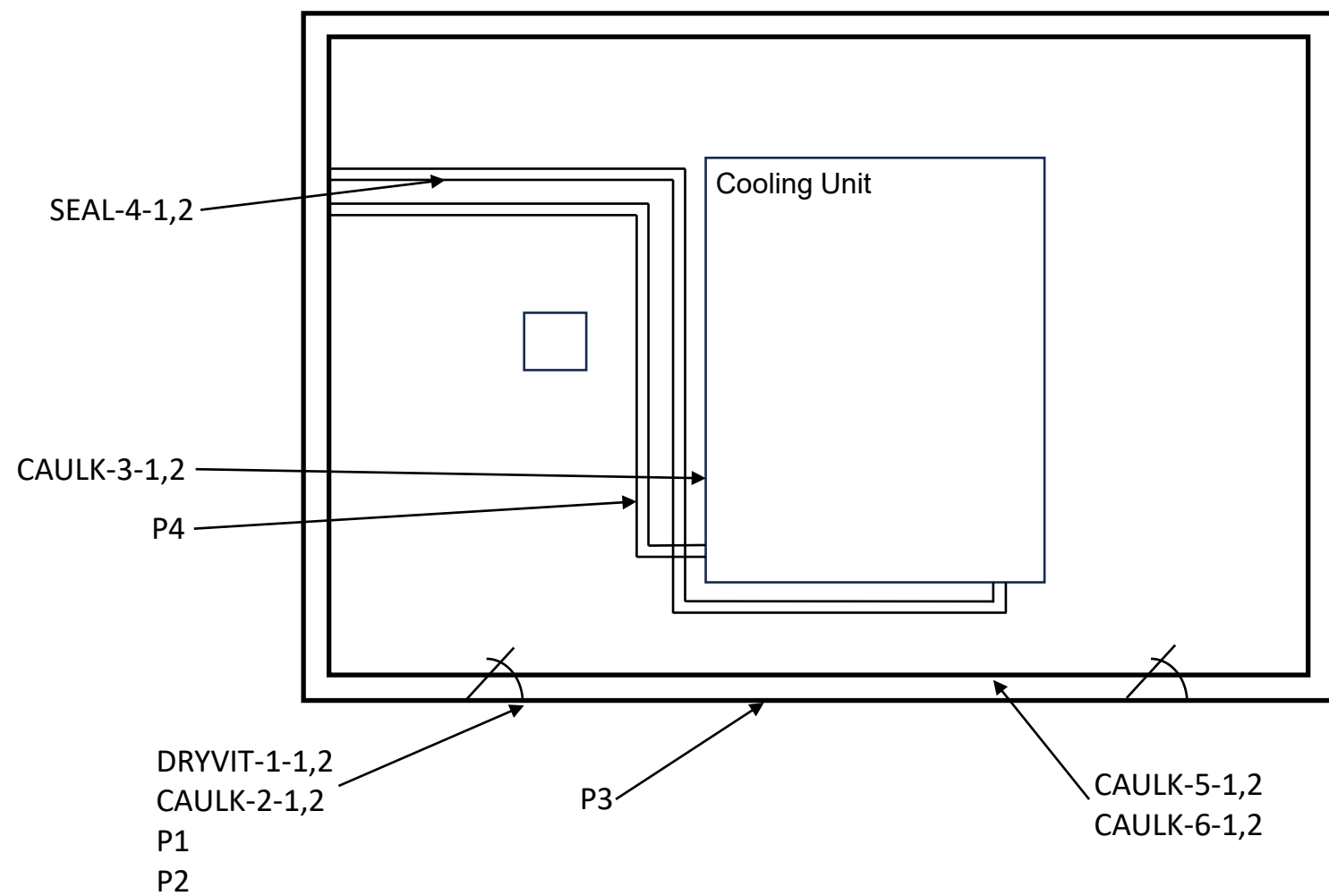


David A. Morse
Sr. Managing Industrial Hygienist

JDB/DAM

Attachments

Sample Locations



Payne Hall, 1101
Sherman Drive,
Utica, NY
Cooling Tower Structure

Attachment A

Certifications

WE ARE YOUR DOL



**Department
of Labor**

DIVISION OF SAFETY & HEALTH LICENSE AND CERTIFICATE UNIT, STATE OFFICE CAMPUS, BLDG. 12, ALBANY, NY 12226

ASBESTOS HANDLING LICENSE

Barton & Loguidice, D.P.C.
443 Electronics Parkway, Liverpool, NY, 13088

License Number: 29267

License Class: RESTRICTED

Date of Issue: 02/03/2023

Expiration Date: 02/29/2024

Duly Authorized Representative: Scott D Nostrand

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

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

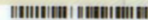
Amy Phillips, Director
For the Commissioner of Labor

EXCELSIOR



H PM (02/24)

MUST BE CARRIED ON ASBESTOS PROJECTS



Attachment B

Laboratory Reports & Sample Chain of Custody Documentation

**AmeriSci New York**

117 EAST 30TH ST.
NEW YORK, NY 10016
TEL: (212) 679-8600 • FAX: (212) 679-3114

PLM Bulk Asbestos Report

Barton & Loquidice, D.P.C.
Attn: John E. Rigge
443 Electronics Parkway

Liverpool, NY 13088

Date Received 06/07/23 **AmeriSci Job #** 223061633
Date Examined 06/08/23 **P.O. #**
ELAP # 11480 **Page** 1 **of** 3
RE: 897.150.001; MVCC; Payne Hall Tower

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
DRYVIT-1-1 DRYVIT-1 Location: Dryvit	223061633-01	No	NAD (by NYS ELAP 198.1) by Bo Sun on 06/08/23 Analyst Description: Gray, Homogeneous, Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Fibrous glass 15%, Non-fibrous 85%
DRYVIT-1-2 DRYVIT-1 Location: Dryvit	223061633-02	No	NAD (by NYS ELAP 198.1) by Bo Sun on 06/08/23 Analyst Description: Gray, Homogeneous, Fibrous, Cementitious, Bulk Material Asbestos Types: Other Material: Fibrous glass 15%, Non-fibrous 85%
CAULK-2-1 CAULK-2 Location: Caulk	223061633-03	No	NAD (by NYS ELAP 198.6) by Bo Sun on 06/08/23 Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 15.4%
CAULK-2-2 CAULK-2 Location: Caulk	223061633-04	No	NAD (by NYS ELAP 198.6) by Bo Sun on 06/08/23 Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 7.1%
CAULK-3-1 CAULK-3 Location: Caulk	223061633-05	No	NAD (by NYS ELAP 198.6) by Bo Sun on 06/08/23 Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 26.4%

PLM Bulk Asbestos Report

897.150.001; MVCC; Payne Hall Tower

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
CAULK-3-2 CAULK-3 Location: Caulk	223061633-06	No	NAD (by NYS ELAP 198.6) by Bo Sun on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 25.2%			
SEAL-4-1 SEAL-4 Location: Sealant	223061633-07	No	NAD (by NYS ELAP 198.6) by Bo Sun on 06/08/23
Analyst Description: Dark Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 3.8%			
SEAL-4-2 SEAL-4 Location: Sealant	223061633-08	No	NAD (by NYS ELAP 198.6) by Bo Sun on 06/08/23
Analyst Description: Dark Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 4.8%			
CAULK-5-1 CAULK-5 Location: Caulk	223061633-09	No	NAD (by NYS ELAP 198.6) by Bo Sun on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 4.7%			
CAULK-5-2 CAULK-5 Location: Caulk	223061633-10	No	NAD (by NYS ELAP 198.6) by Bo Sun on 06/08/23
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 3.8%			
CAULK-6-1 CAULK-6 Location: Caulk	223061633-11	No	NAD (by NYS ELAP 198.6) by Bo Sun on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material Asbestos Types: Other Material: Non-fibrous 14.2%			

Client Name: Barton & Loguidice, D.P.C.

PLM Bulk Asbestos Report

897.150.001; MVCC; Payne Hall Tower

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
CAULK-6-2 CAULK-6	223061633-12	No	NAD (by NYS ELAP 198.6) by Bo Sun on 06/08/23
Analyst Description: Gray, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 12.2%			

Reporting Notes:Analyzed by: Bo Sun
Date: 6/8/2023

Reviewed by: Khaalid W. Perine



*NAD/NSD =no asbestos detected; NA =not analyzed; NA/PS=not analyzed/positive stop, (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; PLM Bulk Asbestos Analysis using Motic, Model BA310 Pol Scope, Microscope, Serial #: 1190000538, by Appd E to Subpt E, 40 CFR 763 quantified by either CVES or 400 pt ct as noted for each analysis (NVLAP 200546-0), ELAP PLM Method 198.1 for NY friable samples, which includes the identification and quantitation of vermiculite, or ELAP 198.6 for NOB samples, or EPA 400 pt ct by EPA 600-M4-82-020 (NY ELAP Lab 11480); Note:PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non asbestos-containing in NY State (also see EPA Advisory for floor tile, FR 59,146,38970,8/1/94) National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the lab.This PLM report relates ONLY to the items tested. RI Cert AAL-094, CT Cert PH-0186, Mass Cert AA000054, NJ Lab ID #NY031.

____END OF REPORT____

Client Name: Barton & Loguidice, D.P.C.

Table I
Summary of Bulk Asbestos Analysis Results
 897.150.001; MVCC; Payne Hall Tower

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01 Location: Dryvit	DRYVIT-1-1	DRYVIT-1	----	----	----	----	NAD	NA
02 Location: Dryvit	DRYVIT-1-2	DRYVIT-1	----	----	----	----	NAD	NA
03 Location: Caulk	CAULK-2-1	CAULK-2	0.170	69.2	15.5	15.4	NAD	NAD
04 Location: Caulk	CAULK-2-2	CAULK-2	0.136	71.4	21.5	7.1	NAD	NAD
05 Location: Caulk	CAULK-3-1	CAULK-3	0.201	33.7	39.9	26.4	NAD	NAD
06 Location: Caulk	CAULK-3-2	CAULK-3	0.159	31.8	43.0	25.2	NAD	NAD
07 Location: Sealant	SEAL-4-1	SEAL-4	0.118	86.4	9.8	3.8	NAD	NAD
08 Location: Sealant	SEAL-4-2	SEAL-4	0.084	83.7	11.6	4.8	NAD	NAD
09 Location: Caulk	CAULK-5-1	CAULK-5	0.211	22.8	72.4	4.7	NAD	NAD
10 Location: Caulk	CAULK-5-2	CAULK-5	0.186	22.8	73.4	3.8	NAD	NAD
11 Location: Caulk	CAULK-6-1	CAULK-6	0.246	38.2	47.5	14.2	NAD	NAD
12 Location: Caulk	CAULK-6-2	CAULK-6	0.208	39.1	48.7	12.2	NAD	NAD

Client Name: Barton & Loguidice, D.P.C.

Table I
Summary of Bulk Asbestos Analysis Results

897.150.001; MVCC; Payne Hall Tower

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM

Analyzed by: Khaalid W. Perine
Date: 6/9/2023



Reviewed by: Khaalid W. Perine



**Quantitative Analysis (Semi/Full); Bulk Asbestos Analysis - PLM by Appd E to Subpt E, 40 CFR 763 or NYSDOH ELAP 198.1 for New York friable samples or NYSDOH ELAP 198.6 for New York NOB samples; TEM (Semi/Full) by EPA 600/R-93/116 (or NYSDOH ELAP 198.4; for New York samples). Analysis using Hitachi, Model H7000-Noran 7 System, Microscope, Serial #: 747-05-06. NAD = no asbestos detected during a quantitative analysis; NA = not analyzed; Trace = <1%; (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only; Qualitative Analysis: Asbestos analysis results of "Present" or "NVA = No Visible Asbestos" represents results for Qualitative PLM or TEM Analysis only (no accreditation coverage available from any regulatory agency for qualitative analyses): NVLAP (PLM) 200546-0, NYSDOH ELAP Lab 11480, NJ Lab ID #NY031.

Warning Note: PLM limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris for which PLM evaluation is recommended (i.e. soils and other heterogenous materials).



Bulk Sample Chain-of-Custody
443 Electronics Parkway

Liverpool, NY, 13088
315-457-5200

Client: MVCC
Location: Payne Hall Tower

Project No.: 897.150.001
Date Sampled: 6/5/23
Sampled by: JDB

Sample Identification:	Description
DRYVIT-1-1/2	Dryvit
CAULK-2-1/2	caulk
CAULK-3-1/2	caulk
SEAL-4-1/2	sealant
CAULK-5-1/2	caulk
CAULK-6-1/2	caulk

Sample Identification:	Description

223061633

Analysis Required:		Comments:	
☐	Polarized Light Microscopy	☒	Stop at first positive (> than 1% asbestos) in each sample series.
☐	PLM - NOB	☒	Advance to TEM if PLM result is 1% asbestos or less
Report Results to: _____		Email/Fax: _____	
Email: Jeff Brandon		By: 48 hour TAT jbrandon@bartonandloguidice.com	
Email: David Morse		DMorse@bartonandloguidice.com	

Signature:	Date:	Comments:
Relinquished by:	6/6/23	
Received by Lab.:	6/10/23 1051	
Received by Analyst:	6-8-23	15:56
	6/9/23	0100

Pb Laboratory Reports



Monday, June 12, 2023

Attn: David Morse
Barton & Loguidice, D.P.C.
443 Electronics Parkway
Liverpool, NY 13088

Project ID: MVCC
SDG ID: GCO21067
Sample ID#s: CO21067 - CO21070

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Phyllis Shiller".

Phyllis Shiller

Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Sample Id Cross Reference

June 12, 2023

SDG I.D.: GCO21067

Project ID: MVCC

Client Id	Lab Id	Matrix
P1	CO21067	BULK
P2	CO21068	BULK
P3	CO21069	BULK
P4	CO21070	BULK



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Analysis Report

June 12, 2023

FOR: Attn: David Morse
Barton & Loguidice, D.P.C.
443 Electronics Parkway
Liverpool, NY 13088

Sample Information

Matrix: BULK
Location Code: BARTLOG
Rush Request: 5 Day
P.O.#: 897.150.001

Custody Information

Collected by: JDB
Received by: CP
Analyzed by: see "By" below

Date

06/05/23

Time

10:23

SDG ID: GCO21067
Phoenix ID: CO21067

Laboratory Data

Project ID: MVCC
Client ID: P1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Lead	< 0.0039	0.0039	%	1	06/09/23	TH	SW6010D
Total Metals Digest	Completed				06/07/23	L/AG	SW3050B

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low

Comments:

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

June 12, 2023

Reviewed and Released by: Anil Makol, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Analysis Report

June 12, 2023

FOR: Attn: David Morse
Barton & Loguidice, D.P.C.
443 Electronics Parkway
Liverpool, NY 13088

Sample Information

Matrix: BULK
Location Code: BARTLOG
Rush Request: 5 Day
P.O.#: 897.150.001

Custody Information

Collected by: JDB
Received by: CP
Analyzed by: see "By" below

Date

06/05/23

Time

10:23

SDG ID: GCO21067
Phoenix ID: CO21068

Laboratory Data

Project ID: MVCC
Client ID: P2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Lead	< 0.0046	0.0046	%	1	06/09/23	TH	SW6010D
Total Metals Digest	Completed				06/07/23	L/AG	SW3050B

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low

Comments:

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

June 12, 2023

Reviewed and Released by: Anil Makol, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Analysis Report

June 12, 2023

FOR: Attn: David Morse
Barton & Loguidice, D.P.C.
443 Electronics Parkway
Liverpool, NY 13088

Sample Information

Matrix: BULK
Location Code: BARTLOG
Rush Request: 5 Day
P.O.#: 897.150.001

Custody Information

Collected by: JDB
Received by: CP
Analyzed by: see "By" below

Date

06/05/23

Time

10:23

06/07/23

Laboratory Data

SDG ID: GCO21067
Phoenix ID: CO21069

Project ID: MVCC
Client ID: P3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Lead	< 0.0022	0.0022	%	1	06/09/23	TH	SW6010D
Total Metals Digest	Completed				06/07/23	L/AG	SW3050B

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low

Comments:

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

June 12, 2023

Reviewed and Released by: Anil Makol, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Analysis Report

June 12, 2023

FOR: Attn: David Morse
Barton & Loguidice, D.P.C.
443 Electronics Parkway
Liverpool, NY 13088

Sample Information

Matrix: BULK
Location Code: BARTLOG
Rush Request: 5 Day
P.O.#: 897.150.001

Custody Information

Collected by: JDB
Received by: CP
Analyzed by: see "By" below

Date

06/05/23

Time

10:23

06/07/23

Laboratory Data

SDG ID: GCO21067
Phoenix ID: CO21070

Project ID: MVCC
Client ID: P4

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Lead	< 0.011	0.011	%	1	06/09/23	TH	SW6010D
Total Metals Digest	Completed				06/07/23	L/AG	SW3050B

RL/PQL=Reporting/Practical Quantitation Level (Equivalent to NELAC LOQ, Limit of Quantitation) ND=Not Detected at RL/PQL
BRL=Below Reporting Level L=Biased Low

Comments:

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director

June 12, 2023

Reviewed and Released by: Anil Makol, Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102



QA/QC Report

June 12, 2023

QA/QC Data

SDG I.D.: GCO21067

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 681178 (mg/kg), QC Sample No: CO21113 (CO21067, CO21068, CO21069, CO21070)													
<u>ICP Metals - Soil</u>													
Lead	BRL	0.33	4.07	4.24	4.10	103	102	1.0	102			75 - 125	35

Comment:

Additional Criteria: LCS acceptance range is 80-120% MS acceptance range 75-125%.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
June 12, 2023

Monday, June 12, 2023

Criteria: None
State: NY

Sample Criteria Exceedances Report
GCO21067 - BARTLOG

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



Analysis Comments

June 12, 2023

SDG I.D.: GCO21067

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report: None.



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

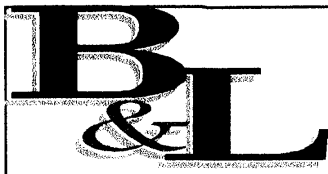


NY Temperature Narration

June 12, 2023

SDG I.D.: GCO21067

The samples in this delivery group were received at 18.9°C.
(Note acceptance criteria for relevant matrices is above freezing up to 6°C)



Wipe / Bulk Sample Chain-of-Custody

443 Electronics Parkway
Liverpool, New York 13088
(315) 457-5200 Fax: (315) 451-0052

Project: M.VCC
Payne Hall Tower

Project No.: 897.150.00
Date Sampled: 6/5/23
Sampled by: JDB

[illegible]

Comments:	Lead paint chip, please report in % by weight.

Report Results to:

Fax: _____ TAT: 5 days
E-mail: dmorse@bartonandloguidice.com
Written: _____
Invoice: _____

Fax: 315-451-0052
jbrandon@bartonandloguidice.com
10 calendar days
10 calendar days

Chain-of-Custody:	Signature	Date
Relinquished by:		6/6/23
Received by Lab.:		
Received by Analyst:		6/7/23

PCB Laboratory Reports



Life Science Laboratories, Inc.

Dave Morse
Barton & Loguidice, D.P.C.
443 Electronics Parkway
Liverpool, NY 13088

Phone: (315) 457-5200
FAX: (315) 451-0052

Laboratory Analysis Report Prepared For Barton & Loguidice, D.P.C.

Client Project ID:
MVCC - Payne Hall Tower/Proj.#897.150.001

LSL Project ID: 2307848

Receive Date/Time: 06/07/23 10:45

Life Science Laboratories, Inc. warrants, to the best of its knowledge and belief, the accuracy of the analytical test results contained in this report, but makes no other warranty, expressed or implied, especially no warranties of merchantability or fitness for a particular purpose. By the Client's acceptance and/or use of this report, the Client agrees that LSL is hereby released from any and all liabilities, claims, damages or causes of action affecting or which may affect the Client as regards to the results contained in this report. The Client further agrees that the only remedy available to the Client in the event of proven non-conformity with the above warranty shall be for LSL to re-perform the analytical test(s) at no charge to the Client. The data contained in this report are for the exclusive use of the Client to whom it is addressed, and the release of these data to any other party, or the use of the name, trademark or service mark of Life Science Laboratories, Inc. especially for the use of advertising to the general public, is strictly prohibited without express prior written consent of Life Science Laboratories, Inc. This report may only be reproduced in its entirety. No partial duplication is allowed. The Chain of Custody and the Sample Receipt documents submitted with these samples are considered by LSL to be an appendix of this report and may contain data qualifiers and specific information that pertains to the samples included in this report. The analytical result(s) in this report are only representative of the sample(s) submitted for analysis. LSL makes no claim of a sample's representativeness, or integrity, if sampling was not performed by LSL personnel.

LSL Central Lab
5854 Butternut Drive
East Syracuse, NY 13057
Tel. (315) 445-1900
Fax (315) 445-1104
NYS DOH ELAP #10248

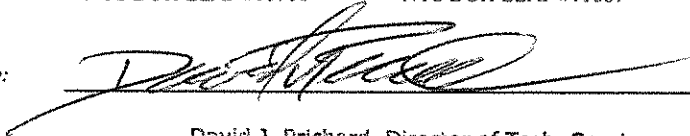
LSL North Lab
131 St. Lawrence Avenue
Waddington, NY 13694
Tel. (315) 388-4476
Fax (315) 388-4061
NYS DOH ELAP #10900

LSL Finger Lakes Lab
16 N. Main St., PO Box 424
Wayland, NY 14572
Tel. (585) 213-4090
Fax (585) 213-4192
NYS DOH ELAP #11667

LSL Southern Tier Office
Cuba, NY
Tel. (585) 209-4032

LSL MidLakes Office
Canandaigua, NY
Tel. (585) 728-3320

This report was reviewed by:



David J. Prichard, Director of Tech. Services

Date:

6/14/23

A copy of this report was sent to:

-- LABORATORY ANALYSIS REPORT --

Barton & Loguidice, D.P.C. Liverpool, NY

Sample ID: Caulk- 2 LSL Sample ID: 2307848-001
Location:
Sampled: 06/05/23 0:00 Sampled By: Client
Sample Matrix: SHW as Recd

Analytical Method	Result	Prep Method	Prep Date	Analysis Date & Time	Analyst Initials
Analyte	Units				
(1) EPA 8082A PCBs		EPA 3550C			
Aroclor-1016	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1221	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1232	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1242	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1248	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1254	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1260	<5 mg/kg		6/13/23	6/13/23	CRT
Surrogate (DCB)	106 %R		6/13/23	6/13/23	CRT

Sample ID: Caulk- 3 LSL Sample ID: 2307848-002
Location:
Sampled: 06/05/23 0:00 Sampled By: Client
Sample Matrix: SHW as Recd

Analytical Method	Result	Prep Method	Prep Date	Analysis Date & Time	Analyst Initials
Analyte	Units				
(1) EPA 8082A PCBs		EPA 3550C			
Aroclor-1016	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1221	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1232	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1242	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1248	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1254	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1260	<5 mg/kg		6/13/23	6/13/23	CRT
Surrogate (DCB)	114 %R		6/13/23	6/13/23	CRT

Sample ID: Caulk- 5 LSL Sample ID: 2307848-003
Location:
Sampled: 06/05/23 0:00 Sampled By: Client
Sample Matrix: SHW as Recd

Analytical Method	Result	Prep Method	Prep Date	Analysis Date & Time	Analyst Initials
Analyte	Units				
(1) EPA 8082A PCBs		EPA 3550C			
Aroclor-1016	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1221	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1232	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1242	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1248	<5 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1254	340 mg/kg		6/13/23	6/13/23	CRT
Aroclor-1260	<5 mg/kg		6/13/23	6/13/23	CRT
Surrogate (DCB)	115 %R		6/13/23	6/13/23	CRT

Analysis performed at: (1) LSL Central Lab, (2) LSL North Lab, (3) LSL Finger Lakes Lab

-- LABORATORY ANALYSIS REPORT --

Barton & Loguidice, D.P.C. Liverpool, NY

Sample ID: Caulk- 6 LSL Sample ID: 2307848-004
Location:
Sampled: 06/05/23 0:00 Sampled By: Client
Sample Matrix: SHW as Recd

Analytical Method	Prep Method	Prep	Analysis	Analyst
Analyte	Result Units	Date	Date & Time	Initials
(1) EPA 8082A PCBs	EPA 3550C			
Aroclor-1016	<50 mg/kg	6/13/23	6/13/23	CRT
Aroclor-1221	<50 mg/kg	6/13/23	6/13/23	CRT
Aroclor-1232	<50 mg/kg	6/13/23	6/13/23	CRT
Aroclor-1242	<50 mg/kg	6/13/23	6/13/23	CRT
Aroclor-1248	<50 mg/kg	6/13/23	6/13/23	CRT
Aroclor-1254	2800 mg/kg	6/13/23	6/13/23	CRT
Aroclor-1260	<50 mg/kg	6/13/23	6/13/23	CRT
Surrogate (DCB)	98 %R	6/13/23	6/13/23	CRT

Analysis performed at: (1) LSL Central Lab, (2) LSL North Lab, (3) LSL Finger Lakes Lab

B+LEng
Due Date:

2827



Wipe / Bulk Sample Chain-of-

443 Electronics Parkway
Liverpool, New York 13088
(315) 457-5200 Fax: (315) 451-0052

Project: MVCC
Payne Hall Tower

Project No.: 897.150.001
Date Sampled: 6/5/03
Sampled by: JDB

[illegible]

Comments:	PCB analysis for bulk product waste screening. Detection limit of 50 ppm required.

Report Results to:

Fax: TAT: 5 day

E-mail: jbrandon@bartonandloguidice.com

Written:

Invoice:

dmorse@bartonandloquidice.com

10 calendar days

10 calendar days

Chain-of-Custody:	Signature	Date
Relinquished by:		6/6/23
Received by Lab.:		6/7/23 1045
Received by Analyst:		

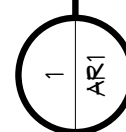
17.8°C
FedEx

ONEIDA COUNTY DEPARTMENT OF PUBLIC WORKS
 MOHAWK VALLEY COMMUNITY COLLEGE
SCIENCE AND TECHNOLOGY BUILDING
 PAYNE HALL COOLING TOWER REMOVAL

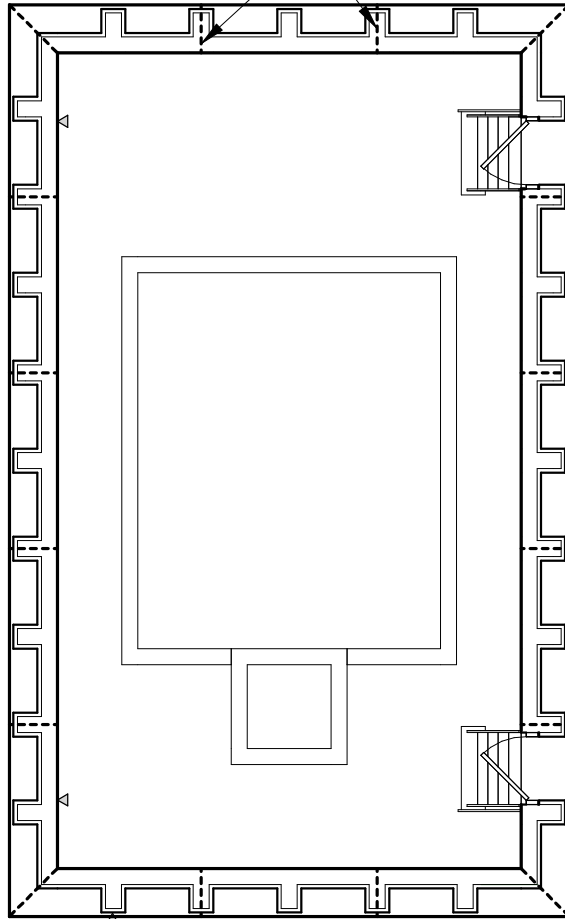
DATE	02/12/25
BY	MEL
PROJ NO.	23000
SKETCH	

AR1

PAYNE HALL COOLING TOWER - PCB CAULK REMOVAL



SCALE: 1/8" = 1'-0"



REMOVE ALL EXISTING PCB
 CONTAINING SEALING BETWEEN
 COPING CAP SECTIONS. REFER TO
 SPECIFICATION SECTION 02 84 00.

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

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 this Section.

1.02 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
 - 1. Footings, Foundation and Building Walls.
 - 2. Slabs-on-grade as indicated on the structural drawings.
 - 3. Elevated Concrete Floor slabs as indicated on the structural drawings.
 - 4. In-fill of openings / recesses in Concrete Floor Slabs.
 - 5. Concrete for Equipment Bases and Curbs to be supplied and installed by Trade involved using concrete as specified in this section.
 - 6. Expanded Polystyrene (EPS) Geofoam (if applicable to the Project for support of in-fill concrete slab).
- B. Related Sections include the followings:
 - 1. Division 1 Section 01 45 33 "Code-Required Special Inspections and Procedures" for independent testing agency procedures and administrative requirements.
 - 2. Division 3 Section "Special Concrete Floor Finish" for general requirements for concrete floor finishes, applications, cure-seal-hardener requirements and general coating application requirements.
 - 3. Division 9 Section "Concrete Floor Treatment" for general requirements for concrete floor treatment.

1.03 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.
- B. Expanded Polystyrene (EPS) Geofoam: As shown on drawings for support of in-fill concrete slabs, structurally sufficient to support weight of plastic concrete and other superimposed loads. Reference ASTM D6817 – Standard Specification for Rigid, Cellular Polystyrene Geofoam.

1.04 SUBMITTALS

- A. Original drawings, prepared by Contractor, Subcontractor, supplier or distributor, which illustrate some portion of the work showing fabrication, layout, setting or erection details.

Refer to Division 1, Section 01 30 00 - "Administrative Requirements" and information within this section for additional submittal requirements.

1. Identify details by reference to sheet and detail numbers shown on shop drawings.
 2. Sheet size, multiple of 8 ½ by 11 inches, not to exceed size of contract drawings when unfolded.
 3. **Photographic reproductions of contract drawings will NOT be accepted as shop drawings and will be REJECTED without review.**
- B. Portable Document Format (PDF) Files: All submittals required for this section (including, but not limited to, Product Data, Design Mixes, Shop Drawings, Qualification Data, Material Test Reports and Material Certificates) shall be submitted to the A/E in "PDF" electronic format.
- C. Product Data: For each type of product indicated.
- D. Design Mixtures: Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
1. Indicate amounts of mixing water to be withheld for later addition at Project site.
 2. **Please note: The proposed mix design submittals shall include the use of the specified maximum Coarse-Aggregate Size and the supporting data submitted for mix design approval shall include appropriate documentation using the specified materials in accordance with ACI requirements. Submitting quantities of materials to be used for proposed design mix alone without the appropriate supporting data as required by ACI will not be sufficient for approval and will not be reviewed. If the proposed supplier does not have sufficient supporting data as required by ACI, the Contractor shall allow appropriate time in their schedule to have the required laboratory trial mixture testing performed so that information can be included in the submittal.**
- E. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include plans and elevations of all reinforced concrete and masonry building elements (including, but not limited to walls, piers, footings, structural framing beams / girders / slabs) and shall include (as a minimum) bar sizes, lengths, material grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement. **NOTE: All reinforcing steel shall be supplied and detailed in U.S. Standard sizes. Metric units will not be accepted and will be rejected.**
- F. Samples: For vapor retarder / barrier.
- G. Qualification Data: For manufacturer and testing agency.

- H. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
 - 1. Aggregates.
- I. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Form materials and form-release agents.
 - 4. Steel reinforcement and accessories.
 - 5. Curing compounds.
 - 6. Floor and slab treatments.
 - 7. Vapor retarder / barrier.
 - 8. Joint-filler strips.
 - 9. Repair materials.
- J. Construction and Contraction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by the A/E. If joint locations are shown on documents, they are intended to provide the Contractor with the general intent of where joints are proposed to be placed. The Contractor shall review the proposed locations and shall submit their proposed placement drawing of all joints for review and comment prior to placement.
- K. Floor surface flatness and levelness requirements to determine compliance with specified tolerances.
- L. Field quality-control test and inspection reports.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
- E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5.
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.
- B. Expanded Polystyrene (EPS) Geofoam: Deliver, store, and handle in accordance with the Manufacturer's requirements to prevent damage.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
 - 2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.02 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 - 1. Plywood, metal, or other approved panel materials.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Expanded Polystyrene (EPS) Geofoam: As shown on drawings for support of in-fill concrete slabs, structurally sufficient to support weight of plastic concrete and other superimposed loads. Reference ASTM D6817 – Standard Specification for Rigid, Cellular Polystyrene Geofoam.
 - 1. Basis of Design: Foam Control Geofoam Type EPS12 or approved equal.
- D. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
- E. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- F. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- G. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.
3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.03 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Epoxy-Coated Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed bars, epoxy coated, ASTM A 775/A 775 M or ASTM A 934/A 934 M, with less than 2 percent damaged coating in each 12-inch bar length.
- C. Steel Bar Mats: ASTM A 184/A 184M, fabricated from ASTM A 615/A 615M, Grade 60, deformed bars, assembled with clips.
- D. Epoxy-Coated Wire: ASTM A 884/A 884M, Class A, Type 1 coated, plain-steel wire, with less than 2 percent damaged coating in each 12-inch wire length.
- E. Plain-Steel Wire: ASTM A 82, as drawn.
- F. Deformed-Steel Wire: ASTM A 496.
- G. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.
- H. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.
- I. Epoxy-Coated Welded Wire Reinforcement: ASTM A 884/A 884M, Class A coated, Type 1, plain steel as-fabricated into flat sheets.
- J. **NOTE: All reinforcing steel shall be supplied and detailed in U.S. Standard sizes. Metric units will not be accepted and will be rejected.**

2.04 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars, cut bars true to length with ends square and free of burrs.
- B. Epoxy-coated Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars, ASTM A 775/A 775M epoxy coated.
- C. Epoxy Repair coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775/A 775M.
- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire.

2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

2.05 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 1. Portland Cement: ASTM C 150, Type I/II, gray or white.
 2. **Use of Fly Ash, Slag Cement, Blended Hydraulic Cement and Silica fume are NOT permitted.**
- B. Normal-Weight Aggregates: ASTM C 33, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source.
 1. Maximum Coarse-Aggregate Size: **3/4 inch nominal**.
 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M and potable.

2.06 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.07 WATERSTOP

- A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch.
 1. Available Manufacturers:
 - a. Colloid Environmental Technologies Company; Volclay Waterstop-RX.
 - b. Concrete Sealants Inc.; Conseal CS-231.
 - c. Greenstreak; Swellstop.
 - d. Henry Company, Sealants Division; Hydro-Flex.
 - e. JP Specialties, Inc.; Earthshield Type 20.
 - f. Progress Unlimited, Inc.; Superstop.
 - g. TCMiraDRI; Mirastop

2.08 VAPOR RETARDERS / BARRIERS

- A. Underslab Vapor Retarder / Barrier: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, complying with ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. **The use of single ply polyethylene is prohibited.**

Maintain permeance of less than 0.01 Perms [grains/(ft² · hr · inHg)] as tested in accordance with mandatory conditioning tests per ASTM E1745 Section 7.1 (7.1.1-7.1.5).

- B. Installation: Comply with ASTM E1643.

1. Note: The Vapor Retarder / Barrier shall be sealed to the foundation walls.

- C. Accessory Products: Vapor Retarder / Barrier manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in Vapor Retarder / Barrier.

- D. Approved Manufacturers / Products:

- a. Fortifiber Building Systems Group; Moistop Ultra 15: www.fortifiber.com.
- b. Layfield Construction Products; Vaporflex 15: www.layfieldgroup.com.
- c. Stego Industries, LLC; [Stego Wrap Vapor Barrier (15-mil)]: www.stegoindustries.com
- d. ISI Building Products: Viper VaporCheck II 15 Mil: www.insulationsolutions.com.
- e. No Substitutions.

2.09 FLOOR AND SLAB TREATMENT

- A. Coordinate all special requirements for concrete floor treatments with the Architectural drawings and Architectural Requirements.

2.10 CONCRETE FLOOR FINISHES

- A. Refer to Division 3 Section "Special Concrete Floor Finish" and the Architectural drawings for general requirements for concrete floor finishes, applications, cure-seal-hardener requirements and general coating application requirements.

2.11 CURING MATERIALS

- A. General: Contractor shall coordinate the compatibility of all curing means, methods and materials / products with the floor surface finish and floor covering materials requirements, including the floor covering adhesives.
- B. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- C. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- D. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- E. Water: Potable.

- F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
- G. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
- H. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

2.12 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.
- B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. Reglets: Fabricate reglets of not less than 0.0217-inch-thick, galvanized steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.
- D. Dovetail Anchor Slots: Hot-dip galvanized steel sheet, not less than 0.0336 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.
- E. Expanded Polystyrene (EPS) Geofoam: As shown on drawings for support of in-fill concrete slabs, structurally sufficient to support weight of plastic concrete and other superimposed loads. Reference ASTM D6817 – Standard Specification for Rigid, Cellular Polystyrene Geofoam.
 - 1. Basis of Design: Foam Control Geofoam Type EPS12 or approved equal.

2.13 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
 - 4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.
- B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.14 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
 2. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 3. **Please note: The proposed mix design submittals shall include the use of the specified maximum Coarse-Aggregate Size and the supporting data submitted for mix design approval shall include appropriate documentation using the specified materials in accordance with ACI requirements. Submitting quantities of materials to be used for proposed design mix alone without the appropriate supporting data as required by ACI will not be sufficient for approval and will not be reviewed. If the proposed supplier does not have sufficient supporting data as required by ACI, the Contractor shall allow appropriate time in their schedule to have the required laboratory trial mixture testing performed so that information can be included in the submittal.**
- B. **Use of Fly Ash, Slag Cement, Blended Hydraulic Cement and Silica fume are NOT permitted in concrete mix designs.**
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
 1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 3. Use water-reducing admixture in pumped concrete, concrete for concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.15 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Footings (including footings supporting Frost Walls) and Interior Foundation Walls: Proportion normal-weight concrete mixture as follows:
 1. Minimum Compressive Strength: 4000 psi at 28 days.
 2. Minimum Cementitious Materials Content: 540 lb/cu. yd
 3. Maximum Water-Cementitious Materials Ratio: 0.45.
 4. Slump Limit: 4 inches (or 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture), plus or minus 1 inch.

5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch nominal maximum aggregate size.
 6. **Please note that mix design shall include the specified maximum Coarse-Aggregate Size and the supporting data submitted for mix design approval shall include appropriate documentation using the specified materials in accordance with ACI requirements as indicated in Article 1.04, "SUBMITTALS" and Article 2.14, "CONCRETE MIXTURES, GENERAL".**
- B. Interior Slabs-on-Grade as shown on structural drawings, In-fill of Openings in Interior Slabs-on-grade indicated on the structural drawings and Concrete for Interior Equipment Bases and Curbs: Proportion normal-weight concrete mixture as follows:
1. Minimum Compressive Strength: 4000 psi at 28 days.
 2. Minimum Cementitious Materials Content: 540 lb/cu. yd.
 3. Maximum Water-Cementitious Materials Ratio: 0.45
 4. Slump Limit: 4 inches, plus or minus 1 inch.
 5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch nominal maximum aggregate size. NOTE: Do not allow air content of troweled finished floors to exceed 3 percent.
 6. **Please note that mix design shall include the specified maximum Coarse-Aggregate Size and the supporting data submitted for mix design approval shall include appropriate documentation using the specified materials in accordance with ACI requirements as indicated in Article 1.04, "SUBMITTALS" and Article 2.14, "CONCRETE MIXTURES, GENERAL".**
- C. Foundation and Building Walls (including Frost Walls), exterior apron slabs-on-grade at overhead doors, exterior slabs-on-grade and frost walls at exterior doors, haunched slabs and exterior ramps / stairs / pads shown on the structural drawings: Proportion normal-weight concrete mixture as follows:
1. Minimum Compressive Strength: 4500 psi at 28 days.
 2. Minimum Cementitious Materials Content: 540 lb/cu. yd.
 3. Maximum Water-Cementitious Materials Ratio: 0.45
 4. Slump Limit: 4 inches, plus or minus 1 inch.
 5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch nominal maximum aggregate size. NOTE: Do not allow air content of troweled finished floors to exceed 3 percent.
 6. **Please note that mix design shall include the specified maximum Coarse-Aggregate Size and the supporting data submitted for mix design approval shall include appropriate documentation using the specified materials in accordance with ACI requirements as indicated in Article 1.04, "SUBMITTALS" and Article 2.14, "CONCRETE MIXTURES, GENERAL".**
- D. Elevated Concrete Slabs-on-Steel Deck (as shown on structural drawings), In-fill of openings in Elevated Concrete slabs and Concrete Toppings: Proportion normal-weight concrete mixture as follows:
1. Minimum Compressive Strength: 4000 psi at 28 days.
 2. Minimum Cementitious Materials Content: 540 lb/cu. yd.
 3. Maximum Water-Cementitious Materials Ratio: 0.45
 4. Slump Limit: 4 inches, plus or minus 1 inch.
 5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch nominal maximum aggregate size. NOTE: Do not allow air content of troweled finished floors to exceed 3 percent.
 6. **Please note that mix design shall include the specified maximum Coarse-Aggregate Size and the supporting data submitted for mix design approval shall include appropriate documentation using the specified materials in accordance with ACI requirements as indicated in Article 1.04, "SUBMITTALS" and Article 2.14, "CONCRETE MIXTURES, GENERAL".**

2.16 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.17 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116, and furnish batch ticket information.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.01 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
 - 1. Class A, 1/8 inch for smooth-formed finished surfaces.
 - 2. Class C, 1/2 inch for rough-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 1. Install keyways, reglets, recesses, and the like, for easy removal.
 - 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.
- M. Expanded Polystyrene (EPS) Geofoam: If required and as shown on structural drawings for support of in-fill concrete slabs, structurally sufficient to support weight of plastic concrete and other superimposed loads. Reference ASTM D6817 – Standard Specification for Rigid, Cellular Polystyrene Geofoam. Install in accordance with manufacture's written requirements.

In areas where portions of Expanded Polystyrene (EPS) Geofoam has been removed to accommodate installation of under-slab utilities, the voids created shall be infilled prior to slab placement with "Controlled Low-Strength Material" (Low-density, self-compacting, flowable concrete material) as specified and in accordance with Specification Section 312000 - "Building Earth Moving", Article 2.03 "Controlled Low-Strength Material" or with approved alternate materials and / or methods.

3.02 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
 - 2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
 - 3. Install dovetail anchor slots in concrete structures as indicated or as required.

3.03 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.04 VAPOR RETARDERS / BARRIERS

A. Plastic Vapor Retarders / Barriers: Place, protect, and repair vapor retarders / barriers according to ASTM E 1643 and manufacturer's written instructions.

1. Unroll the vapor retarder / barrier with the longest dimension parallel with the direction of the concrete placement and face laps away from the expected direction of the placement whenever possible.
2. Extend the vapor retarder / barrier to the perimeter of the slab. If practicable, terminate the vapor retarder / barrier at the top of the slab, otherwise (a) at a point acceptable to the Architect / Engineer or (b) where obstructed by impediments, such as dowels, waterstops, or any other site condition requiring early termination of the vapor retarder / vapor barrier.

At the point of termination, seal the vapor retarder / barrier to the foundation wall, grade beam or slab itself.

Please Note: The perimeter seal can be handled several ways depending on the selected / approved product manufacturer and their proprietary sealing material and / sealing devices specifically intended for this application / use. The Contractor shall submit all products to be used to the A/E for approval prior to installation.

- a. Seal the vapor retarder / barrier to the entire slab perimeter using the selected & approved product manufacturer's proprietary sealing material and / or sealing devices specifically intended for this application / use. Installation shall be in accordance with ASTM E 1643 and manufacturer's written instructions.
 - b. Seal vapor retarder / barrier to the entire perimeter wall or footing/grade beam using the selected / approved product manufacturer's proprietary sealing material and / or sealing devices specifically intended for this application / use. Installation shall be in accordance with ASTM E 1643 and manufacturer's written instructions. Ensure the concrete is clean and dry prior to adhering tape.
3. Overlap joints 6 inches and seal with manufacturer's seam tape.
 4. Apply seam tape or other sealing material / devices to a clean and dry vapor barrier.
 5. Seal all penetrations (including pipes) per manufacturer's instructions.
 6. Avoid the use of non-permanent stakes driven through vapor barrier to the greatest extent possible.

However, if non-permanent stakes are driven through the vapor retarder / barrier, repair as recommended by vapor barrier manufacturer.

7. Repair all damaged areas with vapor retarder / barrier material of similar (or better) permeance, puncture and tensile properties.

3.05 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.
- F. Epoxy-coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.

3.06 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by the A/E. If shown on the Documents, the Joint locations shown are intended to provide the Contractor with the general intent of where joints are proposed to be placed. The Contractor shall review the proposed locations if shown and shall submit their proposed placement drawing of all joints for review and comment prior to placement.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
 - 3. If shown on the Documents, the Joint locations shown are intended to provide the Contractor with the general intent of where joints are proposed to be placed. The Contractor shall review the proposed locations if shown and shall submit their proposed placement drawing of all joints for review and comment prior to placement.

- D. Isolation Joints and / or Voids left in Slabs-on-Grade or in concrete walls / piers: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
 2. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
 3. All voids left in concrete walls, piers, etc. that allow for installation of columns or other embedded items shall be infilled with concrete after installation of these items, regardless of whether or not this is indicated on the drawings.

3.07 WATERSTOPS

- A. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

3.08 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 2. Maintain reinforcement in position on chairs during concrete placement.
 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 4. Slope surfaces uniformly to drains where required.

5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- F. Hot-Weather Placement: Comply with ACI 301 and as follows:
1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.09 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
1. Apply to concrete surfaces exposed to public view.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated. **Note: If a specific Rubbed Finish is not indicated on the Contract Drawings, apply a Grout-Cleaned Finish to all concrete surfaces exposed to view.**
1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
 2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.

3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.10 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in 1 direction.
 1. Apply scratch finish to surfaces indicated, to those to receive concrete floor toppings and to those to receive mortar setting beds for bonded cementitious floor finishes.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
 1. Apply float finish to surfaces indicated, to those to receive trowel finish, to those to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or to those to receive sand bedded terrazzo.
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
 2. For floor slabs greater than 10,000 sq. ft., surface plan tolerances shall be measured by the F-number system listed below. Finish surfaces to the following tolerances, according to ASTM E 1155, for a randomly trafficked floor surface:
 - a. Non-critical Floors Slabs (mechanical rooms, non-public areas, subfloors under concrete toppings, thick-set tile, sand bed terrazzo and raised computer floors): Specified overall values of flatness (SOV), F(F) 20; and of levelness, F(L) 15; with minimum local values of flatness (MLV), F(F) 15; and of levelness, F(L) 10.
 - b. Carpeted Floor Slabs: Specified overall values of flatness (SOV), F(F) 25; and of levelness, F(L) 20; with minimum local values of flatness (MLV), F(F) 17; and of levelness, F(L) 15.
 - c. Slabs-on-Grade with Thin-set Floor Coverings and Resilient Floor coverings: Specified overall values of flatness (SOV), F(F) 35; and of

levelness, F(L) 25; with minimum local values of flatness (MLV), F(F) 24; and of levelness, F(L) 17.

- d. Elevated Floor Slabs with Thin-set Floor Coverings and Resilient Floor Coverings: Specified overall values of flatness (SOV), F(F) 30; and of levelness, F(L) 20; with minimum local values of flatness (MLV), F(F) 24; and of levelness, F(L) 15.
- e. Very Flat Floors with better than average flatness and levelness requirements (only for areas specifically noted on drawings as "Very Flat Floors"): Specified overall values of flatness (SOV), F(F) 45; and of levelness, F(L) 35; with minimum local values of flatness (MLV), F(F) 30; and of levelness, F(L) 24.

For elevated cast-in-place concrete floor slab construction, these tolerances are to be achieved before removal of any supporting shores.

For elevated concrete floor slabs on metal deck, these tolerances for overall flatness and levelness do not apply.

- 3. For floor slabs less than 10,000 sq. ft., surface plan tolerances shall be finished and measured by the "straightedge method" in-lieu of the F-number system listed above. Finish and measure concrete surfaces such that the gap at any point between the concrete surface and an unleveled, freestanding, 10-foot- long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 1/4 inch.
- 4. **For all floor slabs to receive a wooden floor system or other specialty floor systems, the floor finish and surface plan tolerances, flatness and levelness shall be in accordance with the manufacturer's requirements. The General Contractor shall be responsible for performing all necessary testing to certify in writing that the manufacturer's requirements are met in their entirety prior to the installation of the floor system. If it is found that any of these requirements are not in compliance, the General Contractor is responsible for all repairs or corrections required to certify that the manufacturer's requirements are met prior to the installation of the floor system.**

- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.

- 1. Comply with flatness and levelness tolerances for trowel finished floor surfaces.

- F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.

- 1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

- G. Slip-Resistive Finish: Before final floating, apply slip-resistive aggregate finish where indicated and to concrete stair treads, platforms, and ramps. Apply according to manufacturer's written instructions and as follows:

- 1. Uniformly spread 25 lb/100 sq. ft. of dampened slip-resistive aggregate over surface in 1 or 2 applications. Tamp aggregate flush with surface, but do not force below surface.
 - 2. After broadcasting and tamping, apply float finish.
 - 3. After curing, lightly work surface with a steel wire brush or an abrasive stone and water to expose slip-resistive aggregate.

- H. Refer to Division 9 Section "Concrete Floor Treatment" for general requirements for concrete floor treatment.
- I. Refer to Division 3 Section "Special Concrete Floor Finish" for general requirements for concrete floor finishes, applications, cure-seal-hardener requirements and general coating application requirements.

3.11 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes, voids, openings, etc. left in concrete structures, unless otherwise indicated to be left open, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.
- D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.
- E. Expanded Polystyrene (EPS) Geofoam: If required and as shown on structural drawings for support of in-fill concrete slabs, structurally sufficient to support weight of plastic concrete and other superimposed loads. Reference ASTM D6817 – Standard Specification for Rigid, Cellular Polystyrene Geofoam. Install in accordance with manufacture's written requirements.

In areas where portions of Expanded Polystyrene (EPS) Geofoam has been removed to accommodate installation of under-slab utilities, the voids created shall be infilled prior to slab placement with "Controlled Low-Strength Material" (Low-density, self-compacting, flowable concrete material) as specified and in accordance with Specification Section 312000 - "Building Earth Moving", Article 2.03 "Controlled Low-Strength Material" or with approved alternate materials and / or methods.

3.12 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305R for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive concrete stain.
 - b. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.
 - 4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.
- F. Refer to Division 9 Section "Concrete Floor Treatment" for general requirements for concrete floor treatment.
- G. Refer to Division 3 Section "Special Concrete Floor Finish" for general requirements for concrete floor finishes, applications, cure-seal-hardener requirements and general coating application requirements.

3.13 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 - 1. Defer joint filling until concrete has aged at least six month(s). Do not fill joints until construction traffic has permanently ceased.

- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.14 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

3.15 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports. Refer to Section 01 45 33 "Code-Required Special Inspections and Procedures" for additional information.
- B. Inspections:
 - 1. Steel reinforcement placement.
 - 2. Headed bolts and studs.
 - 3. Verification of use of required design mixture.
 - 4. Concrete placement, including conveying and depositing.
 - 5. Curing procedures and maintenance of curing temperature.
- C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
 - 1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 - 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 - 3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - 4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
 - 5. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
 - 6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

- a. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
 7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
 8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
 9. Test results shall be reported in writing to the Owners' on-site Representative or Agent, the Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
 10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
 11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
 12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
 13. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- D. Measure floor and slab flatness and levelness according to ASTM E 1155 within 48 hours of finishing.

END OF SECTION

SECTION 03 35 11
CONCRETE FLOOR FINISHES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface treatments for concrete floors and slabs.
- B. Liquid densifiers and hardeners.
- C. Clear penetrating sealers.
- D. Polished concrete.

1.02 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with concrete floor placement and concrete floor curing.
- B. Pre Structural Concrete Slab Installation Meeting: Schedule and conduct pre-installation conference at Project site to establish guidelines and expectations for scheduling of floor treating application, degree of polish, concrete finish specifications, floor flatness, and similar issues. Ensure attendance at Pre-installation conference by at least:
 - 1. Architect
 - 2. Construction Manager
 - 3. Owner's Representative (Oneida County & MVCC)
 - 4. Prime Contractor
 - 5. Applicable Subcontractors
 - 6. Certified Applicator
 - 7. Floor Treatment Manufacturer's representative

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.
- C. Product Data: Manufacturer's published data and installation instructions for concrete polishing system and finishing products, including manufacturer's installation instructions, information on compatibility of different products, and limitations.
- D. Maintenance Data: Provide data on maintenance and renewal of applied finishes.
- E. Warranty Documentation: Manufacturer warranty; ensure that forms have been completed in Owner's name and registered with manufacturer.
- F. Specimen Warranty: Manufacturer warranty.

1.04 QUALITY ASSURANCE

- A. For slabs indicated to receive concrete polishing system, do not proceed with concrete polishing unless manufacturer's representative and specialized equipment is present for every day of placement.

1.05 MOCK-UP

- A. For polished concrete, construct mock-up area under conditions similar to those that will exist during application, with coatings applied.
- B. Mock-Up Size: 200 feet square.
- C. Locate where directed.
- D. Mock-up may remain as part of the work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's sealed packaging, including application instructions.

1.07 FIELD CONDITIONS

- A. Maintain light level equivalent to a minimum 200 W light source at 8 feet above the floor surface over each 20 foot square area of floor being finished.
- B. Do not finish floors until interior heating system is operational.
- C. Maintain ambient temperature of 50 degrees F minimum.

1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer/Applicator Warranty: Provide joint agreement between floor treatment manufacturer and floor treatment applicator for not less than 10 years for materials and 10 years of labor.

PART 2 PRODUCTS

2.01 CONCRETE FLOOR FINISH APPLICATIONS

- A. Unless otherwise indicated, all concrete floors are to be finished using liquid densifier/hardener.
- B. Liquid Densifier and Hardener:
 - 1. Use at following locations: Where sealed concrete floor indicated on room finish schedule.
- C. Polished Finish:
 - 1. Use at following locations: Where polish concrete floor indicated on room finish schedule..

2.02 DENSIFIERS AND HARDENERS

- A. Liquid Densifier and Hardener: Penetrating chemical compound that reacts with concrete, filling the pores, hardening, and dustproofing.
 - 1. Abrasion Resistance to Revolving Disks: At least a 32.5 percent improvement over untreated samples when tested in accordance with ASTM C779.
 - 2. Surface Adhesion: At least a 22 percent increase in adhesion for epoxy when tested in accordance with ASTM D3359.
 - 3. Hardening: As follows when tested in accordance with ASTM C39:
 - a. After 7 days: An increase of at least 40 percent over untreated samples.
 - b. After 28 days: An increase of at least 38 percent over untreated samples.
 - 4. Coefficient of Friction: 0.86 dry, 0.69 wet when tested in accordance with ASTM C1028.
 - 5. Rebound Number: An increase of at least 13.3% over untreated samples when tested in accordance with ASTM C805.
 - 6. Light Exposure Degradation: No evidence of adverse effects on treated samples when tested in accordance with ASTM G23.
 - 7. Composition: Sodium silicate.
 - a. Products:
 - 1) Curecrete Distribution, Inc; Ashford Formula: www.curecrete.com.
 - 2) Euclid Chemical Company; EUCO DIAMOND HARD: www.euclidchemical.com.
 - 3) L&M Construction Chemicals, Inc, a subsidiary of Laticrete International, Inc; SEAL HARD: www.lmcc.com.

2.03 POLISHED CONCRETE SYSTEM

- A. Polished Concrete System: Materials, equipment, and procedures designed and furnished by a single manufacturer to produce dense polished concrete of the specified sheen.
 - 1. Acceptable Systems:
 - a. Curecrete Distribution, Inc; RetroPlate 99: www.curecrete.com.
 - b. Euclid Chemical Company; DOUBLE DIAMOND POLISHED CONCRETE FLOOR SYSTEMS: www.euclidchemical.com.
 - c. Green Umbrella Architectural Concrete Systems; Green Umbrella Concrete Polishing: www.greenumbrellasystems.com.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that floor surfaces are acceptable to receive the work of this section.
- B. Verify that flaws in concrete have been patched and joints filled with methods and materials suitable for further finishes.

3.02 GENERAL

- A. Apply materials in accordance with manufacturer's instructions.

3.03 COATING APPLICATION

- A. Verify that surface is free of previous coatings, sealers, curing compounds, water repellents, laitance, efflorescence, fats, oils, grease, wax, soluble salts, residues from cleaning agents, and other impediments to adhesion.
- B. Verify that water vapor emission from concrete and relative humidity in concrete are within limits established by coating manufacturer.
- C. Protect adjacent non-coated areas from drips, overflow, and overspray; immediately remove excess material.
- D. Apply coatings in accordance with manufacturer's instructions, matching approved mock-ups for color, special effects, sealing and workmanship.

3.04 CONCRETE POLISHING

- A. Execute using materials, equipment, and procedures specified by manufacturer, using manufacturer approved installer.
 - 1. Provide a Level B - Salt and Pepper Ground finish
 - 2. Provide a Level 3 Semi-Gloss Finish: Reflecting overhead and side images from 35 to 45 feet away.
- B. Protect finished surface as required and as recommended by manufacturer of polishing system.

END OF SECTION

SECTION 03 54 13
GYPSUM CEMENT UNDERLAYMENT

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the cement leveling compound as indicated on the drawings and/or specified herein, including, but not limited to, the following:
 - 1. Gypsum cement underlayment.
 - 2. Acoustical mat and reinforcement.

1.3 RELATED SECTIONS

- A. Cast-in-Place Concrete - Section 03 30 00.

1.4 QUALITY ASSURANCE

- A. Applicator: Company specializing in performing the work of this Section with a minimum of 3 years' experience and approved by the manufacturer of the product used.
- B. Acoustical performance requirements of the complete assembly when tested with a mass timber floor panel:
 - 1. IIC Rating: 43 / STC Rating: 51

1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's catalog information and product data for material to be used.

1.6 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect the materials of this Section before, during, and after installation, and to protect the installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary.

1.7 MOCK-UP

- A. Construct a mock-up of underlayment material, 8 feet long by 8 feet wide.
- B. Locate where directed by the Architect.
- C. Approved mock-up may remain as part of the Work.

1.8 JOB REQUIREMENTS

- A. Do not install underlayment until floor penetrations and peripheral work are complete.
- B. Maintain minimum ambient temperatures of 50 degrees F. 24 hours before, during, and 72 hours after installation of underlayment.
- C. During the curing process, ventilate spaces to remove excess moisture and until underlayment is dry, allow a minimum of seven (7) days.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Basis of Design: "Gyp-Crete High Performance" by Maxxon Corporation (800-356- 7887).
- B. Sound Deadening Mat: "Acousti-Mat 3/8 Premium" as manufactured by the Maxxon Corporation, Hamel, MN.
- C. Reinforcement: Maxxon Crack Suppression Mat (CSM), Maxxon Reinforcement (MR), or Metal Lath.
- D. Acoustical performance requirements of the complete assembly when tested with a mass timber floor panel:
 - 1. IIC Rating: 43 / STC Rating: 51

2.2 PRODUCTS AND MATERIALS

- A. Gypsum Cement: Gypsum cement product as manufactured by listed manufacturers.
- B. Provide aggregate when recommended in writing by underlayment manufacturer for underlayment thickness required.
- C. Water: Potable and at a temperature of not more than 70 degrees F.

- D. Floor Primer and Sealer: Products of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.

2.3 MIXES

- A. Mix proportions and methods shall be in strict accordance with product manufacturer's recommendations.
- B. Compressive strength of 3000 psi. Do not over-water.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for conditions affecting performance of underlayment including substrate moisture content. Begin underlayment application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Prepare and clean substrate according to manufacturer's written instructions for substrate indicated. Provide clean, dry, neutral-pH substrate for underlayment application.
- B. Subfloor shall be structurally sound, clean, and free of mud, oil, grease, or other contaminants.
- C. Leak Prevention: Fill cracks and voids with a quick setting patching or caulking material where leakage of gypsum cement underlayment could occur.
- D. Priming Subfloor: Prime the subfloor using manufacturer's recommended floor primer. Priming instructions may vary according to the type of substrate; multiple coats may be necessary.
- E. Expansion Joints: Allow joints to continue through the underlayment at the same width.

3.3 APPLICATION OF ACOUSTICAL MAT

- A. Install sound-deadening mat as recommended by the manufacturer.
- B. Installation of Reinforcement: Install crack suppression mat, reinforcement, or metal lath as recommended by the manufacturer.

3.4 APPLICATION OF GYPSUM CEMENT FLOORING

- A. Scheduling: Application of gypsum cement underlayment shall not begin until the building is enclosed, including roof, windows, doors and other fenestration. Install after drywall installation, unless tenant finish requirements identify partitioning after the pour.
- B. Application: Apply in accordance with manufacturer's instructions. Place underlayment at 1" minimum over subfloor. Spread and screed to a smooth surface. Except at authorized joints, place underlayment as continuously as possible until application is complete so that no gypsum cement slurry is placed against underlayment product that has obtained its initial set.
- C. Curing: General Contractor shall provide continuous ventilation and adequate heat to rapidly remove moisture from the area until the underlayment is dry. Contractor shall provide mechanical ventilation if necessary. This Contractor shall test for dryness in the presence of the Owner's Representative utilizing the procedure as recommended by the underlayment manufacturer.
- D. Preparation for Installation of Glue Down Floor Goods: Seal all areas that receive glue according to the underlayment manufacturer's specifications. Any floor areas where the surface has been damaged shall be cleaned and sealed regardless of floor covering to be used. Where floor goods manufacturers require special adhesive or installation systems, their requirements supersede these recommendations.

3.5 FIELD QUALITY CONTROL

- A. Slump Test: Gypsum cement mix shall be tested for slump as it's being pumped using a 2" x 4" cylinder for compliance with manufacturer's written recommendations.
- B. Field Samples: At least one set of 3 molded cube samples shall be taken from each day's pour during the application. Cubes shall be tested as recommended by the underlayment manufacturer in accordance with ASTM C 472 using split brass molds. Test results shall be available to Owner's Representative and Contractor from applicator upon request.

3.6 PROTECTION

- A. During construction, contractor shall place temporary wood planking over underlayment wherever it will be subjected to heavy wheeled or concentrated loads.

END OF SECTION

SECTION 04 05 11
MASONRY MORTARING AND GROUTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Mortar for masonry.
- B. Grout for masonry.

1.02 REFERENCE STANDARDS

- A. ASTM C5 - Standard Specification for Quicklime for Structural Purposes; 2018.
- B. ASTM C91/C91M - Standard Specification for Masonry Cement; 2023.
- C. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2023.
- D. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.
- E. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.
- F. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2018.
- G. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019a, with Editorial Revision.
- H. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2018.
- I. ASTM C476 - Standard Specification for Grout for Masonry; 2023.
- J. ASTM C780 - Standard Test Methods for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2023.
- K. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.
- L. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2019a.
- M. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used. Also include required environmental conditions and admixture limitations.
- C. Reports: Submit reports on mortar indicating compliance of mortar to property requirements of ASTM C270 and test and evaluation reports per ASTM C780.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Installation Instructions: Submit packaged dry mortar manufacturer's installation instructions.

1.04 QUALITY ASSURANCE

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.06 FIELD CONDITIONS

- A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 MORTAR AND GROUT APPLICATIONS

- A. At Contractor's option, mortar and grout may be field-mixed from packaged dry materials, made from factory premixed dry materials with addition of water only, or ready-mixed.
- B. Mortar Mix Designs: ASTM C270, Proportion Specification.
 - 1. Masonry below grade and in contact with earth: Type S.
 - 2. Exterior Masonry Veneer: Type N.
 - 3. Exterior Cavity Walls: Type S mortar with Type N pointing mortar.
 - 4. Exterior, Loadbearing Masonry: Type N.
 - 5. Interior, Loadbearing Masonry: Type N.
- C. Grout Mix Designs:
 - 1. Bond Beams and Lintels: 3,000 psi strength at 28 days; 8-10 inches slump; provide premixed type in accordance with ASTM C 94/C 94M.
 - a. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
 - b. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
 - 2. Engineered Masonry: 3,000 psi strength at 28 days; 8-10 inches slump; provide premixed type in accordance with ASTM C 94/C 94M.
 - a. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
 - b. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

2.02 MATERIALS

- A. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
 - 1. Color: Mineral pigments added as required to produce approved color sample to match brick.
- B. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.
- C. Portland Cement: ASTM C150/C150M.
 - 1. Type: Type I - Normal; ASTM C150/C150M.
 - 2. Color: Color as required to produce approved color sample.
- D. Masonry Cement: ASTM C91/C91M.
 - 1. Type: Type N; ASTM C91/C91M.
- E. Hydrated Lime: ASTM C207, Type S.
- F. Quicklime: ASTM C5, non-hydraulic type.
- G. Mortar Aggregate: ASTM C144.
- H. Grout Aggregate: ASTM C404.
- I. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
 - 1. Color(s): As selected by Architect from manufacturer's full range.
- J. Water: Clean and potable.
- K. Bonding Agent: Latex type.

2.03 MORTAR MIXING

- A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C270 and in quantities needed for immediate use.
- B. Maintain sand uniformly damp immediately before the mixing process.
- C. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio; mix in accordance with manufacturer's instructions, uniform in coloration.
- D. Do not use anti-freeze compounds to lower the freezing point of mortar.
- E. If water is lost by evaporation, re-temper only within two hours of mixing.

2.04 GROUT MIXING

- A. Mix grout in accordance with ASTM C94/C94M.
- B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476 for fine and coarse grout.
- C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.
- D. Do not use anti-freeze compounds to lower the freezing point of grout.

PART 3 EXECUTION

3.01 PREPARATION

- A. Apply bonding agent to existing concrete surfaces.
- B. Plug clean-out holes for grouted masonry with brick masonry units. Brace masonry to resist wet grout pressure.

3.02 INSTALLATION

- A. Install mortar and grout to requirements of section(s) in which masonry is specified.
- B. Do not install grout in lifts greater than 16 inches without consolidating grout by rodding.

3.03 GROUTING

- A. Use either high-lift or low-lift grouting techniques, at Contractor's option, subject to other limitations of Contract Documents.
- B. Low-Lift Grouting:
 - 1. Limit height of pours to 12 inches.
 - 2. Limit height of masonry to 16 inches above each pour.
 - 3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
 - 4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.
- C. High-Lift Grouting:
 - 1. Verify that horizontal and vertical reinforcement is in proper position and adequately secured before beginning pours.
 - 2. Brick: Limit pours to maximum 12 feet in height and 25 feet horizontally.
 - 3. Hollow Masonry: Limit lifts to maximum 4 feet and pours to maximum height of 24 feet.
 - 4. Place grout for spanning elements in single, continuous pour.

END OF SECTION

**SECTION 04 20 00
UNIT MASONRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete block.
- B. Ground face concrete block.
- C. Clay facing brick.
- D. Mortar and grout.
- E. Reinforcement and anchorage.
- F. Flashings.
- G. Lintels.
- H. Accessories.

1.02 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
- B. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2023a.
- C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.
- D. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2019.
- E. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2023.
- F. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2022.
- G. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.
- H. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2023.
- I. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2023.
- J. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale); 2023.
- K. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019a, with Editorial Revision.
- L. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2018.
- M. ASTM C476 - Standard Specification for Grout for Masonry; 2023.
- N. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.
- O. BIA Technical Notes No. 13 - Ceramic Glazed Brick Exterior Walls; 2017.
- P. BIA Technical Notes No. 28B - Brick Veneer/Cold-Formed Steel Framed Walls; 2025.
- Q. BIA Technical Notes No. 46 - Maintenance of Brick Masonry; 2017.
- R. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.
- C. Shop Drawings: Indicate pertinent dimensions, materials, anchorage, size and type of fasteners, and accessories for brickwork support system.
- D. Samples: Submit four samples of decorative block and facing brick units to illustrate color, texture, and extremes of color range.
- E. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra face brick and ground face block: 50 of each type, size, and color combination.

1.05 QUALITY ASSURANCE

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.
- B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Concrete Block: Comply with referenced standards and as follows:
 - 1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depth of 8 inches.
 - 2. Special Shapes: Provide nonstandard blocks configured for corners.
 - a. Provide bullnose units for outside corners.
 - 3. Load-Bearing Units: ASTM C90, normal weight.
 - a. Both hollow and solid block, as indicated.
 - 4. Nonloadbearing Units: ASTM C129.
 - a. Hollow block, as indicated.
 - 5. Ground Face Concrete Block
 - a. TTrendstone Ground Face Concrete Block in nominal 8x16 face size with factory-applier sealer.
 - 1) Special Scoring: Center Score
 - b. Manufactured by Echelon Masonry.
 - c. Color: Butterbrickle
 - d. Distributed by Paragon Supply, Inc

2.02 BRICK UNITS

- A. Manufacturers:
 - 1. Belden Brick: www.beldenbrick.com.
 - 2. Endicott Clay Products Co; Maganese Ironspout Smooth Modular: www.endicott.com.

- a. Distributed by Paragon Supply, Inc
- B. Facing Brick: ASTM C216, Type FBS Smooth, Grade SW.
 - 1. Color and texture to match Architect's sample.
 - 2. Nominal size: As indicated on drawings.
 - 3. Special shapes: Molded units as required by conditions indicated, unless standard units can be sawn to produce equivalent effect.

2.03 MORTAR AND GROUT MATERIALS

- A. Grout Aggregate: ASTM C404.

2.04 REINFORCEMENT AND ANCHORAGE

- A. Manufacturers:
 - 1. Blok-Lok Limited: www.blok-lok.com.
 - 2. Hohmann & Barnard, Inc: www.h-b.com.
 - 3. WIRE-BOND www.wirebond.com.
 - 4. Heckmann Building Products: www.heckmanbuildingprods.com
- B. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi), deformed billet bars; galvanized.
- C. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.
- D. Single Wythe Joint Reinforcement: ASTM A951/A951M.
 - 1. Type: Truss or ladder.
 - 2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M Class 3.
 - 3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.
- E. Adjustable Multiple Wythe Joint Reinforcement: ASTM A951/A951M.
 - 1. Type: Truss, with adjustable ties or tabs spaced at 16 in on center.
 - 2. Material: ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/A153M Class B.
 - 3. Size: 0.1875 inch side rods with 0.1483 inch cross rods and adjustable components of 0.1875 inch wire, width of components as required to provide not less than 5/8 inch of mortar coverage from each masonry face.
 - 4. Vertical adjustment: Not more than 1 1/4 inches.
 - 5. Insulation Clips: Provide clips at tabs or ties designed to secure insulation against outer face of inner wythe of masonry.
- F. Strap Anchors: Bent steel shapes, 1-1/2 inch width, 0.105 inch thick, 24 inch length, with 1-1/2 inch long, 90 degree bend at each end to form a U or Z shape or with cross pins, hot dip galvanized to ASTM A153/A153M Class B.
- G. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not less than 5/8 inch of mortar coverage from masonry face.
 - 1. Steel frame: Crimped wire anchors for welding to frame, 0.25 inch thick, with trapezoidal wire ties 0.1875 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B.
- H. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
 - 1. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
 - 2. Wire ties: Manufacturer's standard shape, 0.1875 inch thick.
 - 3. Vertical adjustment: Not less than 3-1/2 inches.

- I. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws; corrosion resistant finish or hot dip galvanized to ASTM A153/A153M.

2.05 FLASHINGS

- A. Metal Flashing Materials:
 - 1. Stainless Steel Flashing: ASTM A666, Type 304, soft temper; 26 gauge, 0.0187 inch thick; finish 2B to 2D.
- B. Combination Non-Asphaltic Flashing Materials - Stainless Steel:
 - 1. Stainless Steel/Polymer Fabric Drainage Plane Flashing: ASTM A240/A240M; 2 mil type 304 stainless steel sheet bonded between one sheet of polymer fabric and one sheet of non-woven drainage material.
 - a. Manufacturers:
 - 1) STS Coatings, Inc: www.stscoatings.com.
 - 2) York Manufacturing, Inc; Flash-Vent SS: www.yorkmfg.com.
- C. Factory-Fabricated Flashing Corners and End Dams: Stainless steel.
 - 1. Manufacturers:
 - a. Hohmann & Barnard, Inc: www.h-b.com.
 - b. Mortar Net Solutions; CompleteFlash: www.mortarnet.com.
 - c. York Manufacturing, Inc: www.yorkmfg.com.
- D. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.
 - 1. Manufacturers, Modified Polyether Products:
 - a. Mortar Net Solutions: www.mortarnet.com.
 - b. York Manufacturing, Inc; UniverSeal US-100 Liquid Tape: www.yorkmfg.com.
- E. Termination Bars: Stainless steel; compatible with membrane and adhesives.
- F. Drip Edge: Stainless steel; angled drip with hemmed edge; compatible with membrane and adhesives.
- G. Lap Sealants and Tapes: As recommended by flashing manufacturer; compatible with membrane and adhesives.

2.06 ACCESSORIES

- A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
- B. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; in maximum lengths available.
- C. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
 - 1. Mortar Diverter: Semi-rigid mesh designed for installation at flashing locations.
 - a. Manufacturers:
 - 1) Advanced Building Products, Inc; Mortar Break DT: www.advancedbuildingproducts.com.
 - 2) Advanced Building Products Inc; Mortar Break: www.advancedbuildingproducts.com.
 - 3) Mortar Net Solutions; MortarNet: www.mortarnet.com.
- D. Weeps:
 - 1. Type: Molded PVC grilles, insect resistant.
 - 2. Color(s): As selected by Architect from manufacturer's full range.
- E. Cavity Vents:
 - 1. Type: Molded PVC grilles, insect resistant.

- 2. Color(s): As selected by Architect from manufacturer's full range.
- F. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.07 MORTAR AND GROUT MIXING

- A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
- B. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

- A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

3.04 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
 - 1. Bond: Running.
 - 2. Coursing: One unit and one mortar joint to equal 8 inches.
 - 3. Mortar Joints: Concave.
- D. Ground Face Concrete Block
 - 1. Bond: Stacked
 - 2. Coursing: One unit and one mortar joint to equal 8 inches.
 - 3. Mortar Joints: Concave
- E. Brick Units:
 - 1. Bond: Running.
 - 2. Coursing: Three units and three mortar joints to equal 8 inches.
 - 3. Mortar Joints: Concave.

3.05 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- D. Remove excess mortar and mortar smears as work progresses.
- E. Interlock intersections and external corners, except for units laid in stack bond.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

- G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- H. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.
- I. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.
- J. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.06 WEEPS/CAVITY VENTS

- A. Install weeps in veneer and cavity walls at 24 inches on center horizontally on top of through-wall flashing above shelf angles and lintels and at bottom of walls.
- B. Install cavity vents in veneer and cavity walls at 32 inches on center horizontally below shelf angles and lintels and near top of walls.

3.07 CAVITY MORTAR CONTROL

- A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
- B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.
- C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

3.08 REINFORCEMENT AND ANCHORAGE - GENERAL, SINGLE WYTHER MASONRY, AND CAVITY WALL MASONRY

- A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Embed longitudinal wires of joint reinforcement in mortar joint with at least 5/8 inch mortar cover on each side.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.
- F. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 36 inches horizontally and 24 inches vertically.
- G. Embed ties and anchors in mortar joint and extend into masonry unit a minimum of 1-1/2 inches with at least 5/8 inch mortar cover to the outside face of the anchor.

3.09 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

- A. Masonry Back-Up: Embed anchors to bond veneer at maximum 16 inches on center vertically and 36 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.
- B. Stud Back-Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 16 inches on center vertically and 24 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

3.10 REINFORCEMENT AND ANCHORAGES - MULTIPLE WYTHER UNIT MASONRY

- A. Use individual metal ties installed in horizontal joints to bond wythes together. Provide ties spaced as indicated on drawings.
- B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

3.11 MASONRY FLASHINGS

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
 - 1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up flashing ends at least 1 inch, minimum, to form watertight pan at nonmasonry construction.
 - 2. Remove or cover protrusions or sharp edges that could puncture flashings.
 - 3. Seal lapped ends and penetrations of flashing before covering with mortar.
- B. Terminate flashing up 8 inches minimum on vertical surface of backing:
 - 1. Install vertical leg of flashing behind water-resistive barrier sheet over backing.
 - 2. Terminate vertical leg of flashing into bed joint in masonry or reglet in concrete.
- C. Extend metal flashings to within 1/2 inch of exterior face of masonry and adhere to top of stainless steel angled drip with hemmed edge.
- D. Support flexible flashings across gaps and openings.
- E. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.

3.12 GROUTED COMPONENTS

- A. Lap splices minimum 24 bar diameters.
- B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
- C. Place and consolidate grout fill without displacing reinforcing.

3.13 CONTROL AND EXPANSION JOINTS

- A. Do not continue horizontal joint reinforcement through control or expansion joints.
- B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

3.14 BUILT-IN WORK

- A. As work progresses, install built-in metal door frames and glazed frames and other items to be built into the work and furnished under other sections.
- B. Install built-in items plumb, level, and true to line.
- C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
- D. Do not build into masonry construction organic materials that are subject to deterioration.

3.15 TOLERANCES

- A. Install masonry within the site tolerances found in TMS 402/602.
- B. Maximum Variation from Alignment of Columns: 1/4 inch.
- C. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- D. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- E. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- F. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- G. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
- H. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.16 CUTTING AND FITTING

- A. Cut and fit for chases. Coordinate with other sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.17 CLEANING

- A. Remove excess mortar and mortar droppings.
- B. Clean soiled surfaces with cleaning solution.
- C. Use non-metallic tools in cleaning operations.

3.18 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

SECTION 05 12 00

STRUCTURAL STEEL FRAMING

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 this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Structural steel.
 - 2. Shop- and Field-installed shear connectors.
 - 3. Grout.
- B. Related Sections include the following:
 - 1. Division 1 Section 01 45 33 "Code-Required Special Inspections and Procedures" for independent testing agency procedures and administrative requirements.
 - 2. Division 5 Section "Metal Fabrications" for steel lintels or shelf angles not attached to structural-steel frame, miscellaneous steel fabrications and other metal items not defined as structural steel.
 - 3. Division 9 painting Sections for surface preparation and priming requirements.

1.03 DEFINITIONS

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC's "Code of Standard Practice for Steel Buildings and Bridges," that support design loads.

1.04 PERFORMANCE REQUIREMENTS

- A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand ASD-service loads indicated and comply with other information and restrictions indicated.
 - 1. Select and complete connections using schematic details indicated and AISC's "Manual of Steel Construction, Allowable Stress Design," Part 4.
 - 2. Engineering Responsibility: Fabricator's responsibilities include using a qualified professional engineer licensed in the State of New York to prepare structural analysis data for structural-steel connections. Refer to Article 1.5 (SUBMITTALS), Paragraph D.5 for Submittal Requirements.
- B. Construction: Type 2, simple framing, unless otherwise indicated on the drawings.

1.05 SUBMITTALS

- A. Original drawings, prepared by Contractor, Subcontractor, supplier or distributor, which illustrate some portion of the work showing fabrication, layout, setting or erection details.

Refer to Division 1, Section 01 30 00 - "Administrative Requirements" and information within this section for additional submittal requirements.

1. Identify details by reference to sheet and detail numbers shown on shop drawings.
 2. Sheet size, multiple of 8 ½ by 11 inches, not to exceed size of contract drawings when unfolded.
 3. **Photographic reproductions of contract drawings will NOT be accepted as shop drawings and will be REJECTED without review**
- B. Portable Document Format (PDF) Files: All submittals required for this section (including, but not limited to, Product Data, Shop Drawings, Welding Certificates, Qualification Data, and Mill Test Reports) shall be submitted to the A/E in "PDF" electronic format.
- C. Product Data: For each type of product indicated.
- D. Shop Drawings: Show fabrication of structural-steel components.
1. Include Anchor Rod and Base Plate / Leveling Plate Erection Drawings, Embedment Drawings, Structural Steel Framing Erection Drawings and associated individual member detail sheets for review and approval prior to start of fabrication.

It is acceptable for the initial review submittal to include the Anchor Rod and Base Plate / Leveling Plate Erection Drawings, Embedment Drawings and Structural Steel Framing Erection Drawings without the associated individual member detail sheets.

However, fabrication shall not begin until all required shop drawings have been submitted, reviewed and approved. Other than the initial submittal, submission of erection drawings alone without the accompanying individual member detail sheets is not acceptable.
 2. Include details of cuts, connections, shop- and field-installed shear connectors, splices, camber, holes, and other pertinent data.
 3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
 4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.
 5. For all structural-steel connections, include structural analysis data, shop standard connections with load carrying capacities, and other pertinent data that has been signed and sealed by the qualified professional engineer licensed in the State of New York responsible for their preparation.
- E. Welding certificates.
- F. Qualification Data: For Installer, fabricator and testing agency.

- G. Mill Test Reports: Signed by manufacturers certifying that the following products comply with requirements:
 - 1. Structural steel including chemical and physical properties.
 - 2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
 - 3. Shop primers.
 - 4. Non-shrink grout.
- H. Source quality-control test reports.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who has completed comparable projects.
- B. Fabricator Qualifications: A qualified fabricator who has completed comparable projects.
- C. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel."
- D. Comply with applicable provisions of the following specifications and documents:
 - 1. AISC's "Code of Standard Practice for Steel Buildings and Bridges."
 - 2. AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."
 - 3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from erosion and deterioration.
 - 1. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use.
 - 2. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

1.08 COORDINATION

- A. Furnish anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS

2.01 STRUCTURAL-STEEL MATERIALS

- A. W-Shapes: ASTM A 992/A 992M.
- B. Channels, Angles, M-Shapes, S-Shapes: ASTM A 36/A 36M.

- C. Plate and Bar: ASTM A 36/A 36M.
- D. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.
- E. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
 - 1. Weight Class: Standard unless otherwise indicated on the drawings.
 - 2. Finish: Black, except where indicated to be galvanized.
- F. Welding Electrodes: Comply with AWS requirements.

2.02 BOLTS, CONNECTORS, AND ANCHORS

- A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.
 - 1. Finish: Plain.
- B. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B.
- C. Headed Anchor Rods: ASTM F 1554, Grade 36.
 - 1. Configuration: Straight, unless otherwise shown on the drawings.
 - 2. Nuts: ASTM A 563 heavy hex carbon steel.
 - 3. Plate Washers: ASTM A 36/A 36M carbon steel.
 - 4. Washers: ASTM F 436 hardened carbon steel.
 - 5. Finish: Plain.

2.03 PRIMER

- A. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer. Coordinate primer selection with surface preparation and topcoat requirements.
- B. Galvanizing Repair Paint: ASTM A 780.

2.04 GROUT

- A. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404, Size No. 2. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.
- B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.05 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."
 - 1. Camber structural-steel members where indicated.
 - 2. Identify high-strength structural steel according to ASTM A 6/ A 6M and maintain markings until structural steel has been erected.
 - 3. Mark and match-mark materials for field assembly.
 - 4. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
 - 1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.
- C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.
- D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 2, "Hand Tool Cleaning", unless otherwise noted on the drawings or as required by the selected primer, paint or coating system requirements. The more stringent requirements shall apply.
- F. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's written instructions.
- G. Holes: Provide holes required for securing other work to structural steel and for passage of other work through steel framing members.
 - 1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
 - 2. Base-Plate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
 - 3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.06 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened, unless otherwise noted on the drawings.
- B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.

1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

2.07 SHOP PRIMING

- A. Shop prime steel surfaces except the following:
 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 2. Surfaces to be field welded.
 3. Surfaces to be high-strength bolted with slip-critical connections, including at all Moment Connections.
 4. Surfaces to receive sprayed fire-resistive materials.
 5. Galvanized surfaces.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the specifications, standards and requirements of the selected primers, paint or coating system.
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
- D. Painting: Apply a 1-coat, nonasphaltic primer complying with SSPC-PS Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Systems," to provide a dry film thickness of not less than 1.5 mils.

2.08 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/ A 123M.
 1. Fill vent holes and grind smooth after galvanizing.
 2. **Galvanize lintels and shelf angles located in exterior walls and in damp locations.**
 3. **Galvanize miscellaneous framing and supports in the following locations:**
 - a. Exterior locations.
 - b. Interior locations in damp locations and where indicated, such as, but not limited to embedded angles, frames and plates at drains.
 4. Refer to Contract drawings for other materials and pieces to be galvanized.

2.09 PREFORMED JOINT MATERIAL

- A. Provide closed cell polyethylene expansion joint material equal to the following manufacturers:
 1. "Sonoflex F" as manufactured by BASF, The Chemical Company.
 2. "Deck-O-Foam" as manufactured by W. R. Meadows, Inc.

2.10 SOURCE QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage an independent special inspector and qualified testing and inspecting agency to perform shop tests and inspections and prepare test reports. Refer to Section 01 45 33 "Code-Required Special Inspections and Procedures" for additional information.
 - 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Bolted Connections: If required, shop-bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- D. Welded Connections: As a minimum, all welded connections will be visually inspected. If the results of the visual inspections indicate that the quality of the welds do not meet the minimum AWS standards and requirements, or show signs of specific concern, the affected shop-welded connections will be tested and inspected according to AWS D1.1 in accordance of one or more of the following inspection procedures as applicable. The selected testing method(s) will be at the testing agency's option that best suits the conditions or concern.
 - 1. Liquid Penetrant Inspection: ASTM E 165.
 - 2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - 3. Ultrasonic Inspection: ASTM E 164.
 - 4. Radiographic Inspection: ASTM E 94.
- E. In addition to visual inspection, test and inspect shop-welded shear connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:
 - 1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
 - 2. Conduct tests according to requirements in AWS D1.1/D1.1M on additional shear connectors if weld fracture occurs on shear connectors already tested.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Contractor is required to field verify elevations of concrete and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments, with steel erector present, with an instrument survey for compliance with requirements.
- B. Prior to fabrication, the Contractor will verify existing dimensions and conditions prior to fabrication of all affected structural steel.
- C. Prior to fabrication of all affected structural steel, the Contractor shall coordinate all sizes and locations of opening requirements with approved equipment shop drawings and the trade involved.

- D. Prior to fabrication of all affected structural steel, the Contractor shall coordinate all support framing dimensional requirements associated with support of all mechanical equipment with approved equipment shop drawings and the trade involved.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. The Contractor is responsible for all means and methods associated with all removals and new construction, including the design of such, to keep the structure and all of the building features (including, but not limited to, the structural framing systems and walls) to remain secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads, including, but not limited to, providing temporary shores, guys, braces, and other supports during erection. Unless otherwise indicated, the Contractor is responsible for determining when it is appropriate to remove any temporary supports. However, as a minimum, these temporary supports shall not be removed prior to permanent structural steel, connections, and bracing are in place, unless otherwise indicated.

3.03 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."
- B. Leveling, Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting leveling, base and bearing plates. Clean bottom surface of leveling, base and bearing plates.
 - 1. Set leveling, base and bearing plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base or bearing plate before packing with grout.
 - 3. Promptly pack grout solidly between bearing surfaces and leveling, base or bearing plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- C. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
- D. Splice members only where indicated.
- E. Do not use thermal cutting during erection unless approved by Architect. Finish thermally cut sections within smoothness limits in AWS D1.1.
- F. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.04 FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened, unless otherwise noted on the drawings.
- B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.
 - 1. Comply with AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design" for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
 - 2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

3.05 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports. Refer to Section 01 45 33 "Code-Required Special Inspections and Procedures" for additional information.
- B. Bolted Connections: Field-bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- C. Field Welded Connections: As a minimum, all field welds will be visually inspected according to AWS D1.1.
 - 1. If the results of the visual inspections indicate that the quality of the welds do not meet the minimum AWS standards and requirements, or show signs of specific concern, the affected field-welded connections will be tested and inspected according to AWS D1.1 in accordance of one or more of the following inspection procedures as applicable. The selected testing method(s) will be at the testing agency's option that best suits the conditions or concern.
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.
- D. In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:
 - 1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
 - 2. Conduct tests according to requirements in AWS D1.1/D1.1M on additional shear connectors if weld fracture occurs on shear connectors already tested.
- E. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.06 REPAIRS AND PROTECTION

- A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Touchup Painting: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists and accessories, bearing plates, and abutting structural steel.
 - 1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.
 - 2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

END OF SECTION

SECTION 05 31 00

STEEL DECKING

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 this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Roof deck.
 - 2. Composite Floor Deck.
 - 3. Noncomposite form deck.
- B. Related Sections include the following:
 - 1. Division 1 Section 01 45 33 "Code-Required Special Inspections and Procedures" for independent testing agency procedures and administrative requirements.
 - 2. Division 5 Section "Structural Steel Framing" for framing deck openings with steel shapes.
 - 3. Division 5 Section "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.
 - 4. Division 9 painting Sections for repair painting of primed deck.

1.03 SUBMITTALS

- A. Original drawings, prepared by Contractor, Subcontractor, supplier or distributor, which illustrate some portion of the work showing fabrication, layout, setting or erection details.

Refer to Division 1, Section 01 30 00 - "Administrative Requirements" and information within this section for additional submittal requirements.

 - 1. Identify details by reference to sheet and detail numbers shown on shop drawings.
 - 2. Sheet size, multiple of 8 ½ by 11 inches, not to exceed size of contract drawings when unfolded.
 - 3. **Photographic reproductions of contract drawings will NOT be accepted as shop drawings and will be REJECTED without review.**
- B. Portable Document Format (PDF) Files: All submittals required for this section (including, but not limited to, Product Data, Shop Drawings, Product Certificates, Welding Certificates, and Product Test Reports) shall be submitted to the A/E in "PDF" electronic format.
- C. Product Data: For each type of deck, accessory, and product indicated.

- D. Shop Drawings: Show layout and types of deck panels, anchorage details, reinforcing channels, pans, deck openings, special jointing, accessories, and attachments to other construction.
- E. Product Certificates: Signed by steel deck manufacturers certifying that products furnished comply with requirements.
- F. Welding Certificates: Copies of certificates for welding procedures and personnel.
- G. Field quality-control test and inspection reports.
- H. Product Test Reports: From a qualified testing agency indicating that each of the following complies with requirements, based on comprehensive testing of current products:
 - 1. Mechanical fasteners: At the Contractor's option, mechanical fasteners may be considered for use in lieu of welding to fasten deck, pending approval in writing from the Architect / Engineer. If mechanical fasteners are proposed to be used, the Contractor shall submit for review and approval all necessary supporting calculations, documentation and manufacturer's written instructions verifying that the strength of the proposed mechanical fastening system meets or exceeds that of the welded fastening shown on the contract documents. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed steel deck similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
- C. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."
- D. Fire-Test-Response Characteristics: Where indicated, provide steel deck units identical to those steel deck units tested for fire resistance per ASTM E 119 by a testing and inspection agency acceptable to authorities having jurisdiction.
 - 1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another testing and inspecting agency.
 - 2. Steel deck units shall be identified with appropriate markings of applicable testing and inspecting agency.
- E. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
- F. FMG Listing: Provide steel roof deck evaluated by FMG and listed in its "Approval Guide, Building Materials" for Class 1 fire rating and Class 1-90 windstorm ratings.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.
 - 1. Protect and ventilate acoustical roof deck with factory-installed insulation to maintain insulation free of moisture.

1.06 COORDINATION

- A. The General Contractor is responsible for coordinating edge of deck (E.O.D.) and edge of opening dimensions and locations with the requirements of all Trades, information contained within the Contract Documents for all Trades and existing conditions.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Steel Deck:
 - a. ASC Profiles, Inc.
 - b. Canam Steel Corp.;The Canam Manac Group.
 - c. Consolidated Systems, Inc.
 - d. DACS, Inc.
 - e. D-Mac Industries Inc.
 - f. Epic Metals Corporation.
 - g. Marlyn Steel Decks, Inc.
 - h. New Millennium Building Systems, LLC.
 - i. Nucor Corp.; Vulcraft Division.
 - j. Roof Deck, Inc.
 - k. United Steel Deck, Inc.
 - l. Valley Joist; Division of EBSCO Industries, Inc.
 - m. Verco Manufacturing Co.
 - n. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

2.02 ROOF DECK

- A. Steel Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 30, and the following:
 - 1. Steel Sheet Grades and Finishes: Roof deck to be Galvanized Steel sheet unless specifically noted to be Galvanized and Shop-Primed Painted on the drawings.

- a. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, **G90 zinc coating**.
2. If metal deck is to be painted, the metal deck shall be Galvanized and Shop-Primed and the shop primer shall be compatible with the finish paint system. The Contractor shall coordinate all areas to receive paint with the architectural requirements and the architectural room finish schedule.
 - a. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, **G90 zinc coating**; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer or as noted. Color to be compatible with and coordinated with finished paint system.
3. Deck Profile and Depth: See Drawings for specific locations of each deck depth and profile type. NOTE: NOT INVERTED DECK.
 - a. 1-1/2 inches, Type WR, Wide Rib (or as approved equal), typical unless otherwise noted.
 - b. 3-inches, Type 3DR, Deep Rib (or as approved equal).
4. Design Uncoated-Steel Thickness: See Drawings (0.0358 inch, 20 ga. minimum unless noted otherwise).
5. Span Condition: See Drawings (Triple span or more where possible).
6. Side Laps: See Drawings (Nested side laps unless noted otherwise).

2.03 COMPOSITE FLOOR DECK

- A. Composite Steel Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 30, with the minimum section properties indicated, and with the following properties, deck profile, Design Uncoated-Steel Thickness and Span Condition. See the Drawings for type of floor deck to be used in each area :
 1. 1 1/2 -inch Composite Steel Floor Deck: See Drawings for locations to be used.
 - a. Steel Sheet Grades and Finishes: Metal deck to be Galvanized Steel sheet unless required to be Galvanized and Shop-Primed Painted.

Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, **G90 zinc coating**.
 - b. If metal deck is to be painted, the metal deck shall be Galvanized and Shop-Primed and the shop primer shall be compatible with the finish paint system. The Contractor shall coordinate all areas to receive paint with the architectural requirements and the architectural room finish schedule.

Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, **G90 zinc coating**; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer or as noted. Color to be compatible with and coordinated with finished paint system.
 - c. Deck Profile & Depth: 1 1/2-inch "B" Lock or as approved equal unless noted otherwise). NOTE: NOT INVERTED DECK.
 - d. Design Uncoated-Steel Thickness: See Drawings (0.0358 inch, 20 ga. Minimum unless noted otherwise).

- e. Span Condition: See Drawings (Triple span or more where possible unless noted otherwise).

2.04 NONCOMPOSITE FORM DECK

- A. Noncomposite Form Deck: Fabricate ribbed-steel sheet noncomposite form-deck panels to comply with "SDI Specifications and Commentary for Noncomposite Steel Form Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:
 - 1. If metal deck is to be painted, the metal deck shall be Galvanized and Shop-Primed and the shop primer shall be compatible with the finish paint system. The Contractor shall coordinate all areas to receive paint with the architectural requirements and the architectural room finish schedule.
 - a. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, **G90 zinc coating**; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer or as noted. Color to be compatible with and coordinated with finished paint system.
 - 2. Profile Depth: See Drawings (9/16 inches unless noted otherwise).
 - 3. Design Uncoated-Steel Thickness: See Drawings (0.02958 inch, 22 ga. Minimum unless noted otherwise).
 - 4. Span Condition: See Drawings (Triple span or more where possible).
 - 5. Side Laps: See Drawings (Interlocking seam unless noted otherwise unless noted otherwise)

2.05 ACCESSORIES

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
- C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.
- D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
- E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
- F. Steel Sheet Accessories: Steel sheet, of same material, finish, and thickness as deck, unless otherwise indicated.
- G. Pours Stops: If not shown as structural steel, provide steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck; of thickness and profile indicated, as recommended by SDI Publication No. 30 for overhang and slab depth or as required for application.
- H. **Girder Fillers: PLEASE NOTE that Use of Girder Fillers is NOT allowed. The deck layout and the need to cut the deck to avoid the use of Girder Fillers shall be taken into consideration when bidding and preparing shop drawings. Shop drawings**

submitted using girder fillers will be returned NOT reviewed and will be required to be Revised and Resubmitted. Absolutely No Exceptions.

- I. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck, unless otherwise indicated.
- J. Rolled-in (Integral) Hanger Tabs: UL Approved rolled-in (integral) hanger tabs for use with floor deck. Refer to Article 3.04.G.
- K. Recessed Sump Pans: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck, with 3-inch- wide flanges and sloped recessed pans of 1-1/2- inch minimum depth. For drains, cut holes in the field.
- L. Flat Sump Plate: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.
- M. Galvanizing Repair Paint: ASTM A 780.
- N. Repair Paint: Lead- and chromate-free rust-inhibitive primer complying with performance requirements of FS TT-P-664 of the same color as the primer.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.
- B. Install temporary shoring before placing deck panels, if required to meet deflection limitations.
- C. Locate deck bundles to prevent overloading of supporting members.
- D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
 - 1. Align cellular deck panels over full length of cell runs and align cells at ends of abutting panels.
- E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to decking.

- G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of decking, and support of other work.
- H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- I. At the Contractor's option, mechanical fasteners may be used in lieu of welding to fasten deck. If mechanical fasteners are proposed to be used, the Contractor shall submit for review and approval all necessary supporting calculations, documentation and manufacturer's written instructions verifying that the strength of the proposed mechanical fastening system meets or exceeds that of the welded fastening shown on the contract documents. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.03 ROOF DECK INSTALLATION

- A. Fasten roof deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter, but not less than 1-1/2 inches long, and as follows:
 - 1. Weld Diameter: 5/8 inch, nominal.
 - 2. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds 6 inches apart in the field of the roof and 6 inches apart in roof corners and perimeter, based on roof-area definitions of FMG Loss Prevention Data Sheet 1-28, unless otherwise indicated on drawings.
- B. Perimeter Edge Fastening: Fasten perimeter edges of panels between supports at intervals not exceeding 6 inches, and as follows:
 - 1. Welded with 5/8 inch diameter spot (puddle) welds.
 - 2. Mechanically fasten with self-drilling No. 10 diameter or larger carbon-steel screws.
- C. Side-Lap Fastening: Fasten side laps panels between supports, at intervals not exceeding 6 inches, or as indicated on the Drawings, and as follows:
 - 1. Mechanically fasten with self-drilling No. 10 diameter or larger carbon-steel screws.
- D. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
 - 1. End Joints: Lapped 2 inches minimum.
- E. Roof Sump Pans and Sump Plates: Install over openings provided in roof decking and weld flanges to top of deck. Space welds not more than 6 inches apart with at least 1 weld at each corner.
 - 1. Install reinforcing channels or zees in ribs to span between supports and weld or mechanically fasten.
- F. Miscellaneous Roof Deck Accessories: Install ridge and valley plates, finish strips, cover plates, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld to substrate to provide a complete deck installation.

1. Weld cover plates at changes in direction of roof-deck panels, unless otherwise indicated.
- G. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.
- H. Sound-Absorbing Insulation: If required, installation into topside ribs of deck as specified in Division 07 Section.

3.04 FLOOR DECK INSTALLATION

- A. Fasten floor-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:
 1. Weld Diameter: 5/8 inch, nominal.
 2. Weld Spacing: Weld edge ribs of panels at each support not more than 12-inches apart and as shown on the drawings.
- B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of half of the span or 36 inches, and as follows:
 1. Mechanically fasten with self-drilling No. 10 diameter or larger carbon-steel screws.
 2. Mechanically clinch or button punch.
 3. Fasten with a minimum of 1 1/2-inch long welds.
- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
 1. End Joints: Butted.
- D. Pour Stops: Weld steel sheet pour stops to supporting structure according to SDI recommendations, unless otherwise indicated.
- E. **Girder Fillers: PLEASE NOTE that Use of Girder Fillers is NOT allowed. The deck layout and the need to cut the deck to avoid the use of Girder Fillers shall be taken into consideration when bidding and preparing shop drawings. Shop drawings submitted using girder fillers will be returned NOT reviewed and will be required to be Revised and Resubmitted. Absolutely No Exceptions.**
- F. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.
- G. Hanger Tabs, Slots, or Clips
 1. Provide UL approved rolled-in (integral) hanger tabs or punched hanger slots between cells or flutes of lower element where floor deck units are to receive hangers for support of ceiling construction, air ducts, diffusers, or lighting fixtures, only where deck manufacturer allows such loads and provide hanging attachment devices.
 2. Hanger clips designed to clip over male side lap joints of floor deck units may be used instead of hanger tabs or slots.

3. Locate tabs, slots, or clips at not more than 14 inches o.c. in both directions, not over 9 inches from walls at ends, and not more than 12 inches from walls at sides, unless otherwise shown.

3.05 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports. Refer to Section 014533 "Code-Required Special Inspections and Procedures" for additional information.
- B. If required, field welds will be subject to inspection.
- C. If required, testing agency will report test results promptly and in writing to Contractor and Architect.
- D. If required, remove and replace work that does not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.06 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on primed surfaces of Galvanized and prime-painted deck immediately after installation, and apply repair paint.
 1. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.
 2. Wire brushing, cleaning, and repair painting of bottom deck surfaces are included in Division 9 Section.
- C. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION

**SECTION 05 40 00
COLD-FORMED METAL FRAMING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Formed steel stud exterior wall framing.

1.02 REFERENCE STANDARDS

- A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016, with Supplement (2020).
- B. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015, with Errata (2020).
- C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
- E. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2020.
- F. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.
- G. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2020.
- H. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel; 2018, with Errata (2022).
- I. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with work of other sections that is to be installed in or adjacent to metal framing systems, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by affected installers.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on cold-formed steel structural members; include material descriptions and base steel thickness.
- C. Product Data: Provide manufacturer's data on factory-made connectors and mechanical fasteners, showing compliance with requirements.
- D. Product Data: For lateral-force resisting systems, provide product data sheets on hold-down, showing compliance with requirements.
- E. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, and type and location of fasteners, and accessories or items required of related work.

1.05 QUALITY ASSURANCE

- A. Designer Qualifications: Design framing system under direct supervision of a professional structural engineer experienced in designing this work and licensed in the State in which the Project is located.

- B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum three years of documented experience.
- C. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.3/D1.3M and dated no more than 12 months before start of scheduled welding work.
- D. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience and approved by manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Structural Framing:
 - 1. ClarkDietrich Building Systems: www.clarkdietrich.com.
 - 2. MarinoWARE: www.marinoware.com.
 - 3. Telling Industries, LLC: www.buildstrong.com.
- B. Connectors:
 - 1. Same manufacturer as metal framing.

2.02 PERFORMANCE REQUIREMENTS

- A. Design Requirements: Design cold-formed framing systems, components and connectors to withstand specified design loads in compliance with ICC (IBC), ASCE 7, AISI S100, and AISI S240.
- B. Regulatory Requirements: Comply with applicable building code criteria for loads, including seismic loads.
 - 1. Live load deflection meeting the following, unless otherwise indicated:
 - a. Exterior Walls: Maximum horizontal deflection under wind load of 1/240 of span.
 - 2. Able to tolerate movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
 - 3. Able to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

2.03 MATERIALS

- A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S240.
 - 1. Structural Grade: As required to meet design criteria.
 - 2. Corrosion Protection Coating Designation: CP 60 in accordance with AISI S240.

2.04 STRUCTURAL FRAMING COMPONENTS

- A. Wall Studs and Track Sections: AISI S240; c-shaped studs and u-shaped track sections in stud-matching nominal width and compatible height.
 - 1. Thickness and Depth: Depth as indicated on the drawings; thickness and structural grade as required to meet design criteria.
 - 2. Provide components fabricated from ASTM A1011/A1011M Designation SS (structural steel).
- B. Jamb Studs: AISI S240; manufactured, engineered, c-shaped with wide flanges, designed to replace conventional double-stud framing at openings.
 - 1. Thickness and Depth: Depth as indicated on drawings; thickness and structural grade as required to meet specified design criteria.
- C. Headers: AISI S240; manufactured, engineered one-member or two-member assemblies, with wide flanges, designed to replace conventional box or nested header framing at openings.
 - 1. Thickness and Depth: Depth as indicated on drawings; thickness and structural grade as required to meet specified design criteria.
 - 2. Jamb Mounting Clips: Manufacturer's standard.

2.05 LATERAL FORCE-RESISTING SYSTEMS

- A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S240.
 - 1. Structural Grade: As required to meet design criteria.
 - 2. Corrosion Protection Coating Designation: CP 60 in accordance with AISI S240.
- B. Curtain Wall Studs and Girts:
- C. CONNECTIONS
 - 1. Performance Requirements: Provide connections in compliance with requirements of AISI S240.
 - 2. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S240.
 - 3. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, shouldered screws or screws and anti-friction or stepped bushings, while maintaining structural performance of framing. Provide movement connections where indicated on drawings.
 - a. Where continuous studs bypass elevated floor slab, connect stud to slab in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch.
 - b. Where top of stud wall terminates below structural floor or roof, connect studs to structure in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch.
 - c. Provide top track with long leg track and head of wall movement connectors; minimum track length of 10 feet.
 - 4. Fixed Connections: Provide nonmovement devices for tie-down to foundation, floor-to-floor tie-down, roof-to-wall tie-down, joist hangers, gusset plates, and stiffeners.
 - 5. Bridging Connections: Provide mechanical load-transferring devices that accommodate wind load torsion and weak axis buckling induced by axial compression loads. Provide bridging connectors where indicated on the drawings.

2.06 MISCELLANEOUS CONNECTIONS

- A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot-dip galvanized per ASTM A153/A153M.
- B. Anchorage Devices: Powder actuated.
- C. Welding: Comply with AWS D1.1/D1.1M.

2.07 ACCESSORIES

- A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.
- B. Galvanizing Repair: Touch up bare steel with zinc-rich paint in compliance with ASTM A780/A780M.
- C. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify field measurements and adjust installation as required.

3.02 PREPARATION

- A. Structural Wall Foundations: For gaps between wall bottom track and top of foundation 1/4 inch or greater, level substrate with loadbearing shims or grout between track and foundation.

3.03 INSTALLATION - GENERAL

- A. Install structural members and connections in compliance with ASTM C1007.

3.04 INSTALLATION OF STUDS

- A. Install wall studs plumb and level.
- B. Construct corners using minimum of three studs. Install double studs at wall openings, door and window jambs.
- C. Install load-bearing studs full length in one piece. Splicing of studs is not permitted.
- D. Install load-bearing studs; brace, and reinforce to develop full strength and achieve design requirements.
- E. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.
- F. Install intermediate studs above and below openings to align with wall stud spacing.
- G. Provide deflection allowance in stud track, directly below horizontal building framing at non-loadbearing framing.
- H. Attach cross studs to studs for attachment of fixtures anchored to walls.
- I. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
- J. Touch-up field welds and damaged corrosion-protected surfaces zinc-rich paint in compliance with ASTM A780/A780M.
- K. Touch-up field welds and damaged corrosion protected surfaces with primer.

3.05 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Provide material verification inspections in accordance with requirements of AISI S240.
- C. Provide inspections for welding, mechanical fastening, and cold-formed steel light-frame construction in accordance with requirements of AISI S240.
- D. Coordination of Other Tests and Inspections: Owner will employ independent testing agency to test and/or inspect framing as outlined in section 01 45 33; provide access as required to accommodate timely performance.

3.06 TOLERANCES

- A. Studs - Vertical Alignment (Plumbness): 1/960 of span or 1/8 inch in 10 ft, in accordance with ASTM C1007.
- B. Studs - Maximum Variation from True Position: 1/8 inch in accordance with ASTM C1007.
- C. Stud Spacing: 1/8 inch from the designated spacing, provided that the cumulative error does not exceed the requirements of the finishing materials in accordance with ASTM C1007.

END OF SECTION

**SECTION 05 50 00
METAL FABRICATIONS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop fabricated steel and aluminum items.

1.02 REFERENCE STANDARDS

- A. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes; 2024.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.
- D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- E. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.
- F. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.
- G. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.
- H. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2023.
- I. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- J. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.
- K. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).
- L. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014, with Errata (2020).
- M. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.
- N. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- C. Plates: ASTM A283/A283M.
- D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- E. Stainless Steel, General: ASTM A666, Type 304.
- F. Stainless Steel Bars, Shapes and Moldings: ASTM A276/A276M, Type 304.

- G. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.
- H. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.
- I. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- J. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- K. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 MATERIALS - ALUMINUM

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.
- B. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

2.03 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- E. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 FABRICATED ITEMS

- A. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking; prime paint finish.
- B. Lintels: As detailed; prime paint finish.
- C. Recessed Mat Frames : As detailed and specified in section 12 48 13.

2.05 FINISHES - STEEL

- A. Prime paint steel items.
 - 1. Exceptions: Galvanize items to be embedded in concrete and items to be embedded in masonry.
 - 2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
- B. Prime Painting: One coat.
- C. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.
- D. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.06 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.

3.03 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components as indicated on drawings.
- D. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed , except surfaces to be in contact with concrete.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

**SECTION 05 51 00
METAL STAIRS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Stairs with concrete treads.
- B. Structural steel stair framing and supports.

1.02 REFERENCE STANDARDS

- A. AISC 201 - AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures; 2006.
- B. ASTM A6/A6M - Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling; 2023.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- D. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.
- E. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
- F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.
- G. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.
- H. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.
- I. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.
- J. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2023, with Editorial Revision.
- K. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.
- L. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2023.
- M. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.
- N. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021, with Errata (2023).
- O. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).
- P. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel AC172; 2019.
- Q. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.
- R. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.
- S. SSPC-SP 2 - Hand Tool Cleaning; 2018.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
 - 2. Include the design engineer's seal and signature on each sheet of shop drawings.
- C. Design Data: As required by authorities having jurisdiction.
- D. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.
- E. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is certified under AISC 201.
- F. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

1.04 QUALITY ASSURANCE

- A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located, or personnel under direct supervision of such an engineer.
- B. Fabricator Qualifications:
 - 1. A company specializing in manufacturing products specified in this section, with not less than ten years of documented experience.

PART 2 PRODUCTS

2.01 METAL STAIRS - GENERAL

- A. Metal Stairs: Provide stairs of the design specified, complete with landing platforms, vertical and horizontal supports, railings, and guards, fabricated accurately for anchorage to each other and to building structure.
 - 1. Regulatory Requirements: Provide stairs and railings that comply with most stringent requirements of local, state, and federal regulations; where requirements of Contract Documents exceed those of regulations, comply with Contract Documents.
 - 2. Handrails: Comply with applicable accessibility requirements of ADA Standards.
 - 3. Structural Design: Provide complete stair and railing assemblies that comply with the applicable local code.
 - 4. At exit stairwells, provide unit stair towers designed for stacking to height of building as a self-supporting structure.
 - 5. Dimensions: As indicated on drawings.
 - 6. Shop assemble components; disassemble into largest practical sections suitable for transport and access to site.
 - 7. No sharp or rough areas on exposed travel surfaces and surfaces accessible to touch.
 - 8. Separate dissimilar metals using paint or permanent tape.
- B. Metal Jointing and Finish Quality Levels:
 - 1. Architectural: All joints as inconspicuous as possible, whether welded or mechanical.
 - a. Welded Joints: Continuously welded and ground smooth and flush.
 - b. Mechanical Joints: Butted tight, flush, and hairline; concealed fastenings only.
 - c. Exposed Edges and Corners: Eased to small uniform radius.
 - d. Metal Surfaces to be Painted: Sanded or ground smooth, suitable for highest quality gloss finish.
- C. Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.
- D. Anchors and Related Components: Same material and finish as item to be anchored, except where specifically indicated otherwise; provide all anchors and fasteners required.

2.02 METAL STAIRS WITH CONCRETE TREADS

- A. Jointing and Finish Quality Level: Architectural, as defined above.
- B. Risers: Closed.
- C. Treads: Metal pan with field-installed concrete fill.
 - 1. Concrete Depth: 2 inches, minimum.
 - 2. Tread Pan Material: Steel sheet.
 - 3. Tread Pan Thickness: As required by design; 14 gauge, 0.075 inch minimum.
 - 4. Aluminum anti-slip strip cast into riser at stair nosing
 - 5. Pan Anchorage to Stringers: Continuously welded, from top or bottom.
 - 6. Concrete Reinforcement: Welded wire mesh.
 - 7. Concrete Finish: For resilient floor covering in exit stair, steel troweled and polished at link between building areas.
- D. Risers: Same material and thickness as tread pans.
 - 1. Riser/Nosing Profile: Sloped riser with rounded nosing of minimum radius.
 - 2. Nosing Depth: Not more than 1 inch overhang.
 - 3. Nosing Return: Flush with top of concrete fill, not more than 1/2 inch wide.
- E. Stringers: Rolled steel channels.
 - 1. Stringer Depth: 10 inches.
 - 2. End Closure: Sheet steel of same thickness as risers welded across ends.
- F. Landings: Same construction as treads, supported and reinforced as required to achieve design load capacity.
- G. Railings: Steel pipe railings as specified.
- H. Finish: Shop- or factory-prime painted.
- I. Under Side of Stair: Exposed to view, to be finished same as specified for other exposed to view surfaces.

2.03 HANDRAILS AND GUARDS

- A. Wall-Mounted Rails: See Section 05 52 13.
- B. Guards: Pipe railings, see Section 05 52 13.

2.04 MATERIALS

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A500/A500M or ASTM A501/A501M structural tubing, round and shapes as indicated.
- C. Steel Plates: ASTM A6/A6M or ASTM A283/A283M.
- D. Pipe: ASTM A53/A53M Grade B Schedule 40, black finish.
- E. Ungalvanized Steel Sheet: Hot- or cold-rolled, except use cold-rolled where finished work will be exposed to view.
 - 1. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Designation CS (commercial steel).
 - 2. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Designation CS (commercial steel).
- F. Galvanized Steel Sheet: ASTM A653/A653M, Structural Steel (SS) Grade 33/230 with G40/Z120 coating.
- G. Concrete Fill: See Section 03 30 00.
- H. Concrete Reinforcement: Mesh type as detailed, galvanized.

2.05 ACCESSORIES

- A. Anti Slip Strip:
 - 1. Materials: Extruded aluminum, alloy type 6063-T5, mill finish.

- a. Tread Abrasive Filler: Virgin grain aluminum oxide epoxy-bonded to tread base.
- b. Tread Type: Ribbed bar.
- c. Nosing Types: Long nose for steel pan stairs.
- d. Color: As selected by architect from standard range..
- B. Steel Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, and galvanized to ASTM A153/A153M where connecting galvanized components.
- C. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- D. Shop and Touch-Up Primer: SSPC-Paint 15, and comply with VOC limitations of authorities having jurisdiction.
- E. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic, and comply with VOC limitations of authorities having jurisdiction.

2.06 SHOP FINISHING

- A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- B. Do not prime surfaces in direct contact with concrete or where field welding is required.
- C. Prime Painting: Use specified shop- and touch-up primer.
 - 1. Preparation of Steel: In accordance with SSPC-SP 2 Hand Tool Cleaning.
 - 2. Number of Coats: One.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. When field welding is required, clean and strip primed steel items to bare metal.

3.03 INSTALLATION

- A. Install components plumb and level, accurately fitted, free from distortion or defects.
- B. Provide anchors, plates, angles, hangers, and struts required for connecting stairs to structure.
- C. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- D. Provide welded field joints where specifically indicated on drawings. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. Other field joints may be either welded or bolted provided the result complies with the limitations specified for jointing quality levels.
- F. Obtain approval prior to site cutting or creating adjustments not scheduled.
- G. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.

END OF SECTION

SECTION 05 51 17
ALUMINUM SLOTTED FRAMING SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. Non-ferrous metal fabrications and manufactured items not shown or specified under work of other Sections, including, but not limited to, the following.
 - 1. Suspended aluminum slotted framing system at laboratory ceilings for support of service fixtures, equipment, etc.
 - 2. Hardware, fittings, clamps, hangers, supports, accessories and fasteners required to complete the installation.
- B. Related Sections:
 - 1. Mechanical: Division 23.
 - 3. Electrical: Division 26.

1.2 REFERENCES

- A. The following standards are cited in or may be relevant to this Section. The latest edition of each standard shall govern the Work of this Section only to the extent specified in each citation.
- B. Aluminum Association (AA):
 - 1. SAS-30 Specifications for Aluminum Structures.
 - 2. WA-20 Welding Aluminum.
- C. American Society for Testing and Materials (ASTM):
 - 1. A36/A36M Specification for Structural Steel.
 - 2. A570 (Grade 33) Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality.
 - 3. A575 Specification for Steel Bars, Carbon, Merchant Quality, M-Grade.
 - 4. A576 (Grade 1015) Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality.
 - 5. A635 Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Carbon, Hot-rolled.
 - 6. B117 Method of Salt Spray (fog) Testing.
 - 7. B209 Specification for Aluminum and Aluminum Alloy Sheet and Plate.
 - 8. B221 Specification for Aluminum-Alloy Extruded Bars, Rods, Wires, Shapes, and Tubes.
 - 9. B308 Specification for Aluminum-Alloy 6061-T6 Standard Structural Shapes, Rolled or Extruded.
- C. American Iron and Steel Institute (AISI) Specification for the Design of Cold-Formed Steel Structural Members.
- D. Federal Specifications (FS): FF-S-325 Shield, Expansion, and Nail, Drive Screw (Devices, Anchoring, Masonry).

1.3 STRUCTURAL REQUIREMENTS

- A. Aluminum Slotted Framing: Comply with the following:
 - 1. Work shall remain rigid and free of vibration, sway, or excessive deflection under anticipated loads.
 - 2. Work shall safely support anticipated loads consisting of piping, service fixtures, and equipment (approximately 25 lbs./square foot).
- B. Anchoring Devices: Support dead load of framing system plus specified live loads with a safety factor of 2.5. The contractor shall be responsible for design of anchorage of Aluminum Slotted Framing System to existing concrete-filled metal deck and to partitions.

1.4 SUBMITTALS

- A. Comply with Section 013300 requirements.
- B. Shop Drawings/Product Data:
 - 1. Aluminum Slotted Framing System member size, weight/wall thickness, shape; kinds and locations of shop and field connections; fittings and accessories; support and anchorage; relation to building frame, floors, and walls; and other data necessary to fabricate, erect and coordinate work of affected trades.
 - 2. Anchorage to existing construction: Contractor shall design and submit proposed anchorage of Aluminum Slotted Framing System to existing concrete-filled metal deck and to partitions.

- C. Structural calculations signed and sealed by a structural engineer licensed in the State of New York. Calculations may include, but are not limited to:
 - 1. Description of design criteria.
 - 2. Stress and deflection analysis.
 - 3. Loads of Aluminum Slotted Framing System, including anticipated live loads described above, on existing building structure.
 - 4. Anchorage of Aluminum Slotted Framing System to heavy/cross laminated timber and concrete-filled metal deck, and partitions.

1.5 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 - 1. Work shall be done by a manufacturer regularly engaged in producing assemblies of the required kind and quality. He shall have the equipment, skilled workers, and capacity to accomplish the work and meet the Construction Schedule. He shall employ the services of a Professional Engineer, registered in the State of New York to design work to meet specified structural requirements.
 - 2. The manufacturer shall certify in writing that all components supplied have been produced in accordance with an established quality assurance program.
- B. Installer's Qualifications:
 - 1. Installer shall be authorized by framing system manufacturer with not less than 5 years' experience in the installation of systems of this size and complexity.
 - 2. All system components shall be supplied by a single manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 016000 requirements.
- B. All material is to be delivered to the work site in original factory packaging.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Fabricate work to field dimensions where possible. Where field measurements cannot be made without delaying work, make proper allowances for trimming and fitting. This provision does not relieve the Contractor of his responsibility for accurately fabricating and installing his work and fitting it to adjoining work.
- B. Confirmation of Adjacent Construction: Contractor shall field verify site conditions and adjacent construction to which Aluminum Slotted Framing System will be anchored.

1.8 SEQUENCING/SCHEDULING

- A. Coordinate delivery and installation of items required for support of other trades.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. All Aluminum Slotted Framing System components shall be manufactured by a single manufacturer: 1.5 Series by Bosch Rexroth (www.boschrexroth-us.com), or Aluminum Fractional T-Slotted Framing System, 80/20 Inc. Columbia City, IN 46725 (260-248-8030), or approved equal. Components shall be fabricated/assembled by Airline Hydraulics (www.airlinehyd.com) or approved equal.

2.2 MATERIALS

- A. Standard 4-slot (one per side) extrusions of 6105-T5 aluminum, 1-1/2" x 1-1/2", 1-1/2" x 3", and of other sizes as shown on drawings, or as needed to satisfy performance criteria, with a system of connectors, black polystyrene endcaps, black polystyrene slot covers, and zinc/steel fasteners. See drawings for size of assemblies, and lengths of extrusions required.
- B. Slotted Framing supports square clear anodized aluminum welded wire mesh panels, attached with mesh panel retainers (47065T198).
- C. Anchors:
 - 1. Expansion Shields: Fed. Spec. FF-S-325, Group I, Type I, Class 2, head-out multiple unit bolt expansion shield.
 - 2. Self-Threading Concrete Anchors: Buildex Tapcon Concrete Anchors or Ackerman Johnson Mascrus or approved equal, proof load 4x design load, suitable for driving into 4,000 psi concrete without concrete or anchor failure.

2.3 GENERAL FABRICATION REQUIREMENTS

- A. Make work neat, accurate, and free from defects that impair strength, function or appearance.

- B. Shear and punch work cleanly and accurately. Remove burrs. Ease sharp exposed edges.
- C. Make straight sections free of bow or camber. Make bends to constant radii.
- D. Make flush, tight, butt joints where not otherwise shown/specified. Locate joints where least conspicuous.
- E. Fit and trial assemble work in the shop. Permanently shop-assemble work into the largest section that meet shipping and field conditions. Use connections that maintain structural value of joined pieces.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Comply with Section 01 60 00 requirements.

3.2 INSTALLATION REQUIREMENTS

- A. Install work per approved shop drawings; square, level, plumb, and true; free from distortion; and in proper relation to adjoining work. Provide all anchoring devices necessary to secure work to building structure.
- B. Carefully fit and true work before joining and anchoring it. Make field joints and connections to standards specified for fabrication.
- C. Anchorage: Where not otherwise specified, anchor work as follows:
 - 1. To Structural Steel: Clamp, bolt or weld.
 - 2. To Hardened Concrete: Use expansion bolts. Shim and grout base plates.
 - 3. To Masonry: Use expansion shields and bolts or self-threading concrete anchors into solid masonry units/mortar filled cores and solid mortar joints, as required to carry loads.
 - 5. To Drywall Construction: Use flat-head toggle bolts into steel framing and steel anchor plates. Do not anchor work to unreinforced gypsum board.
 - 6. To Wood Construction: Use wood screws or through-bolts.

3.3 ADJUSTING, CLEANING, AND PROTECTION

- A. Correct nonconforming and damaged work. Replace work that cannot be repaired at the Project.
- B. Hand tool-clean field connections and coating abrasions per SSPC SP2.
- C. Protect work from damage and abuse.

END OF SECTION

SECTION 05 51 33 METAL LADDERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Prefabricated ladder to roof hatch in Mechanical Room ME202.

1.02 REFERENCE STANDARDS

- A. ANSI A14.3 - American National Standard for Ladders -- Fixed -- Safety Requirements; 2008 (Reaffirmed 2018).
- B. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
- C. ASTM B210/B210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes; 2019a.
- D. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.
- E. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.
- F. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).
- G. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014, with Errata (2020).

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 - 1. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 2. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

1.04 QUALITY ASSURANCE

- A. Design ladder under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located.
- B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than 12 months before start of scheduled welding work.

PART 2 PRODUCTS

2.01 MATERIALS - ALUMINUM

- A. Extruded Aluminum: ASTM B211/B211M, 6063 alloy, T6 temper.
- B. Sheet Aluminum: ASTM B209/B209M, 5052 alloy, H32 or H22 temper.
- C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210/B210M, 6063 alloy, T6 temper.
- D. Bolts, Nuts, and Washers: Stainless steel.

2.02 PREFABRICATED LADDERS

- A. Prefabricated Ladder: Welded metal unit complying with 29 CFR 1910.23 and ANSI A14.3; factory fabricated to greatest degree practical and in the largest components possible.
 - 1. Components: Manufacturer's standard rails, rungs, treads, handrails, returns, platforms and safety devices complying with the requirements of the MATERIALS article of this section.
 - 2. Materials: Aluminum; ASTM B211/B211M 6063 alloy, T52 temper.
 - 3. Finish: Mill finish aluminum.

4. Manufacturers:
 - a. O'Keeffe's Inc; Model 500: www.okeeffes.com.
 - b. Precision Ladders, LLC; Fixed Aluminium Wall Ladder: www.precisionladders.com.

2.03 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Perform field welding in accordance with AWS D1.1/D1.1M.
- D. Obtain approval prior to site cutting or making adjustments not scheduled.
- E. After erection, prime welds, abrasions, and surfaces not shop primed , except surfaces to be in contact with concrete.

3.03 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

**SECTION 05 52 13
PIPE AND TUBE RAILINGS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall mounted handrails.
- B. Stair railings and guardrails.

1.02 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.
- C. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.
- D. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2020.
- E. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.
- F. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021, with Errata (2023).
- G. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated within the previous 12 months.
- D. Designer's Qualification Statement.
- E. Fabricator's Qualification Statement.

1.04 QUALITY ASSURANCE

- A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located, or personnel under direct supervision of such an engineer.
- B. Fabricator Qualifications:
 - 1. A company specializing in manufacturing products specified in this section, with not less than ten years of documented experience.

PART 2 PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS

- A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.
- B. Allow for expansion and contraction of members and building movement without damage to connections or members.
- C. Dimensions: See drawings for configurations and heights.
 - 1. Top Rails and Wall Rails: 1-1/2 inches diameter, round.
 - 2. Posts: 1-1/2 inches diameter, round.
 - 3. Balusters: 1/2 inch square solid bar at exit stair.

4. Infill: stainless cabling at link stair.
- D. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
 1. For anchorage to concrete, provide inserts to be cast into concrete, for bolting anchors.
 2. For anchorage to masonry, provide brackets to be embedded in masonry, for bolting anchors.
 3. For anchorage to stud walls, provide backing plates, for bolting anchors.
- E. Provide slip-on non-weld mechanical fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.02 STEEL RAILING SYSTEM

- A. Steel Tube: ASTM A500/A500M Grade B cold-formed structural tubing.
- B. Steel Pipe: ASTM A53/A53M Grade B Schedule 80, painted. Color as selected by Architect.
- C. Non-Weld Mechanical Fittings: Slip-on, galvanized malleable iron castings, for Schedule 40 pipe, with flush setscrews for tightening by standard hex wrench, no bolts or screw fasteners.
- D. Exposed Fasteners: No exposed bolts or screws.

2.03 STAINLESS STEEL HANDRAIL

- A. Tubing: ASTM A554 Grade MT316
- B. Pipe: ASTM A312/A Grade TP316
- C. Handrail bracket: Provide cast-stainless steel wall brackets with flange tapped for concealed anchorage with vertical and horizontal adjustment capability.

2.04 FABRICATION

- A. Accurately form components to suit specific project conditions and for proper connection to building structure.
- B. Fit and shop assemble components in largest practical sizes for delivery to site.
- C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.
- D. Welded Joints:
 1. Exterior Components: Continuously seal joined pieces by intermittent welds and plastic filler. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
 2. Interior Components: Continuously seal joined pieces by intermittent welds and plastic filler.
 3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E. Weld connections that cannot be shop welded due to size limitations.
 1. Weld in accordance with AWS D1.1/D1.1M.
 2. Match shop welding and bolting.
 3. Clean welds, bolted connections, and abraded areas.
 4. Touch up shop primer and factory-applied finishes.
 5. Repair galvanizing with galvanizing repair paint per ASTM A780/A780M.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.
- C. Apply one coat of bituminous paint to concealed aluminum surfaces that will be in contact with cementitious or dissimilar materials.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- C. Install railings in compliance with ADA Standards for accessible design at applicable locations.
- D. Anchor railings securely to structure.
- E. Field weld anchors as indicated on drawings. Touch-up welds with primer. Grind welds smooth.
- F. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

**SECTION 05 73 00
DECORATIVE METAL RAILINGS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. **Cable Railing system at Connector Ramp**

1.02 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes; 2024.
- C. ASTM A554 - Standard Specification for Welded Stainless Steel Mechanical Tubing; 2021.
- D. ASTM A555/A555M - Standard Specification for General Requirements for Stainless Steel Wire and Wire Rods; 2023.
- E. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2023.
- F. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2020.
- G. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2021.
- H. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).
- I. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.
- J. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.
- K. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).
- L. AWS D1.6/D1.6M - Structural Welding Code - Stainless Steel; 2017, with Amendment (2021).
- M. NAAMM AMP 500-06 - Metal Finishes Manual; 2006.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene preinstallation meeting one week before starting work of this section. Attendees include:
 - 1. Contractor.
 - 2. Manufacturer's representative.
 - 3. Architect.
 - 4. Owner's representative.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, including description of materials, components, finishes, fabrication details, glass, anchors, and accessories.
- B. Shop Drawings: Indicate railing system elevations and sections, details of profile, dimensions, sizes, connection attachments, anchorage, size and type of fasteners, and accessories. Indicate anchor and joint locations, brazed connections, transitions, and terminations.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Samples: Submit one of each item below for each type and condition shown.
- D. Test Reports: Submit test reports from independent testing agency showing compliance with specified design and performance requirements.
- E. Manufacturer's Instructions: Indicate installation.
- F. Designer's qualification statement.

- G. Maintenance Data: Manufacturer's instructions for care and cleaning.
- H. Executed warranty.

1.05 QUALITY ASSURANCE

- A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located or personnel under direct supervision of engineer.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least three years of documented experience.
- C. Installer Qualifications:

1.06 MOCK-UPS

- A. Provide mock-up of railing system, 8 feet long, indicating each type of material, cladding, and finish.
- B. Locate where directed.
- C. Mock-up may remain as part of work.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in factory-provided protective coverings and packaging.
- B. Protect materials against damage during transit, delivery, storage, and installation at site.
- C. Inspect materials upon delivery for damage. Replace damaged items.
- D. Prior to installation, store materials and components under cover in dry location.

1.08 FIELD CONDITIONS

- A. Ambient Conditions:
 - 1. Do not install railings until project is enclosed and ambient temperature of space is minimum 65 degrees F and maximum 95 degrees F.
 - 2. Maintain ambient temperature of space at minimum 65 degrees F and maximum 95 degrees F for 24 hours before, during, and after railing installation.

1.09 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's standard 1-year warranty against defects in materials, fabrication, finishes, and installation commencing on mm-dd-yyyy; complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 RAILING SYSTEMS

- A. General: Factory- or shop-fabricated to suit project conditions, for proper connection to building structure, and in largest sizes practical for delivery to site.
- B. Performance Requirements: Applying loads simultaneously not required; design and fabricate railings and anchorages to resist loads without failure, damage, or permanent set, including:
 - 1. Lateral Force: 75 lb minimum, when tested in accordance with ASTM E935.
 - 2. Distributed Load: 50 lbf/ft minimum, applied vertically and horizontally at top of handrail, when tested in accordance with ASTM E935.
 - 3. Concentrated Loads: 200 lb minimum, applied to handrail horizontally and vertically, in accordance with ASTM E935.
- C. Assembly: Use slip-on, nonweld mechanical fittings, flanges, escutcheons, and wall brackets to join lengths, seal open ends, and conceal exposed mounting bolts and nuts.
- D. Joints: Machined smooth with hairline seams; tightly fitted and secured.
- E. Field Connections: Provide sleeves to accommodate site assembly and installation.
- F. **Post and Cable Railing System for Connector Ramp:**

1. **Configuration: Guardrail with separate handrail.**
2. **Stainless Steel Bar and Shape: Type 316 stainless steel.**
 - a. **Guardrail Post: 2"x2" square posts.**
3. **Cable: ASTM A555/A555M.**
 - a. **Fabricate from ASTM A666 stainless steel, Type 316.**
 - b. **Size: 3/16-inch diameter.**
4. **Fittings: Type 316 stainless steel, nonswage.**
5. **Fasteners: Stainless steel.**
6. **Finishes:**
 - a. **Exposed Stainless Steel Pipe and Tubing: No.4 satin finish.**
7. **Fabrication:**
 - a. **Corners: Mitered and welded; grind smooth to match adjacent finish.**
 - b. **Exposed Joints: Butt tight and flush.**
 - c. **Splices: Provide interior sleeves; fasteners allowed at splice connections.**
8. **Basis of Design Manufacturer:**
 - a. **SC&R Square Stainless Steel Cable View Railing System**

2.02 MATERIALS

- A. **Stainless Steel Components: ASTM A666, Type 304 or Type 316.**
 1. **Stainless Steel Tubing: ASTM A554, Type 304 or Type 316, 16-gauge, 0.0625-inch minimum metal thickness, 1-1/2-inch diameter.**
 2. **Stainless Steel Bars, Shapes and Moldings: ASTM A276/A276M, Type 304 or Type 316.**
- B. **Wood for Railings: Comply with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 7 - Stairwork & Rails, at manufacturer's standard grade.**
 1. **Species: Manufacturer's standard for exterior application, stained.**

2.03 FABRICATION

- A. **Welded and Brazed Joints: Make visible joints butt tight, flush, and hairline; use methods that avoid discoloration and damage of finish; grind smooth, polish, and restore to required finish.**
 1. **Ease exposed edges to small uniform radius.**
 2. **Welded Joints:**
 - a. **Stainless Steel: Perform welding in accordance with AWS D1.6/D1.6M.**

2.04 FINISHES

- A. **General: Comply with NAAMM AMP 500-06.**
 1. **Complete mechanical finishes before fabrication. After fabrication, finish joints, bends, abrasions, and surface blemishes to match sheet.**
 2. **Protect mechanical finishes on exposed surfaces from damage.**
 3. **Apply organic and anodic finishes to formed metal after fabrication.**
 4. **Appearance: Limit variations in appearance of adjacent pieces to one-half of range represented in approved samples. Noticeable variations in same piece are not acceptable. Install components within range of approved samples to minimize contrast.**
- B. **Stainless Steel Finishes:**
 1. **Directional Satin: No.4.**
 2. **Mirror-Like Reflective, Nondirectional Polish: No.8.**

2.05 ACCESSORIES

- A. **Welding Fittings: Factory- or shop-welded from matching pipe or tube; joints and seams ground smooth.**
- B. **Anchors and Fasteners: Provide anchors, fasteners, and other attachment devices required to attach to structure. Ensure attachment devices are of same material as components unless indicated otherwise.**
- C. **Sealant: Silicone; clear.**

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate and site conditions are acceptable and ready to receive work.
- B. Verify field dimensions of locations and areas to receive work.
- C. Notify Architect immediately of conditions that would prevent satisfactory installation.
- D. Do not proceed with work until detrimental conditions are corrected.

3.02 PREPARATION

- A. Review installation drawings before beginning installation. Coordinate diagrams, templates, instructions, and directions for installation of anchorages and fasteners.
- B. Clean surfaces to receive railings. Remove materials and substances detrimental to installation.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install components plumb and level, accurately fitted, free from distortion or defects, and with tight joints, except where necessary for expansion.
- C. Anchor securely to structure.
- D. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.
- E. Weld connections that cannot be shop welded due to size limitations.
 - 1. Weld in accordance with AWS D1.1/D1.1M.
 - 2. Match shop welding and bolting.
 - 3. Clean welds, bolted connections, and abraded areas.
 - 4. Touch up shop primer and factory-applied finishes.
 - 5. Repair galvanizing with galvanizing repair paint in accordance with ASTM A780/A780M.
- F. Isolate dissimilar materials with bituminous coating, bushings, grommets, or washers to prevent electrolytic corrosion.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per floor level, noncumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

3.05 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Manufacturer Services: Provide services of manufacturer's field representative to observe railing installation.

3.06 CLEANING

- A. Remove protective film from exposed metal surfaces.
- B. Metal: Clean exposed metal finishes with potable water and mild detergent in accordance with manufacturer recommendations; do not use abrasive materials or chemicals, detergents, or other substances that may damage material or finish.

3.07 PROTECTION

- A. Protect installed components and finishes from damage after installation.
- B. Repair damage to exposed, making finishes indistinguishable from undamaged areas.
- C. Replace finishes and components that have irreparable damage. Ensure damaged areas are indistinguishable from undamaged finishes and surfaces.

END OF SECTION

**SECTION 06 10 00
ROUGH CARPENTRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sheathing.
- B. Miscellaneous framing and sheathing.
- C. Communications and electrical room mounting boards.
- D. Concealed wood blocking, nailers, and supports.
- E. Miscellaneous wood nailers, furring, and grounds.

1.02 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
- B. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.
- C. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023c.
- E. AWPA U1 - Use Category System: User Specification for Treated Wood; 2023.
- F. PS 1 - Structural Plywood; 2023.
- G. PS 20 - American Softwood Lumber Standard; 2021.
- H. SPIB (GR) - Standard Grading Rules; 2021.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.
- C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
 - 2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).
- B. Sizes: Nominal sizes as indicated on drawings, S4S.
- C. Moisture Content: S-dry or MC19.
- D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
 - 2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

- A. Wall Sheathing: Glass mat faced gypsum, ASTM C1177/C1177M, 5/8 inch Type X fire resistant.
 - 1. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly.
 - 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - 3. Edges: Square.
 - 4. Products:
 - a. CertainTeed Corporation; GlasRoc Brand: www.certainteed.com.
 - b. Georgia-Pacific Gypsum; DensGlass Sheathing: www.gpgypsum.com.
 - c. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond eXP Fire-Shield Sheathing: www.goldbondbuilding.com.
 - d. USG Corporation; Securock Brand Glass-Mat Sheathing Regular 5/8 in. (15.9 mm): www.usg.com.
 - e. USG Corporation; Securock Brand Glass-Mat Sheathing Firecode SHX 5/8 in. (15.9 mm): www.usg.com.
- B. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.04 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
 - 2. Anchors: Toggle bolt type for anchorage to hollow masonry.

2.05 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWWA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 - 1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWWA standards.

PART 3 EXECUTION

3.01 PREPARATION

- A. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.
- C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.
- E. Provide the following specific nonstructural framing and blocking:
 - 1. Cabinets and shelf supports.
 - 2. Wall brackets.
 - 3. Handrails.
 - 4. Grab bars.
 - 5. Towel and bath accessories.
 - 6. Wall-mounted door stops.
 - 7. Chalkboards and marker boards.
 - 8. Wall paneling and trim.
 - 9. Joints of rigid wall coverings that occur between studs.
 - 10. Metal wall panels
 - 11. Lockers
 - 12. Display Cases

3.04 ROOF-RELATED CARPENTRY

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.
- B. Provide wood curb at each roof opening except where prefabricated curbs are specified and where specifically indicated otherwise; form corners by alternating lapping side members.

3.05 INSTALLATION OF CONSTRUCTION PANELS

- A. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
- B. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
 - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
 - 3. Install adjacent boards without gaps.

3.06 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.07 CLEANING

- A. Waste Disposal: See Section 01 74 19 - Construction Waste Management and Disposal.
 - 1. Comply with applicable regulations.
 - 2. Do not burn scrap on project site.

3. Do not burn scraps that have been pressure treated.
 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06 18 00

STRUCTURAL GLUED-LAMINATED TIMBER & CROSS-LAMINATED TIMBER (CLT) PANEL CONSTRUCTION

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. The other Contract Documents complement the requirements of this section. The General Requirements apply to this Section and applicable parts thereof shall be included in the work.
- B. Refer to all drawings and other Sections of the Specifications to determine the type and extent of work therein affecting the work of this Section whether or not such work is specifically mentioned herein.

1.02 SUMMARY OF WORK

- A. The Contractor under this section shall supply all materials, labor, equipment and appliances required to perform all the Structural Glued-Laminated (Glulam) Timber Framing Construction and Cross-Laminated Timber Panels Construction and related work necessary for the proper completion of the operation as required by the Contract Documents.
- B. Without limiting the generality thereof, the work shall include the following:
 - 1. Structural glued-laminated (Glulam) Timber for the Head Building Framing.
 - 2. Cross-Laminated Timber (CLT) Panels for the Head Building Floor and Roof Construction and Connecting Link Roof Construction.
 - 3. Blocking and nailers where indicated.
 - 4. Fasteners, anchors and attachments included.
 - 5. Structural glued-laminated (Glulam) Timber and Cross-Laminated Timber (CLT) Panel connectors.
- C. Related work is specified in, but not necessarily limited to, the following Sections of these Specifications. However, the contractor shall make his own determination of the extent of related work and of how said work affects the work of the Section:
 - 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
 - 2. Division 1 Section 01 45 33 "Code-Required Special Inspections and Procedures" for independent testing agency procedures and administrative requirements.
 - 3. Division 6 Section 06 10 00 "Rough Carpentry" for dimension lumber items associated with structural glued-laminated timber.
- D. Perform all Structural Glued-Laminated (Glulam) Timber work required to complete the work as shown on the drawings and as specified herein.
- E. Perform all Cross-Laminated Timber (CLT) Floor and Roof Panel work required to complete the work as shown on the drawings and as specified herein.

- F. Provide all labor, materials, staging, scaffolding, temporary bracing, crane, hoists, rigging, equipment and services necessary to perform the Work of this Section. The work includes but not necessarily limited to the following:
1. Structural Glued-Laminated (Glulam) Timber and Cross-Laminated Timber (CLT) component construction of every description, including but not limited to Framing Beams / Girders, girts, plates, braces, ties, purlins and webs and all floor and roof deck panel construction components.
 2. Miscellaneous hardware for Structural Glued-Laminated (Glulam) Timber and Cross-Laminated Timber (CLT) construction including but not limited to plate connectors and bolts.

1.03 DEFINITIONS

- A. Structural Glued-Laminated (Glulam) Timber: An engineered, stress-rated timber product assembled from selected and prepared wood laminations bonded together with adhesives and with the grain of the laminations approximately parallel longitudinally.
- B. Cross-Laminated (Glulam) Timber (CLT): An engineered, prefabricated stress graded engineered wood product made of at least three orthogonal layers of graded sawn lumber or structural composite lumber (SCL) that are laminated by gluing with structural adhesive.

1.04 ACTION SUBMITTALS

- A. Original drawings, prepared by Contractor, Subcontractor, supplier or distributor, which illustrate some portion of the work showing fabrication, layout, setting or erection details.
- Refer to Division 1, Section 01 30 00 - "Administrative Requirements" and information within this section for additional submittal requirements.
1. Identify details by reference to sheet and detail numbers shown on shop drawings.
 2. Sheet size, multiple of 8 ½ by 11 inches, not to exceed size of contract drawings when unfolded.
 3. **Photographic reproductions of contract drawings will NOT be accepted as shop drawings and will be REJECTED without review.**
- B. Portable Document Format (PDF) Files: All submittals required for this section (including, but not limited to, Product Data, Shop Drawings, Product Certificates, Welding Certificates, and Product Test Reports) shall be submitted to the A/E in "PDF" electronic format.
- C. Product Data: For each type of product.
1. Include data on lumber, adhesives, fabrication, and protection.
 2. For preservative-treated wood products. Include chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
 3. For connectors. Include installation instructions.
- D. Shop Drawings:
1. Submit Shop Drawings in accordance with contract procedures specified elsewhere. All Shop Drawings shall bear the seal of the professional engineer

registered in the State of New York responsible for the structural design of all items designed by the supplier.

2. Structural Glued-Laminated (Glulam) Timber:
 - a. Small scale plans and elevations showing all the layout of all members, all joints and methods of assembly. Shop Drawings shall include details for every member and connection and shall show lengths, angles of cut, connector plates, bolting patterns, etc.
 - b. Indicate species and laminating combination.
 - c. Include large-scale details of connections.
 3. Cross-Laminated Timber (CLT):
 - a. All dimensions; material grades (stress designations); Panel Thickness; appearance grades; Panel Layup; shop applied finishes; fabrication and erection details including cuts, holes, fastenings, and camber; and connection details, hardware, materials, sizes, and finishes.
 - b. Indicate species and laminating combination.
 - c. Include large-scale details of connections.
- E. Samples: Full width and depth, 24 inches long, showing the range of variation to be expected in appearance of structural glued-laminated timber and Cross-Laminated Timber (CLT) Panels, including variations due to specified treatment.
1. Apply specified factory finish to three sides of half-length of each Sample.
 2. Submit representative samples of wood species indicated, of the grade and finish specified, for Architect's review and acceptance.
 3. 12" x 12" sample of CLT material.
- F. Delegated Design Submittal: For structural glued-laminated timber and associated timber connectors; and Cross-Laminated Timber (CLT) and associated CLT connectors.
1. All designs shall provide the required stability and resistance to gravity loads, wind and seismic loads.
 2. Shop Drawings: Submit Shop Drawings in accordance with contract procedures specified elsewhere. All Shop Drawings shall bear the seal of the professional engineer registered in the State of New York responsible for the structural design of all items designed by the supplier.
 3. Connections shall be designed by a Professional Engineer licensed in the State of New York retained by the Timber Fabricator and experienced in the design of Mass Timber / CLT Connections. Drawings and Calculations of components designed by the Mass Timber Fabricator shall be signed and sealed by the Professional Engineer licensed in the State of New York. Unless otherwise noted on the Contract Drawings, the Professional Engineer shall design and provide connections based on the minimum shear capacity required in the Tables within the Contract Drawings for the member sizes selected.
- G. No materials shall be fabricated prior to the review and acceptance of the Shop Drawings by the Architect and Structural Engineer.

1.05 INFORMATIONAL SUBMITTALS

- A. Certificates of Conformance: Issued by a qualified testing and inspecting agency indicating that structural glued-laminated timber complies with requirements in ANSI A190.1.

- B. Product Certificates: Signed by material manufacturers certifying that products furnished comply with requirements.
- C. Material Certificates: For preservative-treated wood products, from manufacturer. Indicate type of preservative used and net amount of preservative retained.
- D. Research/Evaluation Reports: For structural glued-laminated timber and timber connectors], from ICC-ES.
- E. Welding Certificates: Copies of certificates for welding procedures and personnel as applicable.
- F. Field quality-control test and inspection reports.

1.06 QUALITY ASSURANCE

- A. The requirements of the New York State Building Code establish the minimum acceptable quality of workmanship and materials, and all work shall conform thereto unless more stringent requirements and indicated or specified by the Contract Documents.
- B. Installer Qualifications: An experienced installer who has completed steel deck similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: An AITC- or APA-EWS-licensed firm certified for chain of custody by an FSC-accredited certification body.
- D. Vendor Qualifications: A vendor that is certified for chain of custody by an FSC-accredited certification body.
- E. Cross-Laminated Timber (CLT) Panels shall comply with ANSI/APA PRG 320 Standard for Performance-Rated Cross-Laminated Timber.
- F. Product marking: CLT panels shall be identified with a tag or stamp indicating layup, mill name, approved agency, and the symbol of ANSI/APA PRG 320.
- G. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
- H. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."
- I. Fire-Test-Response Characteristics: Where indicated, provide members identical to those members tested for fire resistance per ASTM E 119 by a testing and inspection agency acceptable to authorities having jurisdiction.
 - 1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another testing and inspecting agency.

1.07 PROTECTION, DELIVERY, STORAGE, AND HANDLING

- A. All materials for the work of this Section shall be delivered, stored and handled so as to preclude damage of any nature. Accessibility to site provided by owner.
- B. General: Comply with provisions in AITC 111.
- C. Protect materials and keep covered in transit at all times and at the jobsite. Stack to ensure proper ventilation and drainage. Store under cover in a well ventilated area.
- D. All materials shall be stored level on the site and shall be raised off the ground, stacked using separating spacers, and covered with waterproof material. In the case of wrapped members, the wrapping shall be slit on the underside to prevent accumulation of condensation.
- E. Members that will be exposed to view in the finished building shall be handled using nylon or fabric slings to prevent surface damage.
- F. Individually wrap members using plastic-coated paper covering with water-resistant seams.
- G. Affix authorized label to all panels and members supplied. Identify each panel or member with a mark number.
- H. Keep CLT panels dry and protected from damage during delivery and storage. Store off of the ground and covered.

1.08 GUARANTEE

- A. All workmanship and materials shall be guaranteed in accordance with the provisions in the General Conditions.
- B. AITC or APA/EWS Conformance Certificate required.
 - 1. In the absence of a Conformance Certificate, a notarized guarantee in writing from the manufacturer is required.
- C. The furnishing of the guarantee shall be a condition precedent to final payment.

1.09 PROJECT CONDITIONS

- A. Existing Conditions:
 - 1. The Contractor shall refer to Division 1 general project requirements and the Contractor's responsibility there under.

1.10 COORDINATION AND MEASUREMENTS

- A. The General Contractor is responsible for coordinating edge of deck (E.O.D.) and edge of opening dimensions and locations with the requirements of all Trades, information contained within the Contract Documents for all Trades and existing conditions.
- B. The General Contractor shall obtain and verify all measurements and conditions at the building as required for the proper installation of his work. He shall be responsible for the accuracy and fit of the various parts of his work and the proper building-in of same and coordination of all the other trades.

- C. The Field Erector of the Structural Glued-Laminated (Glulam) Timber materials must visit the site before start of installation to check out site conditions, general lay-out and verify the site is ready to receive materials.
- D. Field measure and verifying that any structural framing that supports the Cross-Laminated Timber (CLT) Panels are in the correct location, alignment, and at the proper elevation. The Contractor shall not proceed with work until unsatisfactory conditions have been corrected in an acceptable manner. Commencement of erection implies acceptance of conditions.

PART 2 - PRODUCTS

2.01 GENERAL

- A. All Structural Glued-Laminated (Glulam) Timber materials for a complete and erected installation shall be supplied by a qualified manufacturer with 5 years or more experience with projects of similar scale and scope.
- B. All structural Cross-Laminated Timber (CLT) Panel materials for a complete and erected installation shall be supplied by a qualified manufacturer with 5 years or more experience with projects of similar scale and scope.
- C. Certified Wood: All Wood shall be certified as FSC Pure or FSC Mixed Credit according to FSC STD-01-00 and FSC STD-40-004 or SFI Certified. All wood shall be free of added formaldehyde and meet ANSI A190.1.
- D. For all Structural Glued-Laminated (Glulam) Timber and Cross-Laminated timber (CLT) Panel materials, provide an Environmental Product Declaration (EPD) that includes the following:
 - 1. Product Category rule.
 - 2. Declared Unit.
 - 3. System Boundary.
 - 4. Global Warming Potential/Baseline Value.
- E. Environmental Product Declarations: Maximize permanently installed products with EPDs that meet the following criteria:
 - 1. Product-Specific, Facility Specific Type III EPD: EPD conforming to ISO 14025 and EN 15804 or ISO 21930 with at least a cradle to gate (A1-A3) scope, third-party certification (Type III), that is manufacturing plant specific, including external verification and external critical review in which the manufacturer is explicitly recognized as the participant by the program operator.
 - 2. EPDs shall be unexpired at time of product procurement.

2.02 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Division 01 Section "Quality Requirements," to design structural glued-laminated timber framing members and associated connections and Cross-Laminated Timber (CLT) Panels and associated CLT connectors.
 - 1. Refer to Article 1.04 "ACTION SUBMITTALS" for additional requirements.
- B. Structural Performance: Structural glued-laminated timber framing members and associated connections and Cross-Laminated Timber (CLT) Panels and associated

connectors are to be engineered to withstand the effects of structural loads shown on Drawings and / or as governed by dead loads, local live loads and applicable building codes without exceeding allowable design working stresses listed in ANSI 117 or determined according to ASTM D3737 and acceptable to authorities having jurisdiction.

- C. Seismic Performance: Structural glued-laminated timber framing members and Cross-Laminated Timber (CLT) Panels and associated connectors are to withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- D. For structural glued-laminated timber framing members and associated connections and Cross-Laminated Timber (CLT) Panels and associated CLT connectors: All designs shall provide the required stability and resistance to gravity loads, wind and seismic loads.

2.03 STRUCTURAL GLUED-LAMINATED (GLULAM) TIMBER & CROSS-LAMINATED TIMBER (CLT) PANELS

- A. General: Provide structural glued-laminated timber that complies with ANSI A190.1 and ANSI 117 or research/evaluation reports acceptable to authorities having jurisdiction.
 - 1. Factory mark each piece of Structural Glued-laminated Timber framing members with AITC Quality Mark or APA-EWS trademark. Place mark on surfaces that are not exposed in the completed Work.
 - 2. Product marking: Cross-Laminated Timber (CLT) panels shall be identified with a tag or stamp indicating layup, mill name, approved agency, and the symbol of ANSI/APA PRG 320.
 - 3. Provide Structural Glued-laminated Timber framing members and Cross-Laminated Timber (CLT) panels made from single species.
 - 4. Provide structural glued-laminated timber made from solid lumber laminations; do not use laminated veneer lumber.
 - 5. Provide structural glued-laminated timber made with wet-use adhesive complying with ANSI A190.1.
 - 6. Fabrication for all components must be in compliance with APA permitted tolerances.
 - 7. Exposed edges of the Structural Glued-laminated Timber framing members shall have a 1/4" radius eased edge unless special chamfer is required.
 - 8. Splicing and joining in locations as shown on the drawings or as required by the delegated design, whichever is more stringent.
 - 9. All members to be fabricated in accordance with specification and approved shop drawings.
 - 10. All lumber shall be graded and governed by grading rules of the Western Grading Rules Association. Lay-up of lumber for laminating governed by APA certification.
 - 11. Adhesive: AITC 405.
 - 12. Appearance Classification: Architectural where exposed as defined in AITC 110.
 - 13. Sealer: Per manufacturer's standard – to be transparent and compatible with finish.
 - 14. Any Substitutions must be submitted and approved by the Architect / Engineer in advance
 - 15. Refer to Notes and information on the Contract Drawings for additional information.

- B. Protective sealers and finishes: unless otherwise specified, one coat of clear sealer shall be applied on architectural face:
1. Materials, Manufacture and Quality Control of glu-lam and CLT shall be in conformance with the following:
 - a. "American National Standard of Wood Products-Structural Glued Laminated Timber ANSI/AITC A190.1-2012, inspected by APA.
 - b. ANSI/APA PRG 320-2012: Standard for Performance-Rated Cross-Laminated Timber.
- C. **GENERAL BASIS OF DESIGN - Species and Grades for Structural Glued-Laminated Timber:**
1. See Article 2.05.A GLUED-LAMINATED (GLULAM) BEAM / COLUMN MANUFACTURE, Available Manufacturer used for the "BASIS OF DESIGN".
 2. Southern Pine in grades needed to comply with "Performance Requirements" Article.
 3. Southern pine that complies with structural properties, combination symbols, and beam stress classifications indicated.
 4. Any Substitutions must be submitted and approved by the Architect / Engineer in advance.
 5. Refer to Notes and information on the Contract Drawings for additional information.
- D. **BASIS OF DESIGN - Species and Grades: For Structural Glued-Laminated Timber girders and beams.**
1. See Article 2.05.A GLUED-LAMINATED (GLULAM) BEAM / COLUMN MANUFACTURE, Available Manufacturer used for the "BASIS OF DESIGN".
 2. Species and Beam Stress Classification: Visually Graded Southern Pine (Outer / Core), 24F-1.8E (Fb = 24,000 psi; E = 1,800,000 psi).
 3. Combination Symbol: 24F-V3.
 4. Unbalanced Layup.
 5. Standard Depths in Standard Lamination Thickness = 1 3/8".
 6. Appearance Classification: Architectural where exposed as defined in AITC 110.
 7. Any Substitutions must be submitted and approved by the Architect / Engineer in advance.
 8. Refer to Notes and information on the Contract Drawings for additional information.
- E. **BASIS OF DESIGN - Species and Grades: For Structural Glued-Laminated Timber Columns.**
1. See Article 2.05.A GLUED-LAMINATED (GLULAM) BEAM / COLUMN MANUFACTURE, Available Manufacturer used for the "BASIS OF DESIGN".
 2. Species and Stress Classification: Visually Graded Southern Pine.
 3. Combination Symbol: 47 1:8.
 4. Uniform Grade Layout: N2M.
 5. Standard Depths in Standard Lamination Thickness = 1 3/8".
 6. Appearance Classification: Architectural where exposed as defined in AITC 110.

7. Any Substitutions must be submitted and approved by the Architect / Engineer in advance.
 8. Refer to Notes and information on the Contract Drawings for additional information.
- F. **BASIS OF DESIGN - Appearance Grade: Architectural, complying with AITC 110.**
1. For Architectural appearance grades, fill voids as required by AITC 110.
 2. Refer to Notes and information on the Contract Drawings for additional information.
- G. **BASIS OF DESIGN - Species and Grades: For Cross-Laminated Timber (CLT) Floor and Roof Panels.**
1. See Article 2.06.A CROSS-LAMINATED TIMBER (CLT) MANUFACTURER, Available Manufacturer used for the "BASIS OF DESIGN".
 2. Combination Symbol: V3-SYP.
 3. Lumber Species:
 - a. Longitudinal Layers: Visually Graded No. 2 Southern Yellow Pine.
 - b. Transverse Layers: Visually Graded No. 3 Southern Yellow Pine.
 4. Density (at 12% MC): 36.3 lb per cubic Ft.
 5. Specific Gravity (G): 0.55
 6. Fc (Perpendicular): 565 psi
 7. Standard Depths in Standard Lamination Thickness = 1 3/8".
 8. Moisture content: at the time of manufacturing, moisture content of lumber shall be 12% +/- 3%.
 9. Appearance Classification: Architectural as defined in AITC 110.
 10. Any Substitutions must be submitted and approved by the Architect / Engineer in advance.
 11. Refer to Notes and information on the Contract Drawings for additional information.

2.04 PRESERVATIVE TREATMENT

- A. Preservative Treatment: Where preservative-treated structural glued-laminated timber is indicated, comply with AWP A U1 and as follows:
1. Categories:
 - a. Category 1: Use where only protection from insects is required.
 - b. Category 2: Use for Damp Conditions.
 - c. Category 3A: Use for Exterior Conditions where the wood is painted or coated.
 - d. Category 3B: Use for Exterior Conditions where the wood is NOT painted or coated
 - e. Category 4A: Use for ground contact in other-than-severe environments.
 2. If glued-laminated timber is to receive a finish, use preservative solution without water repellents or substances that might interfere with application of indicated finishes. Water repellents and oil-borne treatments may interfere with application of water-based finishes.

3. For Southern Pine, do NOT incise structural glued-laminated timber or wood used to produce structural glued-laminated timber.
- B. Preservative:
1. As indicated in AWP A U1, for aboveground use with southern pine and is a water repellent that does not discolor wood and can be used in contact with agricultural food products.
 - a. Oxine copper (copper-8-quinolinolate) in a light petroleum solvent.
 2. As listed in AWP A U1 for ground contact and aboveground use with southern pine. It does not discolor wood but can only be used on the interior of a building where it is in ground contact and then it requires two coats of urethane, shellac, latex epoxy enamel, or varnish sealer.
 - a. Pentachlorophenol in light petroleum solvent.
 3. As listed in AWP A U1 for aboveground use with southern pine.
 - a. Propiconazole tebuconazole imidacloprid (PTI) in a water emulsion.

2.05 STRUCTURAL GLUED-LAMINATED (GLULAM) BEAM / COLUMN MANUFACTURER

- A. Available Manufacturer: Subject to compliance with requirements, the available BASIS OF DESIGN manufacturer offering products that may be incorporated into the Work include, but is not limited to, the following. Any Substitutions must be submitted and approved by the Architect / Engineer in advance.
1. BASIS OF DESIGN - Structural Glued-laminated Timber Beams / Girders and Columns:
 - a. UNALAM: 18 Clifton St, Unadilla, NY; Phone: 607-369-9341.
 - b. SMARTLAM, North America: Dothan Alabama Plant;
1371 Hodgesville Rd, Dothan, AL
Phone: 334-661-4056

2.06 CROSS-LAMINATED TIMBER (CLT) MANUFACTURER

- A. Available Manufacturer: Subject to compliance with requirements, the available BASIS OF DESIGN manufacturer offering products that may be incorporated into the Work include, but is not limited to, the following. Any Substitutions must be submitted and approved by the Architect / Engineer in advance.
1. BASIS OF DESIGN – Cross Laminated Timber (CLT) Floor and Roof Deck Panels:
 - a. SMARTLAM, North America: Dothan Alabama Plant;
1371 Hodgesville Rd, Dothan, AL
Phone: 334-661-4056

2.07 GLUED-LAMINATED (GLULAM) TIMBER CONNECTIONS

- A. Available 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. Simpson Strong-Tie Co.
 - 2. Cleveland Steel Specialty Co.
 - 3. FastenMaster.
 - 4. GRK Fasteners
- B. Fabricate beam seats from steel with minimum 3/8-inch bearing plates, minimum 3/4-inch- diameter-by-12-inch-long deformed bar anchors, and minimum 0.3/8-inch side plates or as shown on Drawings.
- C. Fabricate beam hangers from steel with minimum 0.179-inch stirrups and 0.239-inch top plates or as shown on Drawings.
- D. Fabricate strap ties from steel, minimum 3 inches wide by 0.239 inch thick or as shown on Drawings.
- E. Fabricate tie rods from round steel bars with upset threads connected with forged-steel turnbuckles complying with ASTM A668/A668M or as shown on Drawings.
- F. Provide bolts, 3/4 inch unless otherwise indicated, complying with ASTM A307, Grade A; nuts complying with ASTM A-563 and, where indicated, flat washers or as shown on Drawings.
 - 1. Zinc coated for interior applications
 - 2. Unpainted hot dipped galvanized for exterior applications.
- G. All lags to be in conformance with ANSI/ASME Standard B18.2.1-1981.
- H. All holes in steel to be identified as required.
- I. Provide shear plates, minimum 4 inches in diameter, complying with ASTM D5933 or as shown on Drawings.
- J. Interfacing with structural steel subcontractor including exchange of respective shop drawings.
- K. Materials: Unless otherwise indicated, fabricate from the following materials or as shown on Drawings:
 - 1. Structural-steel shapes, plates, and flat bars complying with ASTM A36/A36M.
 - 2. Round steel bars complying with ASTM A575, Grade M 1020.
 - 3. Hot-rolled steel sheet complying with ASTM A1011/A1011M, Structural Steel, Type SS, Grade 33.
- L. Finish steel assemblies and fasteners with rust-inhibitive primer, 2-mil dry film thickness.
- M. Hot-dip galvanize steel assemblies and fasteners after fabrication to comply with ASTM A123/A123M or ASTM A153/A153M.

- N. Screws: FlatLOK by FastenMaster; RSS structural screws by GRK; SD series screws by Simpson Strong-tie.

2.08 CROSS-LAMINATED TIMBER (CLT) CONNECTIONS

- A. Available 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. Simpson Strong-Tie Co.
 2. FastenMaster.
 3. GRK Fasteners.
- B. Screws: FlatLOK by FastenMaster; RSS structural screws by GRK; SD series screws by Simpson Strong-tie.
- C. Panel anchors: ABR105; ABR9020; AE116 by Simpson Strong-tie.

2.09 MISCELLANEOUS MATERIALS

- A. End Sealer: Manufacturer's standard, transparent, colorless wood sealer that is effective in retarding the transmission of moisture at cross-grain cuts and is compatible with indicated finish.
- B. Penetrating Sealer: Manufacturer's standard, transparent, penetrating wood sealer that is compatible with indicated finish.

2.10 FABRICATION

- A. Shop fabricate for connections to greatest extent possible, including cutting to length and drilling bolt holes:
1. Dress exposed surfaces as needed to remove planing and surfacing marks.
- B. Camber: Fabricate horizontal and inclined members of less than 1:1 slope with either circular or parabolic camber equal to 1/500 of span.
- C. Where preservative-treated members are indicated, fabricate (cut, drill, surface, and sand) before treatment to greatest extent possible. Where fabrication must be done after treatment, apply a field-treatment preservative to comply with AWPA M4.
1. Use inorganic boron (SBX) treatment for members not in contact with the ground and continuously protected from liquid water.
- D. End-Cut Sealing: Immediately after end cutting each member to final length (and after preservative treatment if required), apply a saturation coat of end sealer to ends and other cross-cut surfaces, keeping surfaces flood coated for not less than 10 minutes.
- E. Seal Coat: After fabricating, sanding, and end-coat sealing, apply a heavy saturation coat of penetrating sealer on surfaces of each unit (except for preservative-treated wood where treatment included a water repellent).
- F. Cross-Laminated Timber (CLT) panels shall be fabricated in strict conformance to approved shop drawings. Fabrication prior to receipt of approved shop drawings shall be at the Contractor's risk.

- G. Cross-Laminated Timber (CLT) panels shall be fabricated to join tightly and in proper alignment.

2.11 FACTORY FINISHING

- A. The requirements for providing a “Factory Finish” shall be coordinated with the Architectural Requirements.

Interior glulam can be finished in a variety of architectural coatings when not exposed to weather.

Care should be taken when specifying a finish for glulam used in exterior applications or subject to frequent or long-term moisture.

Verify availability of all finishes with the selected manufacturer.

Available Options are as follows:

- B. Clear Finish: Manufacturer's standard, resistant to mildew and fungus.
1. Water repellent.
 2. Film-forming two-coat: varnish or urethane to be coordinated with Architectural requirements.
- C. Semitransparent Stain Finish: Manufacturer's standard oil-based stain, resistant to mold and fungus
1. Color: As selected by Architect from manufacturer's full range of choices.
- D. Solid-Color Stain Finish: Manufacturer's standard [**oil-based**] [**latex**] penetrating stain, resistant to mildew and fungus.
1. Color: As selected by Architect from manufacturer's full range of choices.
- E. Painted Finish: Acrylic latex system.
1. Prime Coat: Stain blocking primer as recommended by topcoat manufacturer.
 2. Intermediate Coat: Matching topcoat.
 3. Topcoat: High-performance architectural coating that are available include low sheen, eggshell, satin & semigloss. Final decision shall be coordinated with the Architectural Requirements.
 4. Color: As selected by Architect from manufacturer's full range of choices.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates in areas to receive structural glued-laminated timber, with Installer present, for compliance with requirements, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Installation of members shall be in accordance with the details and notes on the Drawings, the approved Shop Drawings, code requirements and the best trade practices.
 - 1. Prior to fabrication, check all dimensions relating to this section of work. Report any discrepancies to Engineer and Architect.
 - 2. Prior to site erection, examine all site conditions to ensure an acceptable condition.
 - 3. Field installation by an experienced installer with a minimum 5 years' experience. Standard industry erection procedures must be followed. Use properly industry rated nylon slings for all lifts.
 - 4. Erect members in accordance with approved shop drawings.
 - 5. Erect decking in accordance with the drawings in a single- or multiple-span continuous pattern as indicated on the drawings (no controlled random pattern).
 - 6. When possible, stagger end joints in adjacent planks over supports. Fasten planks to supports and adjacent courses as shown in the drawings. When the underside of the deck is to have an architectural appearance, particular care must be taken when fastening the decking to supports or to adjacent planks, and when fastening other miscellaneous framing to the wood decking, that fasteners do not penetrate through the full thickness of the decking.
 - 7. Members must be properly braced and kept plumb and with uniform, close-fitting joints until the complete structural system has been constructed. Provide temporary bracing to maintain lines and levels until permanent supporting members are in place. The erection contractor's engineer shall ensure that all structural lumber and connections will sustain any erection loadings that may occur with an adequate factor of safety.
 - 8. Handle and temporarily support glued-laminated timber to prevent surface damage, compression, and other effects that might interfere with indicated finish.
 - 9. In the event of circumstances resulting in improper fit of members, a moderate amount of slight modification may be necessary. Report incident immediately to seller, Architect, and Engineer, and obtain approval of the method of correction prior to making any modifications. Site cutting or boring of structural wood members, other than shown on shop drawings, is not permitted without written consent of Engineer.
- B. Cutting: For shop fabricated members, avoid extra cutting after fabrication. Where field fitting is unavoidable, comply with requirements for shop fabrication.

- C. If members are not shop fabricated, fit structural glued-laminated timber by cutting and restoring exposed surfaces to match specified surfacing and finishing.
 - 1. Predrill for fasteners using timber connectors as templates.
 - 2. Finish exposed surfaces to remove planing or surfacing marks and to provide a finish equivalent to that produced by machine sanding with No. 120 grit sandpaper.
 - 3. Coat cross cuts with end sealer.
 - 4. Where preservative-treated members must be cut during erection, apply a field-treatment preservative to comply with AWPA M4.
 - a. Use inorganic boron (SBX) treatment for members not in contact with the ground and continuously protected from liquid water.
- D. Install timber connectors as indicated:
 - 1. Unless otherwise indicated, install bolts with same orientation within each connection and in similar connections.
 - 2. Install bolts with orientation as indicated or, if not indicated, as directed by Architect.

3.03 ADJUSTING

- A. Repair damaged surfaces and finishes after completing erection. Replace damaged structural glued-laminated timber if repairs are not approved by Architect.

3.04 PROTECTION

- A. Do not remove wrappings on individually wrapped members until they no longer serve a useful purpose, including protection from weather, sunlight, soiling, and damage from work of other trades.
 - 1. Provide moisture protection plan for storing, transportation and erection.
 - 2. Coordinate wrapping removal with finishing work. Retain wrapping where it can serve as a painting shield.
 - 3. Slit underside of wrapping to prevent accumulation of moisture inside the wrapping.
- B. If wrapping cannot be removed upon completion of installation phase, it becomes the responsibility of the general contractor to arrange to remove wrapping when the wrapping no longer serve a useful purpose, including protection from weather, sunlight, soiling and damage from work of other trades.

3.05 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports. Refer to Section 014533 "Code-Required Special Inspections and Procedures" for additional information.
- B. If required, field welds will be subject to inspection.

- C. If required, testing agency will report test results promptly and in writing to Contractor and Architect.
- D. If required, remove and replace work that does not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

END OF SECTION

SECTION 06 40 23
ARCHITECTURAL WOODWORK

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the architectural woodwork as shown on the drawings and/or specified herein, including, but not limited to, the following:
 - 1. Wood paneling and millwork with wood veneers.
 - 2. Wood millwork and counters with plastic laminate finish.
 - 3. Hardware for architectural woodwork.
 - 4. Wood shelving.
 - 5. Solid surfacing material countertops.
 - 6. Wood framing and rough lumber as required for work of this Section.
 - 7. Wood grounds, blocking, nailers, furring as required for work of this Section.
 - 8. All rough hardware and fastenings for work of this Section.
 - 9. Drilling concrete and masonry, drilling and/or tapping metal work, as required, for the installation of work of this Section.
 - 10. Back painting as specified herein.
 - 11. Shop finish of work of this Section, except items indicated herein to be shop primed only.
 - 12. Chair rails, corridor benches, and display cases.

1.3 RELATED SECTIONS

- A. Carpentry - Section 06 20 00.
- B. Caulking between architectural woodwork and any wall, floor, or ceiling joints - Section 079200.
- C. Field finishing of architectural woodwork - Section 099000.

1.4 QUALITY STANDARDS

- A. The quality standards of the Architectural Woodwork Institute, "Architectural Woodwork Standards" (AWS), 2nd Edition, dated July 1, 2016, shall apply to all workmanship, including materials and installation, for architectural woodwork, and by reference are made a part of this specification. All work shall conform to "Premium" grade requirements of the AWS unless otherwise modified herein.
- B. In the event of a dispute as to the quality grade (or grades), the Contractor shall call upon the Architectural Woodwork Institute for an inspection under AWI's Quality Certification Program which shall include a QCP Inspection and Report. The Contractor agrees to abide by the decision of this Report. The cost of said inspection and report shall be borne by the Contractor.

- C. Employ only tradesmen experienced in the fabrication and installation of architectural woodwork.
- D. Woodworking firm must be accredited by the AWI Quality Certification Program (QCP).

1.5 SUBMITTALS

- A. Shop Drawings
 - 1. Submit shop drawings of all woodwork specified and indicated on the drawings. Shop drawings shall indicate room plans and elevations at 3/4" equals 1'-0" scale and typical construction details at 3" equals 1'-0" scale. Shop drawings shall indicate all materials, thicknesses and finishes.
 - 2. Shop drawings shall show all finish hardware, anchors, fastenings and accessories.
 - 3. Shop drawings shall show all jointing, joint treatment and butt jointing in veneers and plastic laminate.
 - 4. Shop drawings for cabinet work must show centerline height and horizontal location of all required internal wall blocking.
 - 5. Where architectural woodwork deviates from AWI standards noted herein, shop drawings must identify these deviations.
- B. Samples: Submit samples of each of the following items:
 - 1. Plastic laminate, twelve (12) inches square, including a section of outside corner.
 - 2. Transparent finish for each species of wood veneer laminated to particleboard, twelve (12) inches square, for each finish specified or shown.
 - 3. Opaque finish wood veneer laminated to particleboard, twelve (12) inches square for each color, gloss and finish specified or shown.
 - 4. Cabinet hardware.

1.6 QUALIFICATIONS

- A. The work of this Section shall be provided by a firm having a minimum of five (5) years' experience on projects of similar size and quality to that specified and shown.

1.7 COORDINATION

- A. Coordinate the work of this Section with other appropriate Sections of the specifications to ensure proper scheduling for fabrication and installation of the work specified herein.
- B. Coordinate with partition and finish trades to ensure that proper provisions are made for the installation of the work specified herein.
- C. Verify all dimensions in the field prior to fabrication of all Architectural Woodwork to ensure proper fit.

1.8 PRODUCT HANDLING

- A. All materials and work of this Section shall be protected from damage from time of shipment from shop to final acceptance of work. Cover, ventilate, and protect work of this Section from damage caused by weather, moisture, heat, staining, dirt, abrasions, any other causes which may adversely affect appearance or use, or which may cause deterioration of finish, warping, distortion, twisting, opening of joints and seams, delamination, loosening, etc., of work of this Section.
- B. Keep all finish carpentry, millwork, and cabinet work under cover both in transit and at the premises. Do not deliver any finish carpentry, millwork or cabinet work before it is required for installation. Protect such work to avoid damage in transit, during erection and after erection until acceptance of the building; use all such methods to provide the proper protection. Remove such protection when directed by the Architect.
- C. Deliver finish carpentry, millwork, and cabinet work in a dry stable condition; protect same against injury and dampness. Do not store or install finish carpentry, millwork or cabinet work until after the concrete, masonry and plaster work are thoroughly dry.
- D. Damaged or defective items of work of this Section are subject to rejection and replacement with new by Contractor, at no cost to Owner.

1.9 JOB CONDITIONS

- A. Humidity Controls: The ambient relative humidity at the site, including both the storage and the installation areas, shall be maintained between 25% and 55% prior to delivery and through the life of the installation.

- B. Determine equilibrium moisture content and maintain required temperature and relative humidity as required for a tolerance of plus or minus one (1) percent of the specified optimum moisture content until woodwork receives specified finishes. Refer to "Guide to Wood Species Selection," AWI, for method of determining equilibrium moisture content values.
- C. Examination of Substrate and Conditions: The installer must examine the substrate and the conditions under which the work of this Section is to be performed and notify the Contractor in writing of unsatisfactory conditions. Do not proceed with work under this Section until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.
- D. Areas to receive architectural woodwork must be fully enclosed with windows and/or curtain wall installed and glazed, exterior doors in place, HVAC systems operational, and temporary openings closed. Any plaster, wet grinding and concrete work shall be fully dry.
- E. Architectural woodwork shall be allowed to come to equilibrium on site for 7 days prior to installation.

PART 2 PRODUCTS

2.1 BASIC REQUIREMENTS

- A. Wood Moisture Content: Provide kiln-dried (KD) lumber with an average moisture content range of nine (9) to twelve (12) percent for exterior work and six (6) to eleven (11) percent for interior work.
- B. Measurements: Before proceeding with woodwork required to be fitted to other construction, obtain field measurements and verify all dimensions of shop drawing details as required for accurate fit.
- C. Compatibility of Grain and Color: Architect reserves the right to select materials for best compatibility between visually related members and veneers.
- D. Machine and sand woodwork to comply with requirements of Standards for specified grade.
- E. Fabricate woodwork to dimensions, profiles and details shown. Rout or groove back of flat trim members, kerf backs of other wide flat members except plywood or veneered members.
- F. Miter joints by joining, splining and gluing to comply with requirements for the specified grade.
- G. Inspect each piece of lumber and plywood or each unit of woodwork after drying; do not use twisted, warped, bowed or otherwise damaged or defective wood.

2.2 GENERAL - MATERIALS

- A. Softwood lumber shall conform to the requirements of the latest edition of American Lumber Standards Simplified Practice Recommendation R-16. Grades shall conform to the grading rules of the Association having jurisdiction and shall bear the official grade and trademark of the Inspection Bureau of the Association and a mark of mill identification.
- B. Framing and Rough Lumber: No. 1 KD grade Southern Pine or Dense Construction grade Douglas Fir, having extreme fiber in bending stress of at least 1700 psi, surfaced four sides (S4S). Provide fire retardant treatment meeting requirements of Section 062000.
- C. Grounds, Blocking, Nailers, Furring: Southern Pine, Douglas Fir or Sitka Spruce, grade to suit particular purpose and to be straight, square edged, straight grained, surfaced four sides (S4S), and which will retain nails and screws without splitting. Provide fire retardant treatment.
- D. Wood Veneers and Lumber: Provide AWI Premium Grade materials and workmanship. For species not listed in the AWS comply with the following:
 - 1. Provide AWS Lumber Grade Premium and AWS Grade AA Veneer, book-matched, minimum 6-inch face veneer width. Kiln dry to 6-8 percent moisture content. Components shall be free of defects and sapwood. Match adjacent pieces for color and grain pattern.

2. Single-Source Requirement for Wood Veneers and Solids: Intent is to provide wood which matches as closely as possible throughout the project. Provide wood veneers and solids from the same distributor, and from the same flitches and solids sources to the greatest extent possible.
- E. Lumber: AWS Section 3 with the following requirements:
 1. Hardwood for Transparent Finish: Premium Grade, select species and cut to match adjoining veneers, unless otherwise shown or specified, and free from cat's eyes, bird's eyes, burls, curls, or cross grains.
 2. Hardwood for Opaque Finish: Any hardwood which, when finished, will not show any grain, imperfection or other surface defects when used with the opaque finish specified.
- F. Plywood: AWS Section 4; veneer core, particleboard or plywood core unless otherwise specified, and with the following requirements:
 1. Hardwood: Premium Grade, face veneers as shown or specified.
 2. Particleboard: Premium Grade, fire retardant for wall paneling only equal to Duraflake FR and Duraflake for cabinets. Particleboard shall be certified to meet EPP CPA 3-08 formaldehyde emission limit of 0.18 ppm and contain no added formaldehyde resins.
 3. Medium-Density Fiberboard (MDF): Conforming to ANSI A208.2, Grade 130 and ANSI MR10 moisture-resistant properties on 5/8" or thicker board. MDF shall be certified to meet EPP CPA 3-08 formaldehyde emission limit of 0.21 ppm and contain no added formaldehyde resins.
 4. Edges: Banded with hardwood in accordance with Premium Grade Standards.
- G. Wood Species and Cut for Transparent Finish: Quarter sliced/sawn, species as selected by the Architect.
 1. Architect's control samples for transparent finish, veneer grain and figure characteristics are available for review at the office of the Architect.
- H. Veneer Matching Requirements:
 1. Matching Between Adjacent Veneer Leaves: Book match and architectural end match.
 2. Matching Within Individual Panel Faces: Balance and Center Match.
 3. Method of Matching Panels: Blueprint-matched panels and components.
- I. Finishing (Wood)
 1. Transparent Finish
 - a. AWI Factory Finish System "Conversion Varnish, System 5, Transparent."
 - b. AWI Premium Grade.
 - c. Stain: As selected by the Architect.
 - d. Degree of Sheen: Dull satin.
 2. Opaque Finish
 - a. AWI Factory Finish System "Conversion Varnish, System 5, Opaque."
 - b. AWI Premium Grade.
 - c. Degree of Sheen: Satin.
 - d. No grain to show.

2.3 PLASTIC LAMINATE

- A. Face Sheets: NEMA Publication LD3, Grade GP50, Type I, 0.05" thick, as manufactured by Formica, Nevamar, WilsonArt. Color, pattern and finish as selected by the Architect.
- B. Backing Sheets: Non-decorative, high-pressure plastic laminate, NEMA LD3, Grade BK20, 0.02" thick.
- C. Edges: Finish with plastic laminate to match face and applied before face sheets are applied, unless otherwise shown or specified.

2.4 METAL

- A. Steel
 1. Structural Steel Shapes and Plates: ASTM A 36.
 2. Hot-Rolled Carbon Steel Sheets: Commercial quality, ASTM A 569, may be used for concealed parts only. Galvanize sheets for planters.

- B. Primer for Unexposed Metal: Zinc chromate primer.

2.5 MISCELLANEOUS PRODUCTS

- A. Fasteners
 1. Wood Screws: FS FF-S-111, type, size, material and finish as required for the condition of use.
 2. Nails: FS FF-N-105, type, size, material and finish as required for the condition of use.
 3. Anchors: Type, size, material and finish as required for the condition of use.
 4. Staples: Upholstery type staples of sufficient strength to hold fabric taut in place without sagging.
- B. Adhesives
 1. For Laminating Plastic Laminate Surfaces: Urea resin, Type II, as recommended by fabricator.
 2. For All Other Uses: Polyvinyl acetate resin emulsion or other type as recommended by the fabricator.

2.6 CABINETS WITH PLASTIC LAMINATE FINISH

- A. General
 1. Fabricate all cabinetry and millwork to the "Premium Grade" standards of the AWS, Section 10.
 2. Face construction of cabinets shall be "Flush Overlay."
 3. Provide 3/4" thick doors, drawer fronts and fixed panels (including thickness of plastic) except where required to be thicker by Standards; and provide flush units.
 4. Provide dust panels of 1/4" thick plywood or tempered hardboard above compartments and drawers, except where located directly below countertops.
 5. Exposed Edges: Plastic laminate matching exposed panel surfaces. Ease exposed edge of overlap sheet.
- B. Plastic Laminate
 1. Plastic Laminate for Horizontal Surfaces: 0.050" thick, general purpose type (high pressure).
 2. Plastic Laminate for External Vertical Surfaces: 0.028" thick, general purpose type (high pressure).
 3. Plastic Laminate for Post Forming: 0.042" thick, post forming (high pressure).
 4. Plastic Laminate for Cabinet Linings: 0.020" thick, cabinet liner (high pressure).
 5. Plastic Laminate for Concealed Panel Backing: 0.020" thick, backer type (high pressure).
 6. Plastic Laminate Colors and Patterns: As selected by the Architect from manufacturer's standard satin finish products.
- C. Shop Assembly: All work shall be shop assembled. Work that is too large for entrance into the use area shall be fabricated in attachable sections with provisions for reconnection in the using space.
- D. Material Thicknesses: See drawings for general material thicknesses. Minimum thickness of solid lumber for web frames, trim, bases, etc., shall be 3/4". Minimum thickness of plywood and particleboard shall be 3/4".
- E. Sizes: See drawings for woodwork sizes required. The manufacturer shall check field dimensions and verify all openings and actual field conditions prior to fabrication of work.
- F. Manufacturer is responsible for rigidity and structural stability.

2.7 STANDARDS AND BRACKETS

- A. Aluminum components by Rakks or approved equal as follows:
 1. Wall Standards: C-Standard and D Standard.
 2. Pole components.
 3. Brackets: Rakks Signature Brackets
 4. Shelf Support Brackets.

2.8 PLASTIC LAMINATE COUNTERTOPS AND VANITIES

- A. Grade: Same as AWI grade required for cabinet work; plastic laminate finish.

- B. Construction
 - 1. Provide back-splash and end-splash, where detailed; top-mounted square butt joint, fully covered with matching plastic laminate, eased edges.
 - 2. Exposed Counter Edges: Plastic laminate matching surface, except as otherwise indicated. Ease exposed edges of overlap sheet.
 - 3. Cut openings for equipment to be installed. Comply with equipment manufacturer's requirements but provide internal corners of 1/8" minimum radius. Smooth saw cut and ease edges.
 - 4. Seal cut edges of counter at openings for sinks and other "wet" equipment, using waterproofing compound recommended by plastic manufacturer and compatible with laminating adhesive.

2.9 BUILT-IN CABINETS, WOODWORK WITH WOOD VENEER FINISH

- A. Construction: Details of cabinet and woodwork construction shall conform to design as detailed on the drawings and shall be constructed in accordance with AWS Section 10, Premium Grade.
- B. Finishing: All work shall be factory pre-finished. No field finishing will be permitted, except minor retouching that is necessary after installation to leave work in perfect condition. Field touch-up shall be accomplished using the same finishes as originally applied at the factory. All finishes shall be free from runs, sags and other visual defects. All wood shall be thoroughly hand smoothed and hand sanded to remove all traces of machine and tool marks. All steel or other metal components shall be deburred, thoroughly cleaned and degreased prior to finishing. Requirements for surface preparation shall be in accordance with AWI Standards specified. Surfaces shall be finished as follows:
 - 1. Wood Species and Cut for Exposed Surfaces: As specified hereinabove.
 - a. Grain Direction: Vertically for drawer fronts, doors, and fixed panels.
 - b. Matching of Veneer Leaves: Book match.
 - c. Vertical Matching of Veneer Leaves: End match.
 - d. Veneer Matching within Panel Face: Running match.
 - e. Veneer Matching within Room: Provide casework veneers in each room or other space from a single flitch with doors, drawer fronts, and other surfaces matched in a sequenced set with continuous match where veneers are interrupted perpendicular to the grain.
 - 2. Semi-Exposed Surfaces: Provide surface materials indicated below:
 - a. Surfaces Other Than Drawer Bodies: Compatible species to that indicated for exposed surfaces, stained to match.
 - b. Drawer Sides and Backs: Solid-hardwood lumber, stained to match species indicated for exposed surfaces.
 - c. Drawer Bottoms: Hardwood plywood.
 - 3. All wood veneer surfaces shall be given transparent finish as specified herein.
 - 4. Backing Veneer: Provide backing veneer, of same thickness and strength as face veneer for balanced construction, where plywood surface not exposed, not semi-exposed, or not to be finished. Note that interior surface of cabinets, closets, are to be finished.
- C. Edge Banding: All visible edges of case and body members fabricated from plywood shall be banded. Transparent finished wood veneer panels shall be banded with wood species to match face veneers.

2.10 HARDWARE

- A. Architectural Woodwork Hardware: Provide the following items, or their approved equal, as required:
 - 1. Hinges: Hafele concealed hinges.
 - 2. Catches: Magnetic; top and bottom.
 - 3. Pulls: Selected by the Architect.
 - 4. Locks: Directed by the Architect.
 - 5. Drawer Slides

- a. 24" Maximum Width: Accuride, Model 7434, full extension, 100 lb. capacity.
 - b. 16" Maximum Width, Easy Close: Accuride Model 3832C, full extension, 100 lb. capacity.
- 6. Shelf Supports: Pin and grommet system equal to No. 282.01.701 pin and 282.50.704 grommet made by Hafele.
- 7. Finish: Satin stainless steel.
- B. Closet Hardware: Oval wardrobe rails, chrome-plated steel with center bracket and wall-support brackets made by Hafele or approved equal.
- C. **Pivot Door Hardware: Blumcraft 1301-SM by CR Lawrence, stainless steel pivot glass display hinges and Blumcraft stainless steel narrow profile glass display door top and bottom frame, stainless steel cam locks and stops.**

2.11 SOLID SURFACING MATERIAL COUNTERTOPS

- A. Provide 1/2" thick "Corian" countertops, with integral bowls where indicated, as manufactured by E.I. DuPont or approved equal made by Avonite, WilsonArt, or Gibraltar meeting standards specified herein. Countertops shall be of color as selected by the Architect.
- B. Material: Cast, filled, acrylic; not coated, laminated or of composite construction, meeting ANSI Z124-1980, Type Six, and ISS FA-2.01 "Classification and Standards Publication of Solid Surfacing Material" as published by the International Solid Surface Fabricators Association (ISSFA).
- C. Countertops shall be adhesively joined with no exposed seams, having edge details shown on drawings.
- D. Material shall conform to the published performance characteristics of ISSFA-2-01.
- E. Joint Adhesive: Manufacturer's standard two-part adhesive kit to create inconspicuous, non-porous joints.
- F. Sealant: Manufacturer's standard mildew-resistant, FDA/UL recognized silicone sealant in colors matching components.
- G. Fabrication
 - 1. Fabricator must be approved by the solid surface manufacturer.
 - 2. Factory fabricate components to custom sizes and shapes indicated, in accordance with approved shop drawings.
 - 3. Form joints between components using manufacturer's standard joint adhesive; without conspicuous joints.
 - 4. Provide factory cutouts for plumbing fittings and accessories as indicated on the drawings.
 - 5. Cut and finish component edges with clean, sharp returns. Route radii and contours to template. Repair or reject defective and inaccurate work.
- H. Warranty: The manufacturer shall warrant to the Owner that the manufacturer will repair or replace (at his/her option), without charge, such product that fails because of a manufacturing defect during the first 10 years after initial installation. This includes all labor charges needed to repair or replace the product covered hereunder.

2.12 FABRICATION

- A. Provide lumber framing for architectural woodwork, complete with all bracing and fastening devices as required for a rigid installation, and as required to sustain the imposed loads.
- B. Do all fabrication from field measurements with provision for scribing as required to meet built-in conditions.
- C. Coordinate the work of this Section with the work of other trades.
- D. Fabricate units in largest practicable sections. Assemble in the shop for trial fit, disassemble for shipment and reassemble with concealed fasteners.
- E. Maintain relative humidity and temperature during fabrication, storage and finishing operations matching that of the areas of installation.

- F. Details indicate the required type and quality of construction. Modifications to conform to manufacturer's standards will be considered provided that they comply with the Contract Documents and maintain the profiles shown, subject to acceptance by the Architect.
- G. Reinforcing shown is minimum. Provide additional reinforcing as required to ensure a rigid assembly. Exposed surfaces shall be free from dents, tool marks, warpage, buckle, glue and open joints, or other defects affecting serviceability or appearance. Accurately fit all joints, corners and miters. Conceal all fasteners. Make threaded connections up tight so that threads are entirely concealed.
- H. Factory finish all items where possible. Defer final touch-up, cleaning and polishing until after delivery and installation.
- I. Comply with AWI, Premium Grade, for sanding, filling countersunk fasteners, back priming and similar preparations for the finishing of architectural woodwork, as applicable to each unit of work.
- J. Prepare all countersunk wood screw attachments for wood plugs. Wood plugs shall match surrounding species and grain direction; putty filling is not acceptable.
- K. Millwork
 - 1. Include all preparations for mechanical, electrical, telephone and plumbing work required.
 - 2. Provide cabinet hardware for millwork as shown.
 - 3. Provide dust panels in body webs and between drawer units.
 - 4. Provide wood veneers for exposed surfaces as specified herein before.
 - 5. Hollow core doors will not be permitted.
 - 6. Provide matching veneers for edge treatments of case body members where transparent finishes are indicated or specified.
 - 7. Provide drawers with slides as specified. Drawers shall not rest on web body frames.
 - 8. Provide wood veneers for transparent finish, of matching and continuing grain, for drawer and door edges.
- L. Closet and Storage Shelving
 - 1. Provide closet and storage shelving in accordance with AWI, Custom Grade, unless otherwise shown or specified.
 - 2. Exposed edges shall have hardwood edge bands.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where architectural woodwork is to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 FRAMING

- A. Use specified framing lumber, sizes and spacing as indicated on drawings and as required to support loads.
- B. Framing shall be cut square on bearings, closely fitted, accurately set to required lines and levels, rigidly secured in place at bearings and connection with nails, lag screws and/or bolts as required by conditions.

3.3 GROUNDS, BLOCKING, NAILERS, AND FURRING

- A. Provide all wood grounds, blocking, nailers, furring, and the like for work of this Section, where shown and where required, dressed to size indicated or required to suit the condition. Install grounds, blocking, nailers, furring, etc., rigidly, in proper alignment, trued with a long straight edge.

3.4 ROUGH HARDWARE

- A. Provide all rough hardware, such as nails, screws, bolts, anchors, hangers, clips and similar items. Hardware shall be of the proper size and kind to adequately secure the work together and in place, in a rigid and substantial manner. Use galvanized hardware at

exterior walls, and at other locations where subject to moisture or where water will be present.

- B. Secure wood to concrete and to solid masonry with countersunk bolts in expansion sleeves or other approved manner, to steel with countersunk bolts, to hollow masonry and to drywall with heavy duty countersunk toggle bolts. Space fastenings not more than sixteen (16) inches apart. Hardened cut nails, power-driven fastenings, or other suitable devices may be used where approved by the Architect.
- C. Connections and fastenings shall be made in such manner as will compensate for swelling and shrinkage and shall permit the work to remain permanently in place without any splitting or opening of joints.

3.5 INSTALLATION OF CABINET FINISH HARDWARE

- A. All items of finish hardware furnished under this Section shall be carefully fitted and secured in place as part of the work of this Section. Locations and positioning of hardware shall be subject to the Architect's approval. Care shall be taken not to mar or damage hardware, or other work. Install doors plumb and true. Hardware shall be fitted to ensure operation without forcing.
- B. After preliminary fitting of hardware, the Contractor shall remove trim for painting and finishing work; after which he shall reinstall the hardware in a permanent manner.
- C. Upon completion of the work, before final acceptance of the building by the Owner, the Contractor shall, in the presence of the Architect, show that all hardware is in satisfactory working order; fit all keys in their respective locks and, upon acceptance of the work, shall tag and deliver all keys to the Architect and Owner.
- D. When directed by the Owner, at any time during the first year after the completion of the Contract, the Contractor shall return to the building and adjust and refit the work and hardware and leave such items in satisfactory working order.

3.6 GENERAL INSTALLATION

- A. Wall anchorage and general installation procedures for cabinetry work shall conform to AWS Section 10, Article entitled "EXECUTION," Sub-Article 6.1, with all related sub-paragraphs.
- B. Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level (including countertops), and with 1/16" maximum offset in flush adjoining surfaces, 1/8" maximum offset in revealed adjoining surfaces.
- C. Scribe and cut work to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.
- D. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation.

3.7 CLOSET AND STORAGE SHELVING

- A. Provide closet and storage shelving at the locations shown. Provide hang rods where shown. Set adjustable center hangers.

3.8 CABINET WORK AND MILLWORK

- A. General
 - 1. Materials and workmanship shall conform to the Quality Standards of the Architectural Woodwork Institute specified herein and to the drawings.
 - 2. Cabinet work and millwork shall be performed by an experienced cabinet work and millwork company, having craftsmen skilled in their trade.
 - 3. Fabricate all cabinet work and millwork completely in the shop, in complete and/or as large units as practical, leaving only fitting, assembly, installation and a minimum of fabrication and finishing to be done at the building. Assembled work shall be rigidly secured and permanently fastened together with concealed fasteners.
 - 4. Afford Architect every facility for inspection of work at shop or mill at such times as the Architect may select.

5. As far as practicable, use concealed fastenings for joining and assembling the work. Where this is impossible, the means of securing shall be placed in inconspicuous places and methods of joining and assembling submitted for Architect's approval prior to fabrication.
 6. Mill all finish wood accurately to detail, with clean cut moldings, profiles and lines, machined, sanded smooth, housed, jointed, blocked, put together in the best manner, with provision for swelling and shrinkage, and to ensure the work remaining in place without warping, splitting or opening of joints.
 7. Cut trim to dimensions and profiles shown, from solid stock.
 8. Make all trim and the like in single lengths wherever possible; joints mitered, glued and splined. Continuous members shall have tight flush joints, doweled or splined and glued.
 9. Make all joints hairline tight, fitted accurately and joined with hardwood splines or dowels, glued together, or by other method approved by Architect. Use screws, not nails, for fastenings.
 10. Gluing shall, where practicable, be by the hot plate press method and glued surfaces shall be in close contact throughout. Glue stains on finished work will not be permitted.
 11. Cover surface fastenings, where permitted, with matching wood plugs or wood putty. Finish exposed edges of plywood with matching solid stock. Lock miter external corners; tongue and groove internal corners to allow for contraction and expansion.
 12. Machine sand with grain, finish with hand sanding, leave exposed surfaces free from machine or tool marks that will show through the finish.
 13. Work which adjoins drywall, concrete, or other finish shall be fitted and scribed in a careful manner and ample allowance shall be given for cutting and scribing.
 14. Erect work true to lines, levels and dimensions, square, aligned and plumb, securely and rigidly fastened in place.
- B. Cabinet Work: Provide all items of cabinet work indicated on drawings and as herein specified.
1. Tops, sides, backs, bottoms, dividers, shelves, fronts, doors and drawer fronts shall be of plywood or flakeboard core, with the specified wood veneer or plastic laminate as indicated on drawings.
 2. Drawer sides and backs shall be 1/2" thick solid clear selected white birch, suitable for clear finish. Drawer bottom shall be 3/8" thick plywood with clear selected white birch veneers, suitable for clear finish.
 3. Cabinet doors and drawers shall be flush mounted.
 4. Adjustable shelves in cabinets shall have grommets spaced 2" o.c.
 5. Fixed shelves shall be dadoed into side supports and glued.
 6. Shelves shall be 3/4" thick for spans up to 30"; for spans in excess of 30" to 48" shelves shall be 1" thick.
 7. All cabinets shall have closed top, sides, bottom, and back with veneers to match face work. Cabinets to fit accurately into indicated locations; scribe moldings permitted only where indicated.
 8. Countertops, counters, counter fronts, shelves, etc., indicated on drawings to have plastic laminate, shall have plastic laminate shop applied to 3/4" thick core, with plastic laminate backing sheet on underside or back of countertops, counters and shelves. Plastic laminate shall be pressure laminated to core with laminate at external corners. Provide concealed wood framing to support plastic laminate counters, securely fastened to wall and to underside of counters.
- C. Countertops shall be installed to support a minimum concentrated live load of 150 lbs. acting downward at mid span at outer edge of counter without causing deformation and damage.

3.9 PAINTING AND FINISHING

- A. General: All painting and finishing work of this Section shall be shop applied, unless otherwise noted, as specified below. All painting and finishing shall match approved samples. Field finish painting, where specified below, shall be by painting Subcontractor, as specified for in Painting Section.
- B. Back-Painting: All work of this Section in contact with concrete or masonry or other moisture areas and all concealed surfaces of cabinet and millwork, shall be back-painted with one (1) coat of oil-based paint prior to installation, shop applied where practicable.
- C. Field Touch-Up: Field touch-up shall be the responsibility of the installing Subcontractor and shall include the filling and touch-up of exposed job made nail or screw holes, refinishing of raw surfaces resulting from job fitting, repair of job inflicted scratches and mars, and final cleaning up of the finished surfaces.

3.10 CLEAN UP AND PROTECTION

- A. Clean Up: At regular intervals during the course of the work, all debris and excess material shall be cleaned up and removed from the site. Upon completion of installation, clean all spaces of debris caused by woodwork installation.
- B. Protection: Protect all woodwork from marring, defacement or other damage until final completion and acceptance of the project by the Owner. Repair or replace all defective units prior to final inspection as directed by the Architect. Any units that cannot be satisfactorily repaired in the opinion of the Architect shall be replaced with new units of same original design, at no additional cost to the Owner.

END OF SECTION

SECTION 06 40 24
LABORATORY CASEWORK

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

- A. The Contract Forms, and Conditions of the Contract as provided by the Construction Manager, and applicable parts of Division 1 - GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Clear finish, full overlay, architectural wood laboratory and miscellaneous casework including but not limited to fixed laboratory base cabinets, movable and/or adjustable height tables, tall storage cabinets, wall cabinets, desk units, ventilated and OSHA cabinets, wall shelving on standards and brackets, fillers, and countertop supports.
 - 2. Casework countertops of molded epoxy resin, stainless steel, butcher block and of plastic laminate with clear finish and stained wood edges.
 - 3. Casework hardware.
 - 4. Shop applied casework finishes.
 - 5. Molded epoxy resin bench sinks.
 - 6. Laboratory service fixtures and fittings.
 - 7. Cylinder strap holders.
 - 8. Clear finish and stained trim.
 - 9. Metal laboratory furniture, regent shelf supports, umbilicals, stainless steel shelving, suspended exhaust snorkels, scullery and pantry sinks, flammable storage cabinets, appliances, stainless steel corner guards, and other purchased laboratory furniture and equipment not specified elsewhere.
 - 10. Painted insulated wood "step-in" coolers.
 - 11. Shop applied metal finishes.
 - 12. Blocking, nailers, furring, grounds, rough hardware, and accessories necessary to install architectural woodwork.
- B. Related Sections:
 - 1. Submittal Procedures – Section 01 33 00.
 - 2. Product Requirements – Section 01 60 00.
 - 3. Carpentry - Section 06 20 00.
 - 4. Caulking between architectural woodwork and any wall, floor, or ceiling joints - Section 07 92 00.
 - 5. Glass and Glazing - Section 08 80 00.
 - 6. Painting and Finishing - Section 09 90 00
 - 7. Visual Display Surfaces – Section 10 11 00.
 - 8. High Performance Laboratory Fume Hoods - Section 11 53 13.
 - 9. Plumbing – Division 22.
 - 10. Heating, Ventilating and Air Conditioning - Division 23.
 - 11. Electrical - Division 26.
 - 12. Communications – Division 27.

1.3 REFERENCES

- A. The following standards are cited in this Section. They govern the work of this Section only to the extent specified in each citation.
- B. Architectural Woodwork Institute (AWI): "Quality Standards" of AWI shall apply and by reference are hereby made part of this Section. References to Premium in the Specification shall be as defined in the latest edition of the AWI Quality Standards. Any item not given a specific quality grade shall be premium.

- C. U.S. Department of Commerce Commercial Standards (CS): CS236-66 Mat-Formed Wood Particleboard.
- D. U.S. Product Standards (PS):
 - 1. PS 1, Construction and Industrial Plywood.
 - 2. PS 20, American Softwood Lumber Standard.
 - 3. PS 51, Hardwood and Decorative Plywood.
 - 4. PS 58, Basic Hardwood.
- E. American National Standards Institute (ANSI):
 - 1. A156.9-82 Cabinet Hardware.
 - 2. A156.11 Cabinet Locks.
 - 3. A208.1-79 Mat-Formed Particleboard.
- F. Federal Specifications (FS):
 - 1. FF-N-105B (3) Nails, Brads, Staples, and Spikes: Wire, Cut, and Wrought.
 - 2. FF-S-325 Shield, Expansion, and Nail, Drive Screw (Devices, Anchoring, Masonry).
- G. National Electrical Manufacturers Association (NEMA): LD3-1980 High Pressure Decorative Laminates.

1.4 PERFORMANCE REQUIREMENTS

- A. Counters, low case tops, and stools shall support a 200-pound concentrated load at mid-span without noticeable springiness or finish/trim separation or overstress of anchorage or supports. Railings shall be designed to resist loads per Connecticut State Building Code.
- B. Work shall accommodate changes in temperature and humidity without separation of joints, warping, binding of moving parts, wood veneer delamination, or overstress.

1.5 SUBMITTALS

- A. Comply with Section 013000 requirements.
- B. Shop Drawings: Shall be prepared by the manufacturer of the architectural woodwork, and shall:
 - 1. Show dimensioned plans, elevations, profiles, and full or large-scale details. Identify details and key them to elevations.
 - 2. Show relation to adjoining construction, including (but not limited to) provisions for fitting and trimming work to accommodate allowable tolerances in adjoining construction. Identify structural support furnished and installed under this and other Sections.
 - 3. Show construction of all parts of the work: Materials, thickness, and finishes; joining methods; details of field connections and anchorage; and provisions for moisture and thermal movement.
 - 4. Show other information necessary to establish conformance to specified requirements and to fabricate, install, and coordinate work with affected trades.
- C. Product Data: Manufacturers printed, descriptive data and catalog cuts for cabinet hardware, fume hoods, service fixtures and other manufactured items.
- D. Samples:
 - 1. Transparent-finished Wood Veneer: See PART 1: QUALITY ASSURANCE.
 - 2. Transparent and stain finished Lumber Samples: Duplicate pairs of finished lumber of each species and cut. Each pair shall show the extremes of the range of variable appearance characteristics of lumber proposed for production work.
 - 3. High-Pressure Decorative Laminate Samples: Two 2 x 3-inch (min.) size samples for each NEMA grade/color/pattern/finish combination.
 - 4. Finished custom shelf bracket.
 - 5. Surfacing materials: Two 4" x 4" (min) size for each type.
 - 6. All casework hardware.
- E. Certificates:
 - 1. Fire Retardant-Treated Wood: Treater's certificate and Contractor's affidavit for treated wood products.

1.6 QUALITY ASSURANCE

- A. Woodworker Qualifications: Work shall be done by a pre-qualified architectural woodworker regularly engaged in fabricating, shop-finishing, and installing custom woodwork of the kind and quality required for the Project. The Architect reserves the right to approve the manufacturer selected to produce laboratory casework.
 - B. Transparent-Finished Wood for Exposed Surfaces:
 - 1. Display: Collect and display a leaf sample of the specified veneer from which the Architect can select wood veneers for transparent-finished work. Make finished samples from Architect-selected veneers.
 - 2. Samples: Submit duplicate pairs of transparent-finished veneered panels. Each panel shall be 24 x 24 inches or larger, as required to show veneer face panel assembly. Each pair of panels shall show extremes of the range of variable appearance characteristics proposed for production work. Similarly, submit duplicate pairs of 6" x 2" x 24" transparent finished solid wood.
- 1.7 DELIVERY, STORAGE, AND HANDLING**
- A. Comply with Section 01 60 00 requirements.
 - B. Do not deliver products until storage and installation areas are dry enough to eliminate damage caused by excessive moisture and changes in moisture content.
 - C. Deliver products in closed vans. Bundle loose materials to prevent loss and damage.
 - D. Store products in a clean, protected space in the Project, under specified environmental conditions.
- 1.8 PROJECT CONDITIONS**
- A. Environmental Conditions: HVAC system shall be operating and ambient occupancy conditions attained.
 - B. Adjoining Work: Constructed to specified tolerances and where applicable, to guaranteed dimensions.
 - C. Field Measurements: Fabricate work to field measurements. If field measurements cannot be made without delaying the Work, the Contractor shall provide guaranteed dimensions and coordinate work of affected trades/Sections to assure proper execution of adjoining work. The casework manufacturer is responsible for details and dimensions that result from field conditions and shall indicate on shop drawings all required field measurements.
- 1.9 SEQUENCING/SCHEDULING**
- A. The Woodwork Contractor shall coordinate delivery and installation of products furnished and/or installed under the work of this and other Sections/trades so that:
 - 1. Locations of anchor plates, openings, and recesses for architectural woodwork are provided in time to be incorporated in drywall construction.
 - 2. Access shall be provided for installation and testing of electrical work built into or concealed by architectural woodwork.

PART 2 - PRODUCTS

2.1 APPROVED CASEWORK MANUFACTURERS

- A. Wood casework shall be manufactured by, and other products of this section shall be the responsibility of:
 - 1. Mott Manufacturing LLC, represented by Spencer-Virnoche, 7900 Davis Road North, Clay, NY 13041 (315-698-0171).
 - 2. CIF Lab Solutions, represented by NEIS Collective, 7701 Maltlage Drive, Liverpool, NY 13090 (315-944-1390).
 - 3. BedcoLab, represented by Jeff Anderson (303-434-9949).

2.2 LUMBER MATERIALS

- A. Hardwood Lumber: PS 58; clear and free from defects; graded in accordance with AWI requirements; maximum moisture content of 6 percent; of the following species and grade for transparent finish:
 - 1. Exposed exterior parts: Clear Northern White Maple, AWI Lumber Grade I.
 - 2. Semi-exposed parts: Clear Northern White Maple, AWI Lumber Grade II.

2.3 SHEET MATERIALS

- A. Hardwood Lumber Core Plywood: Balanced 5-ply construction consisting of a solid hardwood staved core, hardwood cross plies, and hardwood face veneers, glued with water-resistant resin adhesives. Lumber core shall comply with product standards of PS 51 and ANSI/HPMA HP 1983, with veneers of the following species, grade and face veneer cuts for transparent finish:
 - 1. Exposed exterior parts: Clear Northern White Maple, AWI face grade AA.
 - 2. Semi-exposed parts: Clear Northern White Maple, AWI face grade A.
- B. Hardwood Veneer Core Plywood: Balanced 7-ply (min.) construction consisting of 5-ply (min.) hardwood veneer core plywood and hardwood face veneers, glued with water resistant resin adhesives. Veneer core shall comply with product standards of PS 51 and ANSI/HPMA HP 1983; with veneers of the species, grade and face veneer cuts as described above for hardwood lumber core plywood.
- C. Particleboard Core Plywood: Balanced 3-ply construction consisting of 45-pound density particleboard core and hardwood face veneers glued with water resistant resin adhesives. Particleboard core shall comply with product standards of PS 51 and ANSI/HPMA HP 1983; with veneers of the species, grade and face veneer cuts as described above for hardwood lumber core plywood.
- D. Fire-Retardant Treated Medium Density Fiberboard: UL listed wood fiberboard (FX MDF) with 20 Flame Spread and 25 Smoke Developed surface burning characteristics.
- E. Tempered Hardboard: Pressed wood fibers with resin binder, tempered grade. Use ¾" thick tempered hardboard perforated with 1/8" dia. holes on a 1" x 1" grid for pegboards.
- F. High Pressure Plastic Laminate: FS L-P-508H, .050-inch thick, matte finish, manufactured by Formica, or approved equal. See drawings for colors.
- G. Backing Sheets: .020-inch-thick high pressure paper base laminate without decorative finish.

2.4 ACCESSORIES

- A. Glue: Water-resistant type as recommended by manufacturer for application.
- B. Nails: Size and type to suit application.
- C. Bolts, Nuts, Washers, Lags, Screws: Of size and type to suit application; chrome plated brass or stainless steel finish in exposed locations; carbon steel in concealed locations.
- D. Glass: 1/4-inch thick (or as indicated on drawings) laminated safety glass, complying with ANSI Z97.1 performance requirements for safety glass, consisting of two lights of 3 mm annealed clear float glass bonded to 0.06" polyvinyl butyryl interlayer. Float glass shall comply with ASTM C1036 requirements for Type I, Q3. PVB Interlayer shall be translucent or clear, depending on the application, as noted on drawings. Refer to Interior Glass and Glazing Section 088000 and the Architectural Drawings for additional glass types and requirements.
- E. Enameled Steel Whiteboards: Refer to Section 10 10 00 for requirements.

2.5 GENERAL FABRICATION REQUIREMENTS

- A. Fabricate all items in accordance with AWI Quality Standards for Premium Grade, transparent finish, as amended in this Section.
 - 1. Transparent-Finished Wood: Select wood for uniform appearance in each assembly and among all assemblies in the same space. Distribute to best advantage the characteristics and defects allowed by specified AWI Quality Grade.
 - 2. Matched Lumber and Veneer: Where required appearance match (after finishing) cannot be obtained with the same species, obtain the Architect's approval to change lumber species or to substitute veneered solid core assembly for lumber. For stained maple trim and base, prepare samples of minimum (3) stain color options for Architect's selection
 - 3. Scribing Trim: Where not otherwise shown or specified, match species, cut, and finish of work scribing trim is used with.
 - 4. Panel Products: 3-ply construction with 3/4" thick core where not otherwise specified, with face veneers specified for each category of work. Use FX MDF core for all wall paneling, and for any cabinets to be installed in corridors or lobbies. Use MDF core where core edges are to be sanded and finished; use MDF or particleboard core elsewhere.

- B. Panel Product Locations: Use 3/4" thick (min.) cores where not otherwise indicated, with face veneers specified for each category of work. Locations for various core types specified shall be as follows:
 - 1. Cabinet doors and drawer fronts shall be hardwood lumber core plywood. At the woodworker's option, particleboard cores with flush solid lumber inserts at hinge attachment locations may be substituted for lumber core. Drawer sides, backs and fronts of drawer boxes shall be 1/2" 9-ply or solid hardwood.
 - 2. Cabinet sides and backs, and wall shelves shall be hardwood veneer core plywood.
 - 3. Wall paneling, trim, and for any cabinets or other woodwork to be installed in corridors, lobbies or public assembly spaces shall be FX MDF core, or fire-resistant particleboard core plywood.
- C. Fit plywood and particleboard shelf, drawer front, fin and door edges with 3/16-inch matching hardwood edgebands, unless otherwise noted. Use full-length pieces only.
- D. Use concealed fasteners wherever possible. Obtain prior approval for any exposed fasteners.
- E. Provide access to electrical junction boxes and plumbing valves. Coordinate with other trades and indicate locations and means of access on shop drawings.
- F. Provide concealed continuous stiffeners to the underside of any countertop spanning 4'-0" or more.
- G. No particleboard or plywood shall be in contact with flooring. Cabinet bases shall be 4-inch (min.) high x 3/4-inch (min.) thick solid clear, Select Northern White Maple lumber.
- H. Cabinet Hardware: Factory-install cabinet hardware. Remove it as required for shipping. Package field-installed hardware with the assembly to which it is fitted.
- I. Built-ins:
 - 1. Cut/drill openings for fixtures, specialties, accessories, and other built-ins per template/instructions furnished by the manufacturer.
 - 2. Cut/drill openings necessary to accommodate conduit, cable, wiring, and wiring devices. Provide wire access grommets for wire holes in exposed surfaces.
- J. Assembly:
 - 1. Trial-assemble all work. Permanently assemble work in the largest units that meet shipping and Project conditions.
 - 2. Field Joints in Counters: Make counters in one-piece for-length where possible. Where field joints are unavoidable, prepare work for assembly with Flush Joint Fasteners.

2.6 SHOP APPLIED WOODWORK SEALING AND FINISHING

- A. Transparent finish for exposed and semi-exposed surfaces: AWI Finish System 7, catalyzed vinyl, dull rubbed effect.
- B. Opaque finish for exposed and semi-exposed surfaces: AWI Finish System 9, UV curable, acrylated epoxy, polyester or urethane.
- C. Sealing: Seal unfinished wood surfaces to prevent moisture gain. Seal immediately all bare wood that is exposed by field fabrication and fitting.

2.7 CASEWORK HARDWARE

- A. Casework hardware includes, but is not limited to, the following:
 - 1. Pulls:
 - a. Wire Pulls for laboratory casework: Lamp by Sugatsune KC-S640/S, stainless steel, satin finish. Pulls shall be inset 1-1/2 inch from door or drawer edges. Mount door pulls vertically and drawer pulls horizontally.
 - b. Edge pulls: Lamp by Sugatsune SN-70/S stainless steel, satin finish.
 - c. Recessed: Lamp by Sugatsune HH-F-2 Series stainless steel, satin finish.
 - d. Step-In Cooler Pulls: National Hardware Satin Nickel Charleston Pull N187-012
 - 2. Hinges:
 - a. Cabinet doors: Grass Nexis, concealed self-closing hinges. For doors up to 24 inches wide, weighing up to 20 lbs., provide 2 hinges; for doors up to 24 inches wide, weighing 20-40 lbs., provide 3 hinges.

- b. Step-In Cooler Hinges: National Hardware N830-404 Heavy Duty Five Knuckle 4" Hinges full mortise, satin nickel, square corner, 3 per door.
 - 3. Drawer and shelf slides:
 - a. Box and file drawers over 4 inches deep: Accuride 7434, full extension (plus one inch) steel ball bearing, 100 lbs./pair capacity, with rail mounting system and closed position hold-in detent, bright zinc.
 - b. Lateral files: Accuride 4034, full extension (plus one inch) steel ball bearing, 150 lbs./pair capacity, with rail mounting system and closed position hold-in detent, bright zinc.
 - c. Pullout shelves/drawers: Accuride 322 full extension steel ball bearing, 100 lbs./pair capacity, bright zinc.
- 4. Locks: Use at locations noted on drawings.
 - a. Cabinet Locks: Lamp Sugatsune #7810 Lock, master keyed. Stainless steel finish. Locks shall be separately keyed, and two (2) keys shall be furnished for each lock. Supply six (6) master keys.
 - b. Locker Locks: Re-settable combination lock with three dials, key override function and code scrambling. Mastercombi Built-In Combination Locker Lock. Combi-Lock 1153, vertical orientation, Hafele 231.16.312. Provide two Combi-code Codefinders, Hafele 231.16.999. With Hafele 231.14.300 handle and Hafele 231.16.706 strike plate.
- 5. Shelf Standards/Brackets:
 - a. Wall Standards: Custom, 16-gauge steel, as detailed, double-slotted type where shelf sections meet, matching single-slotted type at ends of shelf sections. Brackets paint color to be selected, semi-gloss enamel.
 - b. Shelf brackets for Wall Standards: Custom, 16-gauge steel with three blade hooks as detailed. Shelves shall be screwed to brackets. Brackets paint color to be selected, semi-gloss enamel.
 - c. Standards/Brackets for Corridor Display Cabinets: Extruded aluminum Rakks Wall C-Standards, and BR2-16 shelf support brackets, by Ragine Corporation, Needham, MA (800-826-6006), or www.rakks.com.
- 6. Adjustable, dual-wheel swiveling locking casters: 3" (75mm) swivel lock/wheel brake with double row ball bearing swivels. Hard gray rubber tires, Steinco Series 322 Swivel Castor.
- 7. Furniture levelers: Zinc-plated steel leg levelers and mounting brackets for bottoms of base cabinets.
- 8. Cable sets (grommets): Two-part with spring closure in top, 80 mm. Hafele 429.99.548. Gray.
- 9. Roller catches for flammable storage cabinets: Glynn Johnson.
- 10. Three-point latches for flammable storage cabinets: Similar to Hafele Espagnolette Lock, but with lever handle.
- 11. Grilles for vented cabinets: Aluminum bar grille linear diffuser with mounting frame and integral access doors; CT-540 x Type 3 concealed fastening mounting frames), 4" wide, by Titus Products.
- 12. Sliding storage cabinet doors with glass and sliding whiteboard hardware: Bartels Terra H ST.1061.TH barn door system with rail, valance, wheels, door stops and other components necessary for a complete installation. 300 lb. capacity. Stainless steel.
- 13. Mobile Casework Drawer Slides: Heavy-duty full-extension ball bearing drawer slide with interlock & anti-tilt function. Side mount. Load capacity: Dynamic up to 200 lbs.
- 14. Shelf Support Pin: Nickel plated metal. Required at all fixed cabinets with adjustable shelves.
- 15. Fixed Table Leg for Lab Benches: Doug Mockett TL35P-35 (35" height) and TL33P-33 (custom 33" height) Table Leg, 3" diameter with plate levelers, satin chrome.

16. Step-In Cooler Gasketing: Trim-Lok P Seal X2468HT EPDM Sponge Rubber, medium density black seal with HT Tape.
17. Step-In Cooler Latches: Better Building Hardware PLS24 Pro-XHD Heavy Duty Concealed Magnetic Catch (one per door/2 per cooler).
18. Insulation for Step-In Coolers: Owens Corning Foamular NGX 250 extruded polystyrene (xps) rigid foam insulation, in thicknesses indicated on drawings.
19. Step-In Cooler Cable Pass-Through: PDU Cables AirBlock 4" Rubber – Single Layer Multi-Function Utility Rubber Grommet – SKU# GT003RB.

2.8 MOVABLE TABLES

- A. Wood Movable Tables: With 1-1/2" apron front, 4" sides and back; 2" x 2" wood leg; adjustable non-marring floor glides with 1" adjustment capability. Movable tables 7ft - 8ft long shall be reinforced with a deep welded steel channel frame of a gauge appropriate for the load bearing requirements and concealed by wood elements. Load capacity of tables shall be 1,000 lb. uniformly loaded and support a 250 lb. concentrated load at midspace with deflection not to exceed 1/8". Provide a countersunk metal slide plate with grooves at underside of each leg and provide chain for each pin support. Wood portions of tables are Northern White Maple lumber. Tops are epoxy resin, stainless steel or butcher block, as noted on drawings.
- B. Metal Movable Tables: With 1-1/2" apron front, 4" sides and back; 2" dia. metal leg; adjustable non-marring floor glides with 1" adjustment capability. Movable tables 7ft - 8ft long shall be reinforced with a deep welded steel channel frame of a gauge appropriate for the load bearing requirements and concealed by metal framing elements. Load capacity of tables shall be 1,000 lb. uniformly loaded and support a 250 lb. concentrated load at midspan with deflection not to exceed 1/8". Tops are epoxy resin, stainless steel or butcher block, as noted on drawings.

2.9 WORK SURFACES AND COUNTERTOPS

- A. Laboratory bench tops: Molded chemical and abrasion resistant epoxy resin, one inch thick. Provide top mounted end curbs where work surfaces abut walls, fume hoods, etc. Furnish with separate (non-integral) backsplashes (wall benches), and cutouts for sinks, piping, etc., manufactured by Durcon, 206 Allison Drive, Taylor, Texas 76754, or approved equal. Color: Lunar White.
- A. Plastic laminate with solid wood edges: Countertops, backsplashes and curbs shall have a plastic laminate finish equal to AWI "Premium" grade standards. Wood core to receive plastic laminate finish shall be 1-1/4" thick. Provide 1/2" (12.7mm) hardwood edge banding on exposed edges. Edges shall be stained Select Maple. Plastic laminate for exposed horizontal surfaces shall be 0.050" thick, general purpose (high pressure). Plastic laminate for concealed panel backing shall be 0.020" thick, backer type (high pressure). Color for exposed surfaces as indicated on drawings. Material shall be manufactured by Wilsonart or approved equal.
- C. Stainless steel: Counter tops, curbs and integral sinks noted on drawings as "Stainless Steel" shall be constructed of 16-gauge stainless steel. Exposed surfaces shall have #4 finish. Stainless steel counter tops shall be constructed with raised front rim, marine edge construction. Top surface, rear curb and rear or top edge shall be one piece without seams or joints. The top of the 6" (152mm) high curb shall be chamfered 45 degrees. The joint where the rear curb meets the countertop shall be integral and slightly radiused. Carbon steel or stainless steel shall be welded to the underside in at least three locations along the length to prevent twisting, oil canning, or buckling of surface. The underside shall receive a coat of sound deadening material. Stainless steel counter tops shall be 1" thick. Tops shall be as long as practical to permit access to building and room. Field joints shall be provided to join oversized tops with welded channels and angles with bolting arrangements for pulling tops together to produce a hair-line waterproof seam, maximum 1/64". Where sinks are shown on drawings, they shall be integral and of the size specified. Tops shall be adequately reinforced to accept sinks. Seams and joints shall be welded, ground smooth and polished.

- D. Butcher block countertops, backs guards and shelves: Edge-grained strips of maple with clear surfaces and ends. Seasoned, kiln-dried maple strips are bonded together with resin and electronically cured, planed, sanded and varnished (baked between coats) for a highly water and abrasion resistant clear finish and satin-smooth resilient work surface. Maple countertops are 1-3/4" thick, shelves and back guards are 1-1/4" thick.
- E. Pantry Countertops: Cast, filled, acrylic (not coated, laminated, or of composite construction, meeting ANSI Z124 1980, Type Six, and FS WW-P-541E/GEN. 5000 psi (min.) tensile strength when tested in accordance with ASTM D638. 7000 psi (min.) flexural strength when tested in accordance with ASTM D790. 25 (max.) flame spread, and 30 (max.) smoke developed when tested in accordance with ASTM E84. Corian Surfaces, by E.I. duPont de Nemours & co., Inc., or approved equal. 3/4" (min.) thickness. Backsplash height varies. See architectural details. Colors as indicated on drawings. Use manufacturer's standard joint adhesive, panel adhesives, and sealant. Factory fabricate components to greatest practical sized and shapes indicated, in accordance with approved shop drawings. Provide factory cutouts for plumbing fittings and bath accessories. Rout and finish component edges with clean, sharp returns. Rout cutouts, radii and contours to template. Smooth edges. Repair or reject defective and inaccurate work.
- F. Window Sills: Composite material, solid surface tops, in thickness colors and patterns indicated on drawings.
- G. Toilet Room Sink Counters: Solid surface countertops of recycled plastic material in thickness colors and patterns indicated on drawings. Provide concealed metal channel frames to support counters. Coordinate installation with Plumbing and Gypsum Drywall Contractors.

2.10 UNDERCOUNTER VENTILATED CABINETS (BV)

- A. Cabinet doors shall be full overlay, clear finish wood veneer construction to match the other custom wood laboratory casework. Cabinet bodies, interior and shelf shall be lined with white flame and chemical resistant polypropylene to withstand severe chemical exposure. Removable back shall be gasket-sealed. Provide and install two gasket-tight 2-inch black polypropylene vent pipes that shall extend from cabinet to fume hood and 1/2-inch above hood work surface. Provide aluminum bar grille vents in doors. Shelf in BV cabinets shall be adjustable, full width of cabinet, and only one-half depth of cabinet. Provide in bottom of cabinet a 1/4-inch thick, heat welded, liquid tight, one-inch deep, removable polypropylene pan. Catches, glides and shelf clips shall be stainless steel.

2.11 UNDERCOUNTER FLAMMABLE STORAGE CABINETS (BO)

- A. Cabinet doors shall be full overlay, clear finish veneer construction to match the other custom wood laboratory casework. Cabinet bodies, interior and shelf shall be lined with white flame and chemical resistant polypropylene to withstand severe chemical exposure. Cabinets shall be constructed to comply with NFPA 30 4-3.2.2 and OSHA 1910.106 (d) 93) (ii) (b) requirements. These requirements include, but are not necessarily limited to the following:
 - 1. The bottom, sides and top of cabinets shall be constructed of exterior grade plywood at least 1-inch in thickness, which shall not break down or delaminate under fire conditions. All joints shall be rabbeted and shall be fastened in two directions with wood screws. When more than one door is used, there shall be a rabbeted overlap of not less than 1-inch.
 - 2. Cabinet door hinges shall be constructed and mounted in such a manner as not to lose their holding capacity when subjected to fire exposure.
 - 3. A raised sill or pan capable of containing a two-inch depth of liquid shall be provided at the bottom of the cabinet to retain spilled liquid within the cabinet.
- B. Cabinets are not ventilated. All OSHA cabinets shall be labeled in painted (color to be selected) 1-1/2" high Helvetica Medium lettering: FLAMMABLE-KEEP FIRE AWAY

2.12 UNDERCOUNTER VACUUM PUMP CABINETS (BVAC)

- A. Cabinets shall be full overlay, clear finish veneer construction to match the other custom wood laboratory casework. Cabinet bodies, interior and shelf shall be constructed to withstand severe chemical exposure, particularly acids, such as through the use of triple epoxy coating, or approved equal. Provide an acoustic liner within cabinet. Removable back shall be gasket-sealed, and an electric exhaust fan mounted to back panel. One gasket-tight 3-inch black polypropylene vent pipe shall extend to fume hood and 1/2-inch above hood work surface as detailed. Provide custom aluminum louvered vents in doors. Interior of cabinet shall be lined with 3/4" thick black Armstrong Soundsoak acoustical panels. Shelf shall be adjustable, full width of cabinet, and only one-half depth of cabinet. Provide in bottom of cabinet a 1/4-inch thick, heat welded, liquid tight, one-inch deep, removable polypropylene pan. Catches and shelf clips shall be stainless steel.
- 2.13 SOLID WOOD BENCHES, WOOD HANDRAILS, WOOD BASE OTHER STANDING AND RUNNING WOOD TRIM**
- A. AWI Premium Grade x Transparent Finish.
 - B. Trim: Hardwood lumber in one-piece-for-length up to maximum production sizes; splined joints; plant-assembled miters and openings; milled to indicated profiles.
 - C. Handrails: Plant-joined rail straight and curved runs. Close-fitting, flush end joints with concealed attachment. Concealed anchorage to metal supports provided by others.
- 2.14 SINKS**
- A. Lab Bench Sinks: Molded epoxy resin sinks. Sinks shall be furnished with 1-1/2" outlets, open end overflow 2" shorter than depth of sink, and swivel sink strainer adapter with gasket. Sinks shall be 24" long x 16" wide x 12" deep, 24" long x 16" wide x 5-1/2" deep ADA, or as indicated on drawings. Manufactured by Durcon, 206 Allison Drive, Taylor, Texas 76754, or approved equal. Color: Lunar White. Install in accordance with manufacturer's recommendations, with support straps, assembly kit, and acid-resistant putty compound to seal sink rim, etc.
 - B. Stainless Steel: Stainless steel sinks shall be constructed of 16-gauge #4 finish on exposed surfaces. Sinks shall have interior coved corners with bottoms pitched toward drain. Stainless steel sinks shall have integral side mounted overflows. Standard stock sized sinks shall be deep drawn from a single sheet. Other sinks shall be fabricated having continuous heliarc welded joints ground and polished smooth. The type of stainless steel used to fabricate integral sink to be the same as that used in adjacent countertop (either type 302/304 or 316). Sinks placed in stainless steel counter tops shall be welded in and seams shall be ground smooth and polished to match the countertop finish. Those mounted in plastic laminate or wood tops shall use self-rimming design. Those mounted in epoxy resin tops shall be installed in the same manner as epoxy resin sinks. Scullery sinks shall have stainless steel rear panels, shelves and legs as indicated on drawings.
 - C. Sink Outlets, Tailpieces and Overflows. Sinks shall be equipped with an integral overflow that is connected directly to the tailpiece. Overflow shall consist of an outlet located 2" (50.8mm) below countertop and 1/2" (12.7mm) diameter tygon tubing to connect overflow to tailpiece which shall be modified to accept tubing.
- 2.15 LABORATORY SERVICE FITTINGS AND SAFETY EQUIPMENT**
- A. Laboratory service fittings shall be products of Water Saver Faucet Co., unless otherwise noted. Fittings include the following:
 - 1. Compressed air (A), Vacuum (V), Gas (G), Nitrogen (N), Oxygen (O), and 95/5:
 - a. Wall-mounted: L4200-158FT.
 - b. Deck-mounted, single: L4200-131WSA.
 - c. Deck-mounted, double: L4200-132SWSA.
 - 2. Carbon dioxide (CO2), wall mounted pressure regulator fixture: L4203-364-178FT.
 - 3. Water mixing valves:
 - a. Deck-mounted at lab bench sinks (HW-CW): L2212VB-127BH with swing gooseneck and vacuum breaker, blade handle, removable aerator.
 - b. Foot-Operated Mixer Tap, Floor Mounted: BT3001.

4. Safety equipment:
 - a. Eyewash/drench hose unit, deck-mounted (EW): EW1022.
 - b. See plumbing specifications for Recess Emergency Shower and Safety Station.
 - c. ~~Recessed Emergency Shower, Wall Mounted Exposed Shower Head (ES): ESBF672.~~
 - d. ~~Safety Station with Wide Area Eye/Face Wash, Stainless Steel Bowl (ES/EW): SS909.~~

- B. Water Purification Units: Millipore Sigma Milli-Q IX 7010 Pure Water Systems to provide Type 2 water (>5 megohm/cm resistivity; typically 10-15 megohm/cm) from potable tap feedwater, with purification units, 25-liter tanks and E-Pod dispensers as indicated on drawings.

- 2.16 EXHAUST SNORKELS**
 - A. Movex ME100, 4" dia. Fume extractor, 0.25" pressure drop at 75 cfm, ceiling mounted. Provide hood, bracket and escutcheon plate.

- 2.17 PANTRY SINKS AND FAUCETS**
 - A. Stainless Steel Sinks: Elkay Lustertone Single Bowl 18-gauge Type 304 stainless steel ELUHAD211550PD (23-1/2" x 18-1/4" x 5-3/8") ADA compliant, undermount.
 - B. Pantry Faucets: Kohler Forte Kitchen Sink Faucet, Model K-10411, polished chrome.

- 2.18 CYLINDER RACKS**
 - A. Furnish and install wall mounted cylinder racks, constructed as indicated on the Drawings. The specific series and gauge required for each component shall be as indicated on the Drawings along with associated accessories. Channels and parts shall be furnished to laboratory furniture manufacturer in a plain state in order to allow them to weld and paint the finished assemblies with their standard acid resistant epoxy powder coat finish. Color to be selected by Architect.

- 2.19 METAL LABORATORY CASEWORK**
 - A. Metal Casework: Sheet steel used in the construction of metal laboratory casework shall be Type 304 stainless steel, stretcher leveled, patent beveled, re-squared, and free of defects. Gauges shall be U.S. standard, selected to develop structurally the required strength and rigidity for each component part, in the following minimums:
 1. 20-gauge: Back panels, inner door panels, drawer outer pan, inner pan and body, and shelves. Add reinforcement or use 18-gauge material for shelves over 36" long.
 2. 18-gauge: Sides, ends fixed backs, bottoms, tops, soffits, and outer door pans. Provide 18-gauge for other items where gauge is not specifically noted.
 3. 16-gauge: Intermediate horizontal rails, table frame aprons and cross rails, center posts, top gussets.
 4. 14-gauge: Sink supports, door and case hinge reinforcements.
 5. 11-gauge: Leveling and corner gussets.
 - B. Fabrication: Complete all assembly and finish work at point of manufacture. Perform unit assembly on precision jigs to provide units that are square, fully reinforced with angles, gussets, and channels, integrally framed and welded to form a dirt and vermin retardant enclosure. Maintain uniform clearance around door and drawer fronts, not exceeding 3/32-inch. Casework shall be fabricated as sectional units, ready for placement in the laboratory as a complete integral rigid unit permitting relocation at any subsequent time. Component parts of the unit shall be manufactured ensuring uniformity, interchangeability and accurate alignment.
 - C. Flush Doors: 3/4" thick, double wall, outer pan and inner pan formed and telescoped into box formation, with channel reinforcements full height and center of each pan. Pre-paint door interiors and fill doors solid with fire-resistive, sound-deadening material.
 - D. Glazed Doors: Hollow metal stiles and rails of similar construction as flush doors, with glass held in resilient channels or gasket material. Outer heads shall be one-piece construction. Inner framing members shall be removable for glass replacement.

- E. Hinged Doors: Mortise at flanges for hinges and reinforce with minimum 14-gauge angle, welded inside inner pan at hinge edge. Provide nylon roller catches, rubber bumpers, runners and positive stops to prevent metal-to-metal contact or accidental removal.
- F. Adjustable Shelves: Sides and ends formed down and returned to front and back. Reinforce with welded hat channels for full width of shelves.
- G. Knee Space Units: Fabricate units plain or with drawers as indicated. Provide rails above and below the drawers, and stiles between the drawers. Fabricate the panels of these units of 18-gauge material, with channel shaped flanges on the top and bottom at the front, back and sides. Provide enclosure panels at the rear of the knee spaces below these units for enclosing pipe spaces; design to be removable to provide access to pipe spaces, but with fixed head and base components.
 - 1. Provide full 24-inch deep recess at all openings.
 - 2. Provide panel support where indicated on drawings, with adjustable leveling device.
 - 3. Provide units with front apron, in indicated depth, incorporating a pencil drawer or keyboard drawer, as shown.
 - 4. Provide self-supporting countertop at equipment spaces (no apron).
- H. Filler Strips: Provide where required for closing space between cabinets, walls and ceilings, or same material and finish as cabinets; hem exposed edges. Field-fabricated fillers are not acceptable. Fillers between casework elements are not acceptable.
- I. Utility Space: Provide space, cut-outs, and holes for pipes, conduits and fittings in cabinet bodies to accommodate services and their support assemblies.
- J. Toe Spaces: Approximately 4" high by 3" deep, closed metal with no open pockets.

2.20 OTHER METAL MANUFACTURED ITEMS

- A. Reagent Shelf Supports Frames: Adjustable shelves mounted above peninsula or island benches shall be mounted to a welded double-sided, steel frame assembly. Assembly shall be fabricated of 14-gauge fully welded steel tube with slots laser cut into uprights and be coated with an acid, alkali and solvent resistant epoxy powder coat. Slotted studs and standards shall have a fully compatible slot pattern. Adjustable shelves shall be furnished with integral mounting brackets or clips. Color: silver metallic to match Architect's sample.
- B. Umbilicals: 18-gauge perforated and unperforated sheet metal with collars at top and bottom to be attached to ceiling and work surfaces. Perforation pattern shall be 1/8-inch diameter holes on 3/32-inch staggered centers. Umbilicals shall be factory-finished in baked enamel, color to be selected by the Architect. Removable sections lift up and off to disengage 3 (min.) hooks per side, as detailed.
- C. Service Plates: 11-gauge Type 304 stainless steel escutcheon plates with factory-drilled holes for use at wall-mounted service fixtures. Plates are fastened to blocking installed behind gypsum wallboard surface, or expansion-anchored to CMU partitions.
- D. Drying Racks: Drying racks shall be fabricated of stainless steel. Pegboards shall be furnished with removable rounded-tip white polypropylene pegs, stainless steel drip trough, 1/4" diameter drip trough outlet and flexible tubing between drip trough outlet and sink (cut as required). Pegboard size and configuration shall be as indicated on the Drawings.
- F. Marker Board Trays: Satin anodized aluminum, Glass Marker Board Tray Extrusion, one-piece-for-length, 3/4" high and 1.935" deep, in lengths indicated on drawings; by Specialty Glass Products, Grand Rapids, MI (616-784-5500); (<http://www.specialtyglass.biz/wp-content/uploads/2015/06/Marker-Tray-Product-Specs.pdf>), or approved equal.
- G. Corner Guards: Custom fabricated 2-1/2" x 2-1/2" x 1/8" corner guards of Type 304, 16-gauge stainless steel with No. 4 finish, in lengths indicated on drawings.
- H. Stainless Steel Wire Shelving: Type 304, 18-gauge stainless steel solid shelves and posts in the configurations indicated on the drawings. Super Erecta Shelf Wire Shelving Stainless Steel Shelving by InterMetro Industries Corporation (570-825-2741).
- I. Flammable Storage Cabinets: 18-gauge steel sides, top, bottom and doors are double-wall construction, fire-baffle capped vents with 2" threaded fittings, yellow with red warning lettering, with grounding attachment, 3-point lock, 2" raised leakproof door sill, adjustable

shelves with 4 brackets each, capable of supporting 350 lbs. Model 1947 by Eagle Manufacturing Company (304-737-3171).

2.21 INSULATED STEP-IN COOLERS

- A. AWI Custom Grade x Opaque Finish.
- B. Particleboard core plywood and insulated sides, back, top, bottom and doors, as detailed.
- C. With anti-tip weighted base, locking heavy-duty dual wheel casters, hinges, gasketing, pulls, cable pass-throughs, and heavy-duty magnetic latches as detailed.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Comply with Section 01 60 00 requirements.

3.2 PREPARATION

- A. Protecting Building Surfaces: Install work without damaging building surfaces and with all evidence of drilling, cutting, and anchorage concealed by installed work.

3.3 INSTALLATION

- A. Comply with AWI requirements for Installation of Architectural Woodwork (Interior), as amended by the following.
- B. Install work plumb, level and true to line and plane as measured from established lines and levels. Provide blocking, grounds, shims, supports, and rough hardware necessary for installation. Anchor work securely in place.
- C. Cutting, Fitting, and Placement: Do all cutting, drilling, and fitting required for installation of the work.
- D. Scribing Trim:
 - 1. Cut and fit scribing trim closely and accurately to building surfaces. Use one-piece-for-length scribing trim wherever possible.
 - 2. Make joints tight; back-end joints with splicers/splines.
 - 3. Secure scribes with concealed fasteners.
- E. Anchors and Fasteners:
 - 1. Face Nailing: Confine face nailing to inconspicuous locations. Set nails. Fill holes in exposed and semi-exposed surfaces to conceal nail locations.
 - 2. Anchorage to Drywall Construction: Anchor work to framing/anchor plates with toggle bolts or tapping sheet metal screws; space screws to limit loads to 50 pounds withdrawal or 80 pounds shear per anchor. Where fastening to unreinforced gypsum board is necessary, limit loads to 20 pounds withdrawal or 40 pounds shear per anchor.
 - 3. Anchorage to Concrete: Anchor work with bolts and expansion shields.

3.4 ADJUSTING, CLEANING, AND PROTECTION

- A. Correct nonconforming, poorly fitting, and damaged work. Remove and replace work that cannot be satisfactorily corrected at the Project.
- B. Cover casework for protection during remainder of construction period. Remove covering at completion of construction, inspect, and make any required final repairs.

END OF SECTION

SECTION 07 05 53
FIRE AND SMOKE ASSEMBLY IDENTIFICATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Identification markings for fire and smoke rated partitions, and fire rated walls.

1.02 REFERENCE STANDARDS

- A. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed product literature for each type of marking, indicating font, foreground and background colors, wording, and overall dimensions.
- C. Schedule: Completely define scope of proposed marking, and indicate location of affected walls and partitions, and number of markings.

1.04 FIELD CONDITIONS

- A. Do not install painted markings when ambient temperature is lower than recommended by coating manufacturer.

PART 2 PRODUCTS

2.01 FIRE AND SMOKE ASSEMBLY IDENTIFICATION

- A. Regulatory Requirements: Comply with "Marking and Identification" requirements of "Fire-Resistance Ratings and Fire Tests" chapter of ICC (IBC).
- B. Adhered Fire and Smoke Assembly Identification Signs: Printed vinyl or paper sign with factory applied adhesive backing.
- C. Applied Fire and Smoke Assembly Identification: Identification markings applied to partition with paint and a code compliant stencil. See Section 09 90 00 for products.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.

3.02 PREPARATION

- A. See Section 09 90 00 for substrate preparation for painted markings.

3.03 INSTALLATION

- A. Locate markings as required by ICC (IBC).
- B. Install adhered markings in accordance with manufacturer's instructions.
- C. Install applied markings in accordance with Section 09 90 00.
- D. Install neatly, with horizontal edges level.
- E. Protect from damage until Date of Substantial Completion; repair or replace damaged markings.
- F. Install labeling as follows:
 - 1. At each new penetration through a new or existing fire-rated partition, place a marking label on the wall within 3 feet of the penetration on the corridor side, located above the ceiling.
 - 2. Label shall include lettering not less than 3 inches (76 mm) in height with a minimum 3/8 inch (9.5 mm) stroke in a contrasting color.

3. Label shall read: "FIRE AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS" or similar language to be approved by the Architect.

END OF SECTION

**SECTION 07 13 00
SHEET WATERPROOFING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Self-adhered rubberized asphalt sheet membrane.

1.02 REFERENCE STANDARDS

- A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-- Tension; 2016 (Reapproved 2021).
- B. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting; 2018.
- C. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2021.
- D. ASTM D5295/D5295M - Standard Guide for Preparation of Concrete Surfaces for Adhered (Bonded) Membrane Waterproofing Systems; 2018.
- E. ASTM D5385/D5385M - Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes; 2020.
- F. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.
- G. NRCA (WM) - The NRCA Waterproofing Manual; 2021.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for membrane and flexible flashings.
- C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.
- D. Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and acceptable installation temperatures.
- F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
- G. Specimen Warranty.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.05 FIELD CONDITIONS

- A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application and until liquid or mastic accessories have cured.

PART 2 PRODUCTS

2.01 SHEET WATERPROOFING MATERIALS

- A. Self-Adhered Rubberized Asphalt Sheet Membrane:
 - 1. Thickness: 63 mil, 0.061 inch, minimum.
 - 2. Sheet Width: 3.28 feet, minimum.
 - 3. Tensile Strength:

- a. Film: 5,000 psi, minimum, measured in accordance with ASTM D882 and at grip-separation rate of 2 inches per minute.
 - b. Membrane: 325 psi, minimum, measured in accordance with ASTM D412 Method A, using die C and at spindle-separation rate of 2 inches per minute.
- 4. Elongation at Break: Greater than 300 percent, minimum, measured in accordance with ASTM D412.
- 5. Water Vapor Permeance: .1 perm, maximum, measured in accordance with ASTM E96/E96M.
- 6. Low Temperature Flexibility: Unaffected when tested in accordance with ASTM D1970/D1970M at minus 25 degrees F, 180 degree bend on 1 inch mandrel.
- 7. Hydrostatic Pressure Resistance: Membrane resists leakage for at least one hour from pressure equivalent to 200 feet head of water applied in accordance with test method ASTM D5385/D5385M.
- 8. Adhesives, Sealants, Tapes, and Accessories: As recommended by membrane manufacturer.
- 9. Products:
 - a. GCP Applied Technologies; Bituthene 3000 Membrane: www.gcpat.com
 - b. Mapei Corporation; Planiseal Membrane SA: www.mapei.com/
 - c. Approved Equivalent.

2.02 ACCESSORIES

- A. Seaming Materials: As recommended by membrane manufacturer.
- B. Membrane Sealant: As recommended by membrane manufacturer.
- C. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrates and waterproofing materials.
- D. Drainage Panel: Drainage layer with geotextile filter fabric on earth side.
 - 1. Composition: Dimpled polystyrene, polyethylene, or polypropylene core; polypropylene filter fabric.
 - 2. Thickness: 1/2 inch.
 - 3. Can serve as protection board.
 - 4. Products:
 - a. Hydroduct 220 (vertical) and Hydroduct 660 (horizontal: www.gcpat.com)
- E. Flexible Flashings: Type recommended by membrane manufacturer.
- F. Termination Bars: Aluminum; compatible with membrane and adhesives.
- G. Adhesives: As recommended by membrane manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions are acceptable prior to starting work.
- B. Verify substrate surfaces are durable; free of matter detrimental to adhesion or application of waterproofing system.
- C. Verify that items penetrating surfaces to receive waterproofing are securely installed.
- D. Where existing conditions are responsibility of another installer, notify Architect of unsatisfactory conditions.
- E. Do not proceed with work until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protect adjacent surfaces from damage not designated to receive waterproofing.
- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions; vacuum substrate clean.

- C. Do not apply waterproofing to surfaces unacceptable to membrane manufacturer.
- D. Fill nonmoving joints and cracks with a filler compatible with waterproofing materials.
- E. Seal moving cracks with sealant and nonrigid filler, using procedures recommended by sealant and waterproofing manufacturers.
- F. Prepare building expansion joints at locations as indicated on drawings.
- G. Surfaces for Adhesive Bonding: Apply surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.
- H. Concrete Surfaces for Adhesive Bonding: Prepare concrete substrate in accordance with ASTM D5295/D5295M.
 - 1. Remove substances that inhibit adhesion including form release agents, curing compounds admixtures, laitance, moisture, dust, dirt, grease and oil.
 - 2. Repair surface defects including honeycombs, fins, tie holes, bug holes, sharp offsets, rutted cracks, ragged corners, deviations in surface plane, spalling and delaminations, as described in reference standard.
 - 3. Remove and replace areas of defective concrete; see Section 03 30 00.
 - 4. Prepare concrete for adhesive bonded waterproofing using mechanical or chemical methods described in referenced standard.
 - 5. Test concrete surfaces as described in referenced standards, and verify surfaces are ready to receive adhesive bonded waterproofing membrane system.

3.03 INSTALLATION - MEMBRANE

- A. Install membrane waterproofing in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.
- B. Roll out membrane, and minimize wrinkles and bubbles.
- C. Self-Adhering Membrane: Remove release paper layer, and roll out onto substrate with a mechanical roller to provide full contact bond.
- D. Overlap edges and ends, minimum 3 inches, seal permanently waterproof by method recommended by manufacturer, and apply uniform bead of sealant to joint edge.
- E. Reinforce membrane with multiple thickness of membrane material over joints, whether joints are static or dynamic.
- F. Weather lap joints on sloped substrate in direction of drainage, and seal joints and seams.
- G. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.
- H. Seal membrane and flashings to adjoining surfaces.
 - 1. Install termination bar along edges.
 - 2. Install counterflashing over exposed edges.

3.04 INSTALLATION - DRAINAGE PANEL

- A. Place drainage panel directly against membrane, butt joints, place to encourage drainage downward; scribe and cut boards around projections, penetrations, and interruptions.
- B. Adhere protection board to substrate with compatible adhesive.

3.05 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Upon completion of horizontal membrane installation, dam installation area in preparation for flood testing.
 - 1. Flood to minimum depth of 1 inch with clean water, and after 48 hours inspect for leaks.
 - 2. If leaking is found, remove water, repair leaking areas with new waterproofing materials as directed by Architect; repeat flood test, and repair damage to building.

3. When area is proven watertight, drain water and remove dam.

3.06 PROTECTION

- A. Do not permit traffic over unprotected or uncovered membrane.

END OF SECTION

**SECTION 07 21 00
THERMAL INSULATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Board insulation at cavity wall construction and perimeter foundation wall.
- B. Batt insulation in exterior wall construction.
- C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.02 DEFINITIONS

- A. Mineral Fiber Material Composition: Insulation referred to as mineral fiber block, board, and blanket insulation is composed of fibers from mineral based substances such as rock, slag, or glass and processed from the molten state into fibrous form.
 - 1. Based on type of insulation substance, the material will be referred to as a mineral fiber when having a rock or slag base, and glass fiber with a glass or silica sand base, also considered a mineral.
 - 2. Insulation blankets are flexible units consisting of felted, bonded, or unbonded fibers formed into rolls or flat cut pieces referred to as batts; rolls are simply longer versions of batts.
 - 3. For additional information about mineral fiber and the various classification types, refer to the following reference standards; ASTM C553, ASTM C612, ASTM C665, and ASTM C726.

1.03 REFERENCE STANDARDS

- A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.
- B. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2013 (Reapproved 2019).
- C. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2023.
- D. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2014 (Reapproved 2019).
- E. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2023.
- F. ASTM C726 - Standard Specification for Mineral Wool Roof Insulation Board; 2017.
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023c.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- C. Shop Drawings: Submit drawings that indicate location of joint or termination detail conditions.
- D. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.05 FIELD CONDITIONS

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. Insulation at Perimeter of Foundation: Extruded polystyrene (XPS) board.
- B. Insulation Inside Masonry Cavity Walls: Mineral fiber board.
- C. Insulation Over Metal Stud Framed Walls, Continuous: Mineral fiber board.
- D. Insulation in Exterior Metal Framed Walls: Mineral Wool Batt insulation with separate vapor retarder.

2.02 FOAM BOARD INSULATION MATERIALS

- A. Extruded Polystyrene (XPS) Board Insulation: Comply with ASTM C578 with either natural skin or cut cell surfaces.
 - 1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
 - 2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
 - 3. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88), minimum, per 1 inch thickness at 75 degrees F mean temperature.
 - 4. Board Edges: Square.
 - 5. Type and Water Absorption: Type XII, 0.3 percent by volume, maximum, by total immersion.

2.03 MINERAL FIBER BOARD INSULATION MATERIALS

- A. Mineral Wool Block and Board Thermal Insulation: Complying with ASTM C612.
 - 1. Facing: None, unfaced.
 - 2. Flame Spread Index: 25 or less, when tested with facing, if any, in accordance with ASTM E84.
 - 3. Smoke Developed Index: 50 or less, when tested with facing, if any, in accordance with ASTM E84.
 - 4. Board Size: 48 by 48 inches.
 - 5. Board Thickness: As indicated on drawings
 - 6. Board Edges: Square.
 - 7. Thermal Conductivity (k-factor): Btu inch/hr sq ft degrees F of 4 per inch, minimum, at 75 degrees F when tested in accordance with ASTM C518.
 - 8. Maximum Density: 8 pcf, nominal.
 - 9. Products:
 - a. ROCKWOOL; COMFORTBOARD 110: www.rockwool.com
 - b. Approved Equivalent.
- B. Mineral Wool Blanket Thermal Insulation: Complying with ASTM C553.
 - 1. Where indicated, provide black, non-woven fiberglass facing on one side; with flame spread index of 25 or less, when tested in accordance with ASTM E84.
 - 2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
 - 3. Board Size: 16 by 48 inches.
 - 4. Board Thickness: As indicated on drawings
 - 5. Thermal Resistance: R-value of 4.2 per inch at 75 degrees F, minimum, when tested in accordance with ASTM C518.
 - 6. Products:
 - a. ROCKWOOL; CAVITYROCK: www.rockwool.com/
 - b. ROCKWOOL; CAVITYROCK BLACK: www.rockwool.com/
 - c. Approved Equivalent

2.04 MINERAL FIBER BLANKET INSULATION MATERIALS

- A. Mineral Wool Blanket Thermal Insulation: Flexible or semi-rigid preformed insulation, complying with ASTM C665.

1. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
2. Thermal Resistance: R-value of 4 per inch.
3. Products:
 - a. ROCKWOOL; COMFORTBATT: www.rockwool.com/.
 - b. Approved equivalent

2.05 ACCESSORIES

- A. Air Barrier: See Section 07 27 00.
- B. Tape: Reinforced polyethylene film with acrylic pressure sensitive adhesive.
 1. Application: Sealing of interior circular penetrations, such as pipes or cables.
 2. Width: Are required for application.
- C. Self-Adhered Transition Flashing: Multipurpose, self-adhered flashing with modified butyl adhesive, polyester fiber top sheet, and polypropylene interlayer.
 1. Application: Primerless adhesion for use as through-wall flashings and wall transitions to roof and below-grade systems.
 2. Thickness: 45 mil, 0.045 inch, nominal.
 3. Size: 6 inches wide, in rolls 75 feet long.
- D. Mineral Wool Insulation Attachment:
 1. Products:
 - a. TruFast Walls, a Division of Altenloh, Brinck & Co. US, Inc; Grip-Lok MW Plate: www.trufastwalls.com/#sle.
- E. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER

- A. Install boards horizontally on foundation perimeter.
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.03 BOARD INSTALLATION AT EXTERIOR WALLS

- A. Install boards horizontally on walls.
 1. Install in running bond pattern.
 2. Butt edges and ends tightly to adjacent boards and protrusions.
- B. Extend boards over expansion joints, unbonded to wall on one side of joint.
- C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.04 BOARD INSTALLATION AT CAVITY WALLS

- A. Install boards to fit snugly between wall ties.
- B. Install boards horizontally on walls.
 1. Place boards to maximize adhesive contact.
 2. Install in running bond pattern.
 3. Butt edges and ends tightly to adjacent boards and protrusions.
 4. Place impale fastener locking discs.
- C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.05 BOARD INSTALLATION USING CLADDING AND CONTINUOUS INSULATION SUPPORTS

- A. Install supports in accordance with manufacturer's installation instructions.
- B. Install supports in compliance with system orientation, sizes, and locations as indicated on drawings and in accordance with approved shop drawings.
- C. Install supports to fill in exterior wall spaces without gaps or voids in insulation.
- D. Trim insulation neatly to fit spaces and provide a continuous thermal layer.

3.06 BATT INSTALLATION

- A. Install insulation in accordance with manufacturer's instructions.
- B. Install in exterior wall spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.
- E. At metal framing, place vapor retarder on warm side of insulation; lap and seal sheet retarder joints over face of member
- F. Tape seal tears or cuts in vapor retarder.
- G. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane; tape seal in place.

3.07 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.

3.08 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

SECTION 07 27 00 AIR BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Air barriers.

1.02 DEFINITIONS

- A. Air Barrier: Airtight barrier made of material that is virtually air impermeable but water vapor permeable, both to amount as specified, with sealed seams and sealed joints to adjacent surfaces.

1.03 REFERENCE STANDARDS

- A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).
- B. ASTM D751 - Standard Test Methods for Coated Fabrics; 2019.
- C. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds; 1998 (Reapproved 2017).
- D. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2021.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023c.
- F. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.
- G. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials; 2021a.
- H. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2023.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on material characteristics, performance criteria, and limitations.
- C. Shop Drawings: Provide drawings of special joint conditions.
- D. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

1.05 QUALITY ASSURANCE

- A. Air Barrier Association of America (ABAA) Quality Assurance Program (QAP); www.airbarrier.org/:
 - 1. Installer Qualification: Use accredited contractor, certified installers, evaluated materials, and third-party field quality control audit.
- B. Manufacturer Qualification: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture, and use secondary materials approved in writing by primary material manufacturer.

1.06 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

PART 2 PRODUCTS

2.01 AIR BARRIER MATERIALS (AIR IMPERMEABLE AND WATER VAPOR IMPERMEABLE)

- A. Air and Vapor Barrier, Fluid-Applied:
 - 1. Material: Elastomeric asphalt-based coating.
 - 2. Air Permeance: 0.004 cfm/sq ft, maximum, when tested in accordance with ASTM E2178.
 - 3. Water Vapor Permeance: 0.1 perm, maximum, when tested in accordance with ASTM E96/E96M using Procedure A - Desiccant Method, at 73.4 degrees F.
 - 4. Ultraviolet (UV) and Weathering Resistance: Approved in writing by manufacturer for up to 60 days of weather exposure.
 - 5. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, Class A when tested in accordance with ASTM E84.
 - 6. Complies with NFPA 285 requirements for wall assembly.
 - 7. Seam and Perimeter Tape: As recommended by sheet manufacturer.
 - 8. Products:
 - a. GCP Applied Technologies; Perm-A-Barrier NPL 10: www.gcpat.com/#sle.
 - b. Polyglass USA, Inc; VertiWrap NPL: www.polyglass.us
 - c. W.R. Meadows; Air-Shield LM

2.02 ACCESSORIES

- A. Sealants, Tapes, and Accessories for Sealing Air Barrier and Adjacent Substrates: As indicated or in compliance with air barrier manufacturer's installation instructions.
- B. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrate and air barrier materials.
 - 1. Application: Apply at 30 to 40 mil, 0.030 to 0.040 inch, nominal thickness.
 - 2. Color: Green.
 - 3. Elongation: 1,300 percent, measured in accordance with ASTM D412.
 - 4. Peel Adhesion: 28 lb/inch, minimum, when tested in accordance with ASTM D903.
 - 5. Hydrostatic Head Pressure: Resists head pressure of 57 feet, maximum, when tested in accordance with ASTM D751.
- C. Primer: Liquid applied polymer.
 - 1. Color: Green.
 - 2. Elongation: 1,300 percent, measured in accordance with ASTM D412.
- D. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement waived if not installed on roof.
 - 1. Width: 4 inches.
 - 2. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 30 days of weather exposure.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and conditions are ready for work of this section.
- B. Where existing conditions are responsibility of another installer, notify Architect of unsatisfactory conditions.
- C. Do not proceed with this work until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- B. Clean and prime substrate surfaces to receive adhesives and sealants in accordance with manufacturer's installation instructions.

3.03 INSTALLATION

- A. Install materials in accordance with manufacturer's installation instructions.
- B. Air Barriers: Install continuous airtight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- C. Apply sealants and adhesives within recommended temperature range in accordance with manufacturer's installation instructions.
- D. Fluid-Applied Coatings or Membranes:
 - 1. Prepare substrate in accordance with manufacturer's installation instructions; treat joints in substrate and between dissimilar materials as indicated.
 - 2. Where exterior masonry veneer is being installed, install masonry anchors before installing air barrier over masonry; provide airtight seal around anchors.
 - 3. Apply bead or trowel coat of mastic sealant with minimum thickness of 1/4 inch along coating seams, rough cuts, and as recommended by manufacturer.
 - 4. Use flashing to seal to adjacent construction and to bridge joints in coating substrate.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Owner will provide testing services, and Contractor to provide temporary construction and materials for testing.

3.05 PROTECTION

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

SECTION 07 42 10
COMPOSITE FRAMING SUPPORT SYSTEM (CFS)

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Composite framing support (CFS) system.
 - 1. Substrate: Concrete masonry units (CMU).

1.02 REFERENCE STANDARDS

- A. ASCE American Society of Civil Engineers (www.asce.org)
 - 1. ASCE 7 – Minimum Design Loads for Buildings and Other Structures; 2010 with Supplements and Errata
 - 2. ASCE – Structural Plastics Design Manual
- B. ASTM International (American Society for Testing and Materials; www.astm.org)
 - 1. ASTM A653/A653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015
 - 2. ASTM C518 – Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2015
 - 3. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus; 2011
 - 4. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2010e1
 - 5. ASTM D570 – Standard Test Method for Water Absorption of Plastics; 2010e1
 - 6. ASTM D635 – Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position; 2014
 - 7. ASTM D638 – Standard Test Method for Tensile Properties of Plastics; 2014
 - 8. ASTM D696 - Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between minus 30 degrees C and 30 degrees C with a Vitreous Silica Dilatometer; 2008e1
 - 9. ASTM D695 – Standard Test Method for Compressive Properties of Rigid Plastics; 2015
 - 10. ASTM D790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials; 2010
 - 11. ASTM D792 – Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement; 2013
 - 12. ASTM D2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor; 2013a
 - 13. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics; 2012
 - 14. ASTM D4385 - Standard Practice for Classifying Visual Defects in Thermosetting Reinforced Plastic Pultruded Products; 2013
 - 15. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a
- C. IBC – International Building Code (International Code Council); 2015
- D. NFPA – National Fire Protection Association (www.nfpa.org)
 - 1. NFPA 285 – Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2012

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate construction of wall cladding support system over substrate indicated for proper drainage, flashing, trim, back-up support, and other related Work.
 - 1. Verify availability of materials, installer's personnel, equipment, and facilities needed to maintain schedule.

2. Review means and methods related to installation, including manufacturer's written instructions.
3. Examine support conditions for compliance with requirements, including alignment and attachment to structural support system.
4. Review flashings, wall cladding details, wall penetrations, openings, and condition of other construction that affects this Work.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit for each type of product indicated; include construction details, material descriptions, dimensions of individual components and profiles, and accessories as necessary for complete fully functioning and assembled system.
 1. CFS system attachment methods and required fasteners
- C. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with at least three years of documented experience.
- B. Installer: Company specializing in performing work of this section and the following:
 1. Install system in strict compliance with manufacturer's installation instructions.
 2. Have not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original unopened containers and packaging with labels clearly identifying product name and manufacturer.
- B. Deliver components and other manufactured items or accessories without damage or deformation.
- C. Storage: Store materials in clean, dry, and level interior areas or outdoor areas for limited duration in accordance with manufacturer's written instructions.
- D. Protect components and auxiliary accessories during transportation, handling, and installation from moisture, excessive temperatures and other construction operations in accordance with manufacturer's written instructions.
- E. Handle components in strict compliance with manufacturer's written instructions and recommendations, and in a manner to prevent bending, warping, twisting, and surface, edge or corner damage.

1.07 SITE CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of this Work in accordance with manufacturer's written installation instructions and warranty requirements.

1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. CFS System Warranty: Provide written warranty by manufacturer agreeing to correct defects in manufacturing within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: Advanced Architectural Products (A2P); SMARTci GreenGirt 1-in-1 System: www.smartcisystems.com.
- B. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:

1. Knightwall; WKS MFI System S-Series: www.knightwallsystems.com.

2.02 DESCRIPTION

- A. Attach CFS system components to existing brick masonry units.
- B. Install CFS system components vertically on masonry or concrete substrate system with shims as required in compliance with specified requirements.

2.03 PERFORMANCE REQUIREMENTS

- A. System Thermal Design: Ensure installed insulation and CFS system, sub-framing, clips and cladding attachment does not have thermal bridging of fasteners or framing that creates a continuous metal path from exterior surface of insulation to interior face of insulation.
- B. Temperature: Comply with structural loading requirements within temperature range of minus 55 degrees F to 180 degrees F.
- C. Fire-Test-Response Characteristics: Provide composite framing support system with fire-test results indicated as determined by test standard indicated and applied by UL or other testing and inspection agency acceptable to authorities having jurisdiction.
 1. Surface Burning Characteristics: In compliance with ASTM E84, for foam insulation, fiber reinforced polymer (FRP) and interior surfaces as follows:
 - a. Flame Spread Index (FSI): 25 or less.
 - b. Smoke Developed Index (SDI): 450 or less.
 2. Intermediate Scale Multistory Fire Test: Comply with NFPA 285 and/or IBC acceptance criteria for wall height above grade and fire separation distances, when wall type and other noted conditions require such testing or compliance with requirements as indicated.

2.04 COMPOSITE FRAMING SUPPORT (CFS) SYSTEM

- A. CFS System: Provide CFS system consisting of polyester and vinyl ester bioresin matrix (FRP) with recycled materials, fire retardant additives and integral continuous metal inserts the length of profile. Reinforce CFS system with glass strand rovings used internally for longitudinal (lengthwise) strength and continuous strand glass mats or stitched reinforcements used internally for transverse (crosswise) strength.
 1. Depth of Girt: As indicated on Drawings.
 2. On Center Spacing: 24 inch.
 3. Provide continuous non-corrosive steel insert for engagement of fasteners, at least 16 gage thick with G90 galvanized coating designation in compliance with ASTM A653/A653M.
 - a. Fully engage steel insert with adjacent CFS at ends.
 - b. Anchor sub-girts and other wall cladding support accessories to steel insert set into and part of CFS.
 4. Provide integral compression seal in CFS sections to ensure insulation panel will not dislodge.
 5. Provide integral anti-siphon grooves on exterior and interior flanges of CFS.
 6. Provide force distribution zones integrally designed into profile of CFS.
 7. Surface Burning Characteristics:
 - a. Flame Spread Index (FSI): 25 or less, when tested in accordance with ASTM E84.
 - b. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
 8. Flammability: Comply with ASTM E84.
 9. Self-Extinguishing: Comply with ASTM D635.
 10. Profile Visual Requirements: Comply with ASTM D4385.
 11. Tensile Stress: Provide engineered lengthwise and crosswise tensile stress in compliance with performance loading criteria and specified safety factors, in accordance with ASTM D638.

12. Compressive Stress: Provide engineered lengthwise and crosswise compressive stress in compliance with performance loading criteria and specified safety factors, in accordance with ASTM D695.
13. Flexural Stress: Provide engineered lengthwise and crosswise flexural stress in compliance with performance loading criteria and specified safety factors, in accordance with ASTM D790.
14. Modulus of Elasticity: Engineered to meet performance loading criteria and specified safety factors.
15. Barcol Hardness: 45, in accordance with ASTM D2583.
16. Water Absorption: Less than 0.46 percent by weight, within 24 hours, tested in accordance with ASTM D570.
17. Density: Within range of 0.062 to 0.070 lbs/cubic inch, in accordance with ASTM D792.
18. Lengthwise Coefficient of Thermal Expansion: 7.0×10^{-6} inch/inch/degrees F, in accordance with ASTM D696.
19. Notched Izod Impact, Lengthwise: 24 ft lbs/inch, in accordance with ASTM D256 within temperature range indicated.
20. Notched Izod Impact, Crosswise: 4 ft lbs/inch, in accordance with ASTM D256 within temperature range indicated.

2.05 INSULATION

- A. As specified in Section 07 21 00.

2.06 ASSEMBLY

- A. Assemble CFS system using manufacturer's standard procedures and processes identical to tested units and as necessary to comply with performance requirements indicated.
 1. Comply with CFS system and dimensional and structural requirements as indicated on drawings.
 2. Erect CFS system in established sequence in accordance with manufacturer's standard installation procedures.

2.07 ACCESSORIES

- A. Fasteners: Corrosion-resistant, self-tapping and self-drilling screws, bolts, nuts, and other fasteners as recommended by CFS system manufacturer for project application.
 1. Cladding to CFS System: Use standard self-tapping metal screws.
 2. CFS System to brick: Use standard masonry screw anchors in predrilled hole.
 3. DO NOT USE powder, air, or gas actuated fasteners or actuated fastener tools. DO NOT USE impact wrenches when fastening to or from the CFS.
- B. Sealants: Refer to Section 07 92 00 for sealant information.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas of this work, and project conditions with installer present for compliance with requirements for installation tolerances, substrates, CFS system conditions, and other conditions affecting performance of this Work.
- B. Examine rough-in for components and systems penetrating CFS system to coordinate actual locations of penetrations relative to CFS systems joint locations prior to installation.
- C. Verify that mechanical and electrical services for exterior walls have been installed and tested and, if appropriate, verify that adjacent materials and finishes are dry and ready to receive insulation.
- D. Proceed with installation only after wall substrate surfaces have been properly prepared and unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.

- B. Prepare surfaces using methods recommended by CFS manufacturer for achieving best result for substrate under project conditions.
- C. Prepare sub-framing, base angles, sills, furring, and other CFS system members and provide anchorage in accordance with ASTM C754 for substrate type and wall cladding type in accordance with manufacturer's installation instructions.

3.03 INSTALLATION

- A. Install CFS system in accordance with manufacturer's installation instructions.
- B. Install CFS system in compliance with system orientation, sizes, and locations as indicated on drawings.

3.04 TOLERANCES

- A. Shim and align CFS system within installed tolerances of 1/4 inch in 20 feet, non-cumulative, level, plumb, and on location lines as indicated.

3.05 PROTECTION

- A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

**SECTION 07 42 13
METAL WALL PANELS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Manufactured metal panels for exterior wall panels and soffit panels, with accessory components.

1.02 REFERENCE STANDARDS

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.
- C. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2023.

1.03 SUBMITTALS

- A. Product Data - Wall System: Manufacturer's data sheets on each product to be used, including:
 - 1. Physical characteristics of components shown on shop drawings.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation instructions and recommendations.
- B. Shop Drawings: Indicate dimensions, layout, joints, construction details, support clips, and methods of anchorage.
- C. Test Reports: Submit test report verifying compliance with NFPA 285 for previously-tested exterior wall assembly.
- D. Manufacturer's qualification statement.
- E. Installer's qualification statement.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in installing products specified in this section with minimum three years of documented experience.
- B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- B. Store prefinished material off the ground and protected from weather; prevent twisting, bending, or abrasion; provide ventilation; slope metal sheets to ensure proper drainage.
- C. Prevent contact with materials that may cause discoloration or staining of products.

1.06 FIELD CONDITIONS

- A. Do not install wall panels when air temperature or relative humidity are outside manufacturer's limits.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Finish Warranty: Provide 5-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

- C. Special Warranty: Provide 2-year warranty covering water tightness and integrity of seals of metal wall panels. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Metal Wall Panels - Concealed Fasteners:
 - 1. ATAS International, Inc; Design Wall DSF Panel: www.atas.com.
 - 2. Centria; IW Series: www.centria.com.
 - 3. MBCI; FW-120 Panel: www.mbc.com.
- B. Metal Soffit Panels:
 - 1. ATAS International, Inc; Wind-Lok Soffit MPS 120: www.atas.com.
 - 2. Centria; IW Series: www.centria.com
 - 3. MBCI; FW-120 Panel: www.mbc.com
 - 4. Morin Corporation; Primo Soffit: www.morincorp.com.

2.02 METAL WALL PANEL SYSTEM

- A. Wall Panel System: Factory fabricated prefinished metal panel system, site assembled.
 - 1. Provide exterior wall panels and soffit panels.
 - 2. Design and size components to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of wall.
 - 3. Design Pressure: In accordance with applicable codes.
 - 4. Fire Performance: Tested in accordance with, and complying with acceptance criteria of NFPA 285.
 - 5. Maximum Allowable Deflection of Panel: L/180 for length(L) of span.
 - 6. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.
 - 7. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
 - 8. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.
 - 9. Corners: Factory-fabricated in one continuous piece with minimum 2-inch returns.
- B. Exterior Wall Panels:
 - 1. Profile: Vertical; style as indicated.
 - 2. Side Seams: Double-interlocked, tight-fitting, sealed with continuous gaskets.
 - 3. Material: Precoated steel sheet, 22 gauge, 0.0299 inch minimum thickness.
 - 4. Panel Width: 12 inches.
 - 5. Color: As selected by Architect from manufacturer's full line.
- C. Soffit Panels:
 - 1. Profile: Style as indicated, with venting provided.
 - 2. Material: Precoated steel sheet, 22 gauge, 0.0299 inch minimum thickness.
 - 3. Panel type: Perforated.
 - 4. Color: As selected by Architect from manufacturer's full line.
- D. Internal and External Corners: Same material, thickness, and finish as exterior sheets; profile to suit system; shop cut and factory mitered to required angles.
- E. Expansion Joints: Same material, thickness and finish as exterior sheets; 22 gauge, 0.299 inch thick; manufacturer's standard brake formed type, of profile to suit system.
- F. Trim: Same material, thickness and finish as exterior sheets; brake formed to required profiles.
- G. Anchors: Galvanized steel.

2.03 MATERIALS

- A. Precoated Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A653/A653M, Structural Steel (SS) or Forming Steel (FS), with G90/Z275 coating; continuous coil-coated on exposed surfaces with specified finish coating and on panel back with specified panel back coating.
- B. Select materials with surface flatness, smoothness, and lack of surface blemishes where exposed to view in finished system.

2.04 FINISHES

- A. Exposed Surface Finish: Panel manufacturer's standard polyvinylidene fluoride (PVDF) coating, top coat over epoxy primer.
- B. Panel Backside Finish: Panel manufacturer's standard siliconized polyester wash coat.
- C. Fluoropolymer Coil Coating System: Polyvinylidene fluoride (PVDF) multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent PVDF resin, and at least 80 percent of coil coated metal surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss color to match insulated metal wall panels.
 - 1. Products:
 - a. Arkema, Inc; Kynar 500: www.arkema.com.
 - b. PPG Metal Coatings; Duranar: www.ppgmetalcoatings.com.
 - c. Valspar; Fluoropon: www.valsparcoilextrusion.com.

2.05 ACCESSORIES

- A. Cladding support as detailed.
- B. Gaskets: Manufacturer's standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant.
- C. Concealed Sealants: Non-curing butyl sealant or tape sealant, see Section 07 92 00
- D. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
- E. Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, steel, hot dip galvanized. Fastener cap same color as exterior panel.
- F. Field Touch-up Paint: As recommended by panel manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that building framing members are ready to receive panels.

3.02 PREPARATION

- A. Install subgirts perpendicular to panel length, securely fastened to substrates and shimmed and leveled to uniform plane, and spaced at intervals indicated.
- B. Protect surrounding areas and adjacent surfaces from damage during execution of this work.

3.03 INSTALLATION

- A. Install panels on walls and soffits in accordance with manufacturer's instructions.
- B. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint; allow to dry prior to wall panel installation.
- C. Fasten panels to structural supports; aligned, level, and plumb.
- D. Locate joints over supports.
- E. Lap panel ends 2 inches, minimum.
- F. Provide expansion and control joints where indicated.

- G. Use concealed fasteners unless otherwise indicated by Architect.
- H. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.04 TOLERANCES

- A. Offset From True Alignment Between Adjacent Members Abutting or In Line: 1/16 inch, maximum.
- B. Variation from Plane or Location As Indicated on Drawings: 1/4 inch, maximum.

3.05 CLEANING

- A. Remove site cuttings from finish surfaces.
- B. Remove protective material from wall panel surfaces.
- C. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

3.06 PROTECTION

- A. Protect metal wall panels until completion of project.
- B. Touch-up, repair, or replace damaged wall panels or accessories before Date of Substantial Completion.

END OF SECTION

SECTION 07 42 13.19
INSULATED METAL WALL PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Factory-assembled metal panel system for walls, with trim, related flashings and accessory components.

1.02 REFERENCE STANDARDS

- A. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.
- C. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturer documentation on tested structural, thermal, and fire resistance capabilities of assembled panel.
- C. Shop Drawings: Indicate dimensions.
- D. Samples: Submit two samples of panel, 6 x 6 inch in size illustrating finish color, sheen, and texture.
- E. Design and Performance Data: Indicate panel profile and dimensions.
- F. Manufacturer's Installation Instructions: Indicate special handling criteria.
- G. Manufacturer's qualification statement.
- H. Installer's qualification statement.
- I. Warranty Documentation for Installation of Building Rainscreen Assembly: Submit installer warranty and ensure that forms have been completed in Owner's name and registered with installer.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this Section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing work of this Section with minimum 3 years experience.

1.05 MOCK-UPS

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Demonstrate component assembly including panel and glazing materials, weep drainage system, attachments, anchors, and perimeter sealant.
- C. Locate where directed.
- D. Mock-up may remain as part of work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- B. Store pre-finished material off ground with weather protection to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- C. Prevent contact with materials that could cause discoloration or staining.

1.07 FIELD CONDITIONS

- A. Do not install panels when air temperature or relative humidity are outside manufacturer's limits.

1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Finish Warranty: Provide 5-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.
- C. Special Warranty: Provide 2-year warranty covering water tightness and integrity of seals of metal plate wall panels. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Insulated Metal Wall Panels:
 - 1. Centria; Formawall Dimensions Series - 3T: www.centria.com.
 - 2. ATAS International, Inc; Isolaren ML: www.atas.com
 - 3. Kingspan Insulated Panels; BENCHMARK Designwall 4000 Architectural Wall Panel : www.kingspan.com.

2.02 PERFORMANCE / DESIGN CRITERIA

- A. Metal Panel System: Factory-assembled metal panel system, with trim, related flashings and accessory components.
 - 1. Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
 - 2. Accommodate tolerances of building structural framing.
 - 3. Provide continuity of thermal barrier at building enclosure elements; see Section 07 21 00.
 - 4. Provide continuity of air barrier and vapor seal at building enclosure elements in conjunction with air seal materials; see Section 07 27 00.
- B. Performance Requirements:
 - 1. Thermal Performance: Provide thermal resistance through entire system; U Value 0.052 max.
 - 2. Structural Performance: Design and size to withstand all dead loads and wind loads caused by positive and negative wind pressure acting normal to plane of panel.
 - a. Verify structural performance in accordance with ASTM E330/E330M, using test pressure 1.5 times design wind pressure, with 10 seconds duration of maximum load.
 - 3. Movement: Accommodate the movement caused by the following without damage to system, components, or deterioration of seals:
 - a. Normal movement between system components.
 - b. Seasonal temperature cycling.
 - c. Deflection of structural support framing,

2.03 COMPONENTS

- A. Wall Panels: Exterior and interior metal sheet skin, factory-assembled, with foamed in place insulation; exterior and interior sheet interlocking at edges, fitted with continuous gaskets.
 - 1. Panel Width: 36 inch.
 - 2. Profile: As indicated; horizontal panels.
 - 3. Panel Thickness: 3 inch.
 - 4. Exterior Sheet: Pre-finished galvanized steel, 22 gauge, 0.0299 inch minimum base metal thickness; stucco embossed.
 - 5. Interior Sheet: Galvanized steel, pre-finished, 22 gauge, 0.0299 inch minimum base metal thickness.

6. Panel Edge Profile: Tongue and groove, for flush seam.
 7. Fabricate panels in longest practicable lengths.
 8. Exterior Finish: Polyvinylidene fluoride (PVDF) coating; color as selected from manufacturer's standard range.
 9. Interior Finish: Polyvinylidene fluoride (PVDF) coating; color as selected from manufacturer's standard range.
- B. Internal and External Corners: Same material, thickness, and finish as exterior sheets; factory-fabricated mitered to required angles in one continuous piece with minimum 18 inch returns.
 - C. Trim, Closure Pieces, Expansion Joints, Caps, Flashings, Fascias, and Infills: Same material, thickness and finish as exterior sheets; factory-fabricated to required profiles; fabricated in longest practicable lengths.
 1. Exposed Fasteners: Not permitted.
 2. Profiles: To suit system.

2.04 MATERIALS

- A. Precoated Galvanized Steel Sheet: ASTM A653/A653M, Commercial Steel (CS) or Forming Steel (FS), with G90/Z275 coating; continuous-coil-coated with acrylic primer coat, silicone polyester top coat, and polyester washcoat for panel back.
 1. Color of Exposed Exterior Surfaces: As selected by Architect from manufacturer's standard range.
- B. Foamed-in-Place Insulation: Urethane type.
- C. Gaskets: Manufacturer's standard type suitable for use with panel system, permanently resilient; ultraviolet and ozone resistant; color as selected by Architect.
- D. Panel Sealants: Manufacturer's standard type suitable for use with installation of panel system; non-staining, skinning, non-shrinking, non-sagging, ultra-violet and ozone resistant; color as selected by Architect.

2.05 ACCESSORIES

- A. Support for Cladding and Continuous Insulation: Continuous thermal Z-girts as specified in section 07 42 10.
- B. Concealed Sealants: Non-curing butyl sealant or tape sealant.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that structural framing is ready to receive panel system.

3.02 PREPARATION

- A. Protect surrounding areas and adjacent surfaces from damage during execution of this work.

3.03 INSTALLATION

- A. Install panel system on walls and soffits in accordance with manufacturer's instructions.
- B. Protect panel surfaces in contact with cementitious materials with bituminous paint; allow paint to dry prior to installation.
- C. Permanently fasten panel system to structural supports; aligned, level, and plumb, within specified tolerances.
- D. Locate panel joints over supports.
- E. Use concealed fasteners unless otherwise approved by Architect.
- F. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.04 TOLERANCES

3.05 CLEANING

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.
- B. Remove site cuttings from finish surfaces.
- C. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.
- D. Upon completion of installation, thoroughly clean prefinished aluminum surfaces in accordance with AAMA 609 & 610.

3.06 PROTECTION

- A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 07 44 17
ULTRA-HIGH-PERFORMANCE CONCRETE (UHPC) PANEL SYSTEM

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the ultra-high-performance concrete (UHPC) fabrications, as indicated on drawings and specified herein including, but not limited to, the following:
 - 1. UHPC façade and interior wall panels.
 - 2. Extruded aluminum support system.
 - 3. Attachment hardware and accessories.
 - 4. All Jamb, Head, Sill and Bottom of wall aluminum closure panels.

1.3 RELATED SECTIONS

- A. Thermal insulation - Section 07 21 00.
- B. Sheet Metal Flashing - Section 07 62 00.

1.4 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Manufacturer of ultra-high-performance cement panels shall be a firm which successfully fabricated UHPC components specified for a period of not less than five (5) years and is equipped to provide the quality and quantity shown. Manufacturing plant shall be certified by the Prestressed Concrete Institute.
- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the State of New York and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of UHPC panels that are similar to those indicated for this project in material, design, and extent.
- C. Mock-Up: Provide on-site composite mock-ups as directed by the Architect, including adjacent connected construction.
- D. Prior to installation of cladding, membrane supplier's field representative shall inspect wall substrate and air barrier to confirm proper installation and submit a report of observations and findings to the Architect.

1.5 ULTRA HIGH-PERFORMANCE CONCRETE PERFORMANCE CRITERIA

- A. The components and assemblies of the UHPC components system shall comply with the Codes and regulations of all Governing Agencies having jurisdiction. When applicable Codes or specified requirements differ, the more stringent conditions shall be provided for. Except when applicable codes make other provisions, or as otherwise noted herein, the loads shall act in combinations that provide the most unfavorable conditions.
- B. Wind Loads: The wind loads on the UHPC components and its connections shall be positive and negative per local Building Code.
 - 1. Design Wind Pressure shall be multiplied by a Load Factor of 1.50. With this Load Factor applied, design stresses shall not exceed yield point level or elastic buckling level, whichever is lower. No wall element, including sealants and sealed joints, shall sustain permanent deformation or failure under loading equivalent to 1.5 times the Design Wind Pressures.
 - 2. Stresses shall not exceed the allowable values established and recommended by Prestressed Concrete Institute. In no case shall allowable values exceed the yield stress. For load combinations, a reduction in load or increase in allowable stress (but not both) may be used only if permitted by code.

1.6 SUBMITTALS

- A. Product Data: Submit specifications and other data for each type of UHPC required, including certification that complies with specified requirements. Include instructions for handling, storage, installation, protection, and cleaning.

1. Include product data describing material and fabrication for aluminum attachment system and components.
 - B. Samples: Submit sets of samples of each different color, grade, and finish. Include in each set full range of exposed color and texture to be expected in completed work, 24 by 24 inches and of actual thickness, attachment profile and typical attachment brackets/anchors.
 - C. Shop Drawings: Submit cutting and setting drawings showing sizes, dimensions, sections, and profiles of UHPC units, arrangement and provision for jointing, anchoring, and fastening, supports and other necessary details for lifting devices and reception of other work, including the following:
 1. Provide layout of engineered bracket and rail support system to be coordinated with prefabricated wood wall panel framing.
 2. Provide 1/4"=1'-0" elevation drawings and plan layout drawings, fully dimensioned and referenced to column lines. Details shall be a minimum of 3"=1'-0" scale and shall indicate all fully coordinated adjacent construction.
 3. Unit shapes (elevations and sections) and dimensions.
 4. Thickness of UHPC backing.
 5. Finishes.
 6. Joint and connection details. Include complete integrated aluminum plate trim at windows and openings indicating joints, connections, corner conditions, etc.
 7. Lifting and erection details.
 8. Location and details of hardware attached to structure.
 9. Handling procedures.
 10. Sequence of erection for special conditions.
 11. Relationship to adjacent material.
 12. Description of all loose, and field hardware.
 13. Each piece of panel shall be dimensioned and numbered. The numbers shall correspond to the numbers on the approved setting drawings.
 - D. The manufacturer shall not proceed with fabrication of any products prior to receiving approval of samples and erection drawings by the Architect.
 - E. Engineering Calculations: Submit engineering and design calculations to substantiate the anchoring methods, fastening devices, and substructure assembly components of the rainscreen system, and all UHPC indicated on the submitted shop drawings, signed and sealed by a Professional Engineer licensed in the State of New York.
 1. Calculations shall establish compliance with specified stress at all principal elements and the structural analysis of all connections. If calculations indicate any deficiencies, provide all items necessary to comply with the performance requirements without cost to the Owner.
 2. Calculations shall be submitted on 8-1/2" x 11" sheets and shall be signed and sealed by a professional engineer registered in the State of New York.
 3. The general design shown is presumed adequate to permit compliance with the specified performance. Provide details and calculations as necessary to verify and supplement the general design.
 - F. Certified Test Reports: ASTM C 1185 for panel. Anchor pull-out testing for tension and shear.
- 1.7 PRODUCT DELIVERY, STORAGE AND HANDLING**
- A. Delivery and Handling
 1. Handle and transport units in a position consistent with their shape and design to avoid excessive stresses or damage.
 2. Lift or support units only at the points shown on the erection shop drawings.
 3. Place nonstaining resilient spacers of even thickness between units.
 4. Support units during shipment on nonstaining, shock-absorbing material.
 5. Protect units from dirt and damage during handling and transport.
 - B. Storage at Job Site
 1. Store units to protect them from contact with soiling, staining, and from physical damage.

2. Store units, unless otherwise specified, with nonstaining, resilient supports located in same positions as when transported.
3. Store units on firm, level, and smooth surface.
4. Place stored units so that identification marks are easily readable.

1.8 TESTING

- A. The following tests shall be performed:
 1. Concrete compressive strength according to ASTM C 39. Use specimens 3" x 6". These tests shall be performed at 40 hours, after curing at 72°F for each batch.
 2. Determination of flow according to ASTM C 109 performed on a flow table constructed according to ASTM C 230. Inform the Owner if the measured diameter of the concrete after 20 table drops is outside of the following limits: minimum 7"; maximum 8-1/2". Perform the test on every concrete batch.

PART 2 PRODUCTS

2.1 UHPC PANELS

- A. UHPC Façade Panels: Envel Rainscreen Façade Panels, or approved equal; www.envelfacade.com, or Taktl LLC, Turtle Creek, PA, 724-777-2151 www.taktl-llc.com
 1. Nominal Thickness: Not less than 5/8".
 2. Panel Texture: 48" wide sheets with texture, as indicated on the drawings.
 3. Panel Attachment: Exposed fasteners of 304 stainless steel, powder-coated color matched heads to panel color.
 4. Corner fabrication: Quirk Miter

2.2 PERFORMANCE CHARACTERISTICS

- A. Thermal Expansion (ASTM C 531): 5.71E-06 in/in/degree F.
- B. Density, Thin Panel (ASTM C 642): 4.6%, 150 lbs./ft³.
- C. Flexural Strength (Thin Panel) – Wet (ASTM C 1609): Pass; mean length direction not less than 2,200 lbs./in² and width direction 2,200 lbs./in².
- D. Freeze/Thaw (Cladding) (ASTM C 666): Pass. No visible cracks and not less than .020 Mass Change% 0.04 Relative Dynamic Modulus 96%.
- E. Anchor Pullout Strength (ASTM E 488): 8.5 mm embed in 13mm thick panel.
 1. Tension (Min. Mean) Peak Load: 390 lbf or greater.
 2. Shear (Min. Mean) Peak Load: 800 lbf or greater.
- F. Surface Burning Characteristics (ASTM E84):
 1. Flame Spread: 0.
 2. Smoke Developed: 0.
 3. Class A.
- G. Compressive Strength (ASTM C 39): ≥ 18,000 lbs./in².
- H. Tensile (splitting matrix prism) Strength (ASTM C 496): 2100 lbs./in².
- I. Water Tightness Test: In accordance with ASTM 1186-12 Section 11. No water droplet formation allowed.
- J. ASTM E488 post freeze thaw fastener performance test. Submit data.

2.3 PANEL FINISHES

- A. Finish exposed-face surfaces of UHPC as follows to match approved samples and mock-ups. Color shall be as approved by Architect. Submit samples for color match review in mock-up construction. Panel faces shall be free of joint marks, grain, or other obvious defects.
 1. Smooth-Surface Finish: Provide free of sand streaks, honeycombs, and excessive air voids, with uniform color and texture.
 2. Sand- or Abrasive-Blast Finish: Use abrasive grit, equipment, application techniques, and cleaning procedures to expose aggregate and surrounding matrix surfaces.
 3. Acid-Etched Finish: Use acid and hot-water solution equipment, application techniques, and cleaning procedures to expose aggregate and surrounding matrix surfaces.
 4. Mix and color selected by Architect.

2.4 SUPPORT STRUCTURE

- A. Aluminum Panel Support Structure:

1. Complete sub-frame assembly to support and anchor solid exterior solid UHPC wall panels. Aluminum support structure to be anchored to building structure as per manufacturer's recommendations and in accordance with project-specific structural calculations.
 2. Insulation framing system, semi-rigid mineral wool insulation and thermally broken z-girt.
 3. Extrusions for panel-to-wall attachment shall be continuous aluminum extrusions mounted to wall and black powder coat to reduce their appearance in open panel joints.
- B. Wall Framing Components: Vertical or horizontal hat channels, Z- and/or C-shapes as required for complete installation.

2.5 FABRICATION

- A. Fabricate wall panels and accessory items in accordance with manufacturer's recommendations and approved submittals.
- B. Panels shall be fabricated to size, with all anchor holes and panel extrusion clips factory-installed by the UHPC panel manufacturer.
- C. Field-cut panels (if required) and drill face-fastening anchor holes in accordance with the UHPC panel manufacturer's written directions.
- D. Do not field-modify factory-drilled concealed/undercut panel anchor holes.
- E. Fabricate all panels to profiles, colors and textures per samples and approval selected by the Architect.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for environmental conditions, installation tolerances, and other conditions affecting performance of ultra-high-performance concrete fabrications.
 1. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Air barrier membrane shall be visually inspected for breaches and repaired as recommended by membrane manufacturer prior to installation of support system.

3.2 PREPARATION

- A. Prior to installation of units, the Contractor shall check the job site dimensions affecting the work. Any discrepancies between design dimensions and field dimensions that could adversely affect installation in accordance with the contract documents shall be brought to the attention of the Architect. Installation shall not proceed until discrepancies are corrected or until installation requirements are modified and reviewed by the Architect.
- B. Examine UHPC components prior to installation.
 1. Any piece with flaws, imperfections, dimensional errors, improper tolerances, damage, discolorations, staining, or otherwise not considered suitable and/or acceptable to the Architect, will be subject to rejection.
 2. Defective items shall be removed from the job site and replaced to the Architect's satisfaction within 48 hours. Repairs, such as gluing of broken units are not to be allowed.
- C. Touch up galvanized steel surfaces, which are scratched or damaged, with zinc-rich paint and/or approved "Galvanize Repair" paint products. Clean metal thoroughly before touch-up.

3.3 INSTALLATION

- A. Contiguous Work: Provide openings and other provisions as shown or required for contiguous work. When directed by the Contractor, close up openings in units after other work is in place. Use materials and set to match surrounding units.
- B. Setting: Set UHPC units in accordance with drawings and final shop drawings. Provide anchors, supports, fasteners and other attachments shown or necessary to secure work firmly in place. Shim and adjust accessories for proper setting of units.
 1. Make necessary provisions for the employment of the suitable lifting devices at points provided by the manufacturer.
 2. Erect UHPC units plumb and true with joints uniform in width and accurately aligned within the allowable tolerances.

3. Provide temporary supports and bracings as required to maintain position, stability and alignment when units are being permanently connected. Fasten UHPC units in place by bolting or welding or both as shown on approved erection drawings.
 - a. Provide slotted holes in connection and attachments to accommodate induced panel movement due to creep, thermal, moisture, field tolerances and dimensional changes in the structural frame.

3.4 CONSTRUCTION TOLERANCES

- A. Install UHPC units to comply with the following noncumulative maximum variations:
 1. Tolerance of Face Width of Joint
 - a. Panel Dimensions 10 Feet or Less: + 3/16".
 - b. Panel Dimensions 10 to 20 Feet: + 1/4".
 - c. Panel Dimensions Over 20 Feet: + 5/16".
 2. Warpage: Maximum permissible warpage of one corner out of the plane of the other three shall 1/16 inch/ft. distance from the nearest adjacent corner, or 1/4" total after installation.
 3. Bowing: Not over $L/360$ with a maximum of 1", where L is the panel length in the direction of the bow. Differential bowing as erected between adjacent members of the same design shall be not more than 1/4".

3.5 ADJUSTMENTS AND CLEANING

- A. Remove and replace units which are broken, chipped, stained or otherwise damaged. Where directed, remove and replace units that do not match adjoining work. Provide new matching units, install as specified and eliminate evidence of replacement.
- B. Clean UHPC units not less than 6 days after completion of work, using clean water and stiff-bristle brushes. Do not use wire brushes, acid type cleaning agents or other cleaning compounds with caustic or harsh fillers.
- C. Provide final protection and maintain conditions, in a manner acceptable to Fabricator and Installer, which ensures work being without damage, discoloration, or deterioration during subsequent construction and until time of substantial completion.

END OF SECTION

SECTION 07 54 23
THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Adhered system with thermoplastic polyolefin (TPO) roofing membrane.
- B. Insulation, flat and tapered.
- C. Vapor retarder.
- D. Deck sheathing.
- E. Roofing cant strips, stack boots, roofing expansion joints, and walkway pads.

1.02 REFERENCE STANDARDS

- A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- B. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2023a.
- C. ASTM D6878/D6878M - Standard Specification for Thermoplastic Polyolefin-Based Sheet Roofing; 2021.
- D. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces; 2011 (Reapproved 2019).
- E. FM DS 1-28 - Wind Design; 2015, with Editorial Revision (2022).
- F. FM DS 1-29 - Roof Deck Securement and Above-Deck Roof Components; 2016, with Editorial Revision (2022).
- G. NRCA (RM) - The NRCA Roofing Manual; 2024.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.
 - 1. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturer's written information listed below.
 - 1. Product data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, and fasteners.
- C. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, and paver layout.
- D. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.
- E. Warranty:
 - 1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
 - 2. Submit installer's certification that installation complies with all warranty conditions for the waterproof membrane.
- F. Manufacturer's Qualification Statement.
- G. Installer's Qualification Statement.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section:

1. Approved by membrane manufacturer.
2. Extend manufacturer's labor and materials guarantee.
3. Extend manufacturer's No Dollar Limit guarantee.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.
- B. Protect products in weather protected environment, clear of ground and moisture.
- C. Protect foam insulation from direct exposure to sunlight.
- D. Provide Safety Data Sheets (SDS) at the project site at all times during transportation, storage, and installation of materials.
- E. Comply with requirements from Owner to prevent overloading or disturbance of the structure when loading materials onto the roof.

1.07 FIELD CONDITIONS

- A. Do not apply roofing membrane during unsuitable weather. Refer to manufacturer's written instructions.
- B. Do not apply roofing membrane when ambient temperature is below 40 degrees F.
- C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
- E. Proceed with work so new roofing materials are not subject to construction traffic as work progresses.
- F. Do not allow grease, oil, fats, or other contaminants to come into direct contact with membrane.

1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. System Warranty: Provide manufacturer's system warranty agreeing to repair or replace roofing that leaks or is damaged due to wind or other natural causes.
 1. Warranty Term: 20 years.
 2. For repair and replacement include costs of both material and labor in warranty.
 3. Include accidental punctures according to the manufacturer's standard warranty terms.
 4. Include hail damage according to the manufacturer's standard warranty terms.
 5. Exceptions NOT Permitted:
 - a. Damage due to roof traffic.
 - b. Damage due to wind of speed greater than 56 mph but less than 90 mph.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Carlisle SynTec Systems: www.carlisle-syntec.com.
- B. Elevate Roofing Systems: www.holcimelevate.com
- C. GAF: www.gaf.com
- D. Approved Equivalent

2.02 ROOFING APPLICATIONS

- A. TPO Membrane Roofing: One ply membrane, asphalt adhered, over insulation.
- B. Roofing Assembly Performance Requirements and Design Criteria:
 1. Solar Reflectance Index (SRI): Minimum of 64 based on three-year aged value; if three-year aged data is not available, minimum of 82 initial value.

- a. Calculate SRI in accordance with ASTM E1980.
 - b. Field applied coating may not be used to achieve specified SRI.
- 2. Wind Uplift:
 - a. Designed to withstand wind uplift forces calculated with ASCE 7.
 - b. Design Wind Speed: In accordance with local building code and authorities having jurisdiction (AHJ).
- 3. Insulation Thermal Resistance (R-Value): Provide R-Value over entire roof deck in accordance with local building code requirements.
- 4. Drainage: No standing water within 48 hours after precipitation.

2.03 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

- A. Single Source Responsibility: Provide and install products from single source.
- B. Vapor Barrier/Base Sheet: Self-adhering, rubberized asphalt membrane laminated to spun-bonded polyester fabric; 40 mil, 0.040 inch thick, minimum.
- C. Membrane:
 - 1. Material: Thermoplastic Polyolefin (TPO) complying with ASTM D6878/D6878M.
 - 2. Reinforcing: Internal fabric.
 - 3. Thickness: 60 mil (0.060 inch), minimum.
 - 4. Color: White.
 - 5. Products:
 - a. Carlisle SynTec Systems; Sure-Weld.
- D. Seaming Materials: As recommended by membrane manufacturer.
- E. Membrane Fasteners: As recommended and approved by membrane manufacturer.
- F. Vapor Retarder: Material approved by roof manufacturer; compatible with roofing and insulation materials.
- G. Flexible Flashing Material: Same material as membrane.
- H. Base Flashing: Provide waterproof, fully adhered base flashing system at all penetrations, plane transitions, and terminations.

2.04 DECK SHEATHING AND COVER BOARDS

- A. Cover Board: Polyisocyanurate (ISO) thermal board, complying with ASTM C1289; Type II - Faced with coated-glass facer on both major surfaces of core foam, Class 4 with thickness of 1/2 inch, and Grade 1 with 109 psi, maximum, compressive strength.

2.05 INSULATION

- A. Polyisocyanurate (ISO) Board Insulation: Complies with ASTM C1289, Type II, Class 1 - Faced with glass-reinforced felt on both surfaces of core foam.
 - 1. Tapered Board: Slope as indicated; minimum thickness 1/2 inch; fabricate of fewest layers possible.
 - 2. Grade and Compressive Strength: Grade 2, 20 psi, minimum.
 - 3. Board Thickness: 1/2 inch.
 - 4. Product: Carlisle InsulBase.

2.06 ACCESSORIES

- A. Prefabricated Flashing Accessories:
 - 1. Corners and Seams: Same material as membrane, in manufacturer's standard thicknesses.
 - 2. Penetrations: Same material as membrane, with manufacturer's standard cut-outs, rigid inserts, clamping rings, and flanges.
 - 3. Sealant Pockets: Same material as membrane, with manufacturer's standard accessories, in manufacturer's standard configuration.

4. Pressure Sensitive Cover Strips: 6 inches wide, 45 mil, 0.045 inch thick, non-reinforced TPO membrane laminated to 35 mil, 0.035 inch thick cured synthetic rubber with pressure sensitive adhesive.
 5. Miscellaneous Flashing: Non-reinforced TPO membrane; 80 mil, 0.080 inch thick, in manufacturer's standard lengths and widths.
- B. Insulation Adhesive: Two-component polyurethane, expanding foam.
 1. Products:
 - a. Carlisle Flexible FAST.
 - C. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
 - D. Membrane Adhesive: As recommended by membrane manufacturer.
 1. Product:
 - a. Carlisle Sure-Weld Bonding Adhesive.
 - E. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.
 - F. Sealants: As recommended by membrane manufacturer.
 1. Product:
 - a. Sure-Weld Cut Edge Sealant.
 - G. Cleaner: Manufacturer's standard, clear, solvent-based cleaner.
 1. Product: Carlisle Weathered Membrane Cleaner.
 - H. Edgings and Terminations: Manufacturer's standard edge and termination accessories.
 1. Snap-On Edge System:
 - a. Carlisle SynTec Systems; SecurEdge 200.
 2. Anchor Bar Fascia System:
 - a. Carlisle SynTec Systems; SecurEdge 1000.
 3. Drip Edge System:
 - a. Carlisle SynTec Systems; Sure-Seal Drip Edge.
 4. Coping System:
 - a. Carlisle SynTec Systems; SecurEdge 200 Coping.
 5. Termination Bar.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of snow or ice.
- E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.02 PREPARATION, GENERAL

- A. Clean substrate thoroughly prior to roof application.

3.03 WOOD DECK PREPARATION

- A. Verify flatness and tightness of joints of wood decking. Verify that all wood decking edges are fully supported. Fill knot holes with latex filler or completely cover with securely nailed sheet metal.
- B. Confirm dry deck by moisture meter with 12 percent moisture maximum.

3.04 METAL DECK PREPARATION

- A. Install preformed sound absorbing glass fiber insulation strips supplied by Section 05 31 00 in acoustic deck flutes. Install in accordance with manufacturer's instructions.
- B. Install deck sheathing on metal deck:
 - 1. Lay with long side at right angle to flutes; stagger end joints; provide support at ends.
 - 2. Cut sheathing cleanly and accurately at roof breaks and protrusions to provide smooth surface.
 - 3. Tape joints.
 - 4. Mechanically fasten sheathing to roof deck, in accordance with Factory Mutual recommendations and roofing manufacturer's instructions.
 - a. Over entire roof area, fasten sheathing using 6 fasteners with washers per sheathing board.

3.05 INSTALLATION - GENERAL

- A. Perform work in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Do not apply roofing membrane during unsuitable weather.
- C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.
- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
- F. Coordinate the work with installation of associated counterflashings installed by other sections as the work of this section proceeds.

3.06 INSULATION APPLICATION

- A. Apply vapor retarder to deck surface with adhesive in accordance with manufacturer's instructions.
 - 1. Extend vapor retarder under cant strips and blocking to deck edge.
 - 2. Install flexible flashing from vapor retarder to air seal material of wall construction, lap and seal to provide continuity of the air barrier plane.
- B. Attachment of Insulation: Embed insulation in adhesive in full contact, in accordance with roofing and insulation manufacturers' instructions.
- C. Lay subsequent layers of insulation with joints staggered minimum 6 inch from joints of preceding layer.
- D. On metal deck, place boards parallel to flutes with insulation board edges bearing on deck flutes.
- E. Lay boards with edges in moderate contact without forcing, and gap between boards no greater than 1/4 inch. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- F. Do not apply more insulation than can be completely waterproofed in the same day.

3.07 MEMBRANE APPLICATION

- A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.
- B. Shingle joints on sloped substrate in direction of drainage.
- C. Asphalt Adhered Application: Apply asphalt at manufacturer's recommended rate. Fully embed membrane in adhesive except in areas directly over or within 3 inches of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.
- D. Seam Welding:

1. Seam Welding: Overlap edges and ends and seal seams by heat welding, minimum 2 inches.
 2. Cover seams with manufacturer's recommended joint covers.
 3. Probe seams once welds have thoroughly cooled, in approximately 30 minutes.
 4. Repair deficient seams within the same day.
 5. Seal cut edges of reinforced membrane after seam probe is complete.
- E. Mechanical Attachment:
1. Apply membrane and mechanical attachment devices in accordance with manufacturer's instructions.
- F. At intersections with vertical surfaces:
1. Extend membrane over cant strips and up a minimum of 4 inches onto vertical surfaces.
 2. Fully adhere flexible flashing over membrane and up to nailing strips.
- G. Coordinate installation of roof drains and sumps and related flashings. Locate all field splices away from low areas and roof drains. Lap upslope sheet over downslope sheet.
- H. Daily Seal: Install daily seal per manufacturers instructions at the end of each work day. Prevent infiltration of water at incomplete flashings, terminations, and at unfinished membrane edges.

3.08 CLEANING

- A. Remove wrappings, empty containers, paper, and other debris from the roof daily. Dispose of debris in compliance with local, State, and Federal regulations.
- B. Remove bituminous markings from finished surfaces.
- C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.
- D. Repair or replace defaced or damaged finishes caused by work of this section.

3.09 PROTECTION

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

**SECTION 07 71 00
ROOF SPECIALTIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Manufactured roof specialties, including copings, fascias, and gravel stops.
- B. Roof control and expansion joint covers.

1.02 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2020.
- B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- C. ANSI/SPRI/FM 4435/ES-1 - Test Standard for Edge Systems Used with Low Slope Roofing Systems; 2022.
- D. NRCA (RM) - The NRCA Roofing Manual; 2024.
- E. ANSI/SPRI ES-1 - American National Standard Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.
- C. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.
- D. Manufacturer's Installation Instructions: Indicate special procedures, fasteners, supporting members, and perimeter conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fascias:
 - 1. Shall be manufactured by or approved by roofing system manufacturer and covered under total system warranty.
- B. Roof Edge Flashings and Copings:
 - 1. ATAS International, Inc; Rapid-Lok Fascia: www.atas.com.
 - 2. Hickman Edge Systems; Formed Coping Plus: www.hickmanedgesystems.com.
 - 3. Metal Roofing Systems, Inc; Rapid Lock Coping: www.metalroofingsystems.biz.
- C. Control and Expansion Joint Covers:
 - 1. Construction Specialties, Inc; Roof Covers: www.c-sgroup.com.
 - 2. EMSEAL Joint Systems, Ltd; Emseal RoofJoint: www.emseal.com.

2.02 COMPONENTS

- A. Roof Edge Flashings: Factory fabricated to sizes required; corners mitered; concealed fasteners.
 - 1. Configuration: Fascia, cant, and edge securement for roof membrane.
 - 2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test methods RE-1 and RE-2 to positive and negative design wind pressure as defined by applicable local building code.
 - 3. Finish: 70 percent polyvinylidene fluoride.
 - 4. Products:
 - a. Hickman Edge Systems; TerminEdge Fascia: www.hickmanedgesystems.com.

- B. Fascias: Formed aluminum, .0032 inch thick minimum or as required by manufacturer to achieve warranty, with continuous galvanized spring clip designed to terminate single ply roofing at the perimeter. System shall be watertight with concealed splice plates and no exposed fasteners.
 - 1. Meets ANSI/SPRI ES-1.
 - 2. Include fascia extenders of same material and finish.
- C. Counterflashings: Factory fabricated and finished sheet metal that overlaps top edges of base flashing by at least 4 inches, and designed to snap into through-wall flashing or reglets with lapped joints.
 - 1. Material: Stainless steel sheet, 26 gauge, 0.019 inch thick, minimum.

2.03 FINISHES

- A. Clear Anodized Finish: AAMA 611 AA-M12C22A41 Class I clear anodic coating not less than 0.7 mil, 0.0007 inch thick.
- B. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; color as indicated.

2.04 ACCESSORIES

- A. Sealant for Joints in Linear Components: As recommended by component manufacturer.
- B. Adhesive for Anchoring to Roof Membrane: Compatible with roof membrane and approved by roof membrane manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.

3.02 INSTALLATION

- A. Install components in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Seal joints within components when required by component manufacturer.
- C. Anchor components securely.
- D. Coordinate installation of components of this section with installation of roofing membrane and base flashings.
- E. Coordinate installation of sealants and roofing cement with work of this section to ensure water tightness.
- F. Coordinate installation of flashing flanges into reglets.

END OF SECTION

**SECTION 07 72 00
ROOF ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Roof curbs.
- B. Roof penetrations mounting curbs.
- C. Roof hatches.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used.
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Maintenance requirements.
- C. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.
- D. Warranty Documentation:
 - 1. Submit manufacturer warranty.
 - 2. Ensure that forms have been completed in Owner's name and registered with manufacturer.
 - 3. Submit documentation that roof accessories are acceptable to roofing manufacturer, and do not limit the roofing warranty.

PART 2 PRODUCTS

2.01 ROOF CURBS

- A. Roof Curbs Manufacturers:
 - 1. AES Industries Inc: www.aescurb.com.
 - 2. The Pate Company: www.patecurbs.com.
- B. Roof Curbs Mounting Assemblies: Factory fabricated hollow sheet metal construction, internally reinforced, and capable of supporting superimposed live and dead loads and designated equipment load with fully mitered and sealed corner joints welded or mechanically fastened, and integral counterflashing with top and edges formed to shed water.
 - 1. Roof Curb Mounting Substrate: Curb substrate consists of standing seam metal roof panel system.
 - 2. Sheet Metal Material:
 - a. Aluminum: 0.080 inch minimum thickness, with 3003 alloy, and H14 temper.
 - 3. Fabricate curb bottom and mounting flanges for installation directly on metal roof panel system to match slope and configuration of system.
 - a. Extend side flange to next adjacent roof panel seam and comply with seam configurations and seal connection, providing at least 6 inch clearance between curb and metal roof panel flange allowing water to properly flow past curb.
 - b. Where side of curb aligns with metal roof panel flange, attach fasteners on upper slope of flange to curb connection allowing water to flow past below fasteners, and seal connection.
 - c. Maintain at least 12 inch clearance from curb, and lap upper curb flange on underside of down sloping metal roof panel, and seal connection.
 - d. Lap lower curb flange overtop of down sloping metal roof panel and seal connection.

2.02 ROOF HATCHES AND VENTS

- A. Roof Hatch Manufacturers:
 - 1. Activar Construction Products Group: www.activarcpg.com.
 - 2. Acudor Products Inc; Galvanized Steel Roof Hatch: www.acudor.com.
 - 3. Babcock-Davis; ThermalMAX: www.babcockdavis.com.
 - 4. Bilco Company; Type TB (all types & special size): www.bilco.com.
 - 5. LMCurbs; Roof Hatch: www.lmcurbs.com.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

3.04 CLEANING

- A. Clean installed work to like-new condition.

3.05 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 07 84 00 FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Firestopping systems.
- B. Firestopping of joints and penetrations in fire-resistance-rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 REFERENCE STANDARDS

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2022.
- B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2023a.
- C. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems; 2015 (Reapproved 2019).
- D. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus; 2023b.
- E. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed between Rated Wall Assemblies and Nonrated Horizontal Assemblies; 2023a.
- F. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).
- G. ITS (DIR) - Directory of Listed Products; Current Edition.
- H. FM (AG) - FM Approval Guide; Current Edition.
- I. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.
- J. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.
- K. UL (DIR) - Online Certifications Directory; Current Edition.
- L. UL (FRD) - Fire Resistance Directory; Current Edition.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
- C. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Manufacturer's qualification statement.
- G. Installer's qualification statement.

1.04 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
 - 1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
 - 2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.

3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and:
 1. Trained by manufacturer.
 2. Verification of minimum three years documented experience installing work of this type.
 3. Verification of at least five satisfactorily completed projects of comparable size and type.

1.05 FIELD CONDITIONS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Firestopping Materials: Any materials meeting requirements.
- B. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.
- C. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.
- D. Fire Ratings: Refer to drawings for required systems and ratings.

2.02 FIRESTOPPING ASSEMBLY REQUIREMENTS

- A. Perimeter Fire Containment Firestopping: Use system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of floor assembly.
 1. Movement: Provide systems that have been tested to show movement capability as indicated.
 2. Where floor assembly is not required to have a fire rating, provide systems that have been tested to show L Rating as indicated.
- B. Head-of-Wall (HW) Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of wall assembly.
- C. Floor-to-Floor (FF), Floor-to-Wall (FW), Head-of-Wall (HW), and Wall-to-Wall (WW) Joints, Except Perimeter, Where Both Are Fire-Rated: Use system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
 1. Movement: Provide systems that have been tested to show movement capability as indicated.
 2. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.
- D. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
 1. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

2.03 FIRESTOPPING FOR PERIMETER CONTAINMENT

- A. Perimeter Joint Systems That Have Movement Capabilities (Dynamic-D):
 1. 2 Hour Construction: UL System CW-D-1004; Specified Technologies Inc. Fast Tack Firestop Spray.
 2. 2 Hour Construction: UL System CW-D-2014; RectorSeal MetaCaulk 1200 Spray.

2.04 FIRESTOPPING FOR FLOOR-TO-FLOOR, FLOOR-TO-WALL, HEAD-OF-WALL, AND WALL-TO-WALL JOINTS

- A. Concrete and Concrete Masonry Walls and Floors:
 - 1. Head of Wall Joints at Concrete Masonry Wall to CLT Deck
 - a. refer to details on drawings
 - 2. Head-of-Wall Joints at Concrete/Concrete Masonry Wall to Concrete Over Metal Deck Floor:
 - a. 2 Hour Construction: UL System HW-D-0181; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
- B. Gypsum Board Walls:
 - 1. Head-of-Wall Joints at Underside of Wood Beam and CLT Deck
 - a. Refer to details on drawings
 - 2. Head-of-Wall Joints at Underside of Steel Beam and Concrete Over Metal Deck Floor with Sprayed On Fireproofing:
 - a. 2 Hour Construction: UL System HW-D-0259; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - b. 1 Hour Construction: UL System HW-D-0259; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - 3. Head-of-Wall Joints at Concrete Over Metal Deck, Wall Parallel to Ribs:
 - a. 1 Hour Construction: UL System HW-D-0184; Hilti CP 606 Flexible Firestop Sealant.
 - 4. Head-of-Wall Joints at Concrete Over Metal Deck, Wall Perpendicular to Ribs, Cut to Fit Ribs:

2.05 FIRESTOPPING PENETRATIONS THROUGH CONCRETE AND CONCRETE MASONRY CONSTRUCTION

- A. Penetrations Through Floors or Walls By:
 - 1. Electrical Cables Not In Conduit:
 - a. 2 Hour Construction: UL System C-AJ-3283; Hilti CP653 Speed Sleeve.
 - 2. Cable Trays with Electrical Cables:
 - a. 3 Hour Construction: UL System C-AJ-4093; Hilti CFS-BL Firestop Block.

2.06 FIRESTOPPING PENETRATIONS THROUGH GYPSUM BOARD WALLS

- A. Penetrations By:
 - 1. Electrical Cables Not In Conduit:
 - a. 2 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
 - 2. Cable Trays with Electrical Cables:
 - a. 1 Hour Construction: UL System W-L-4011; Hilti CFS-BL Firestop Block.

2.07 FIRESTOPPING SYSTEMS

- A. Firestopping: Any material meeting requirements.
 - 1. Fire Ratings: Use system that is listed by FM (AG), ITS (DIR), or UL (FRD) and tested in accordance with ASTM E814, ASTM E119, or UL 1479 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and in compliance with other specified requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.
- B. Remove incompatible materials that could adversely affect bond.

3.03 INSTALLATION

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
- B. Install labeling required by code.
 - 1. At each new penetration through a new or existing fire-rated partition, place a marking label on the wall within 3 feet of the penetration on the corridor side, located above the ceiling.
 - 2. Label shall include lettering not less than 3 inches (76 mm) in height with a minimum 3/8 inch (9.5 mm) stroke in a contrasting color.
 - 3. Label shall read: "FIRE AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS" or similar language to be approved by the Architect.

3.04 FIELD QUALITY CONTROL

- A. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

3.05 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.06 PROTECTION

- A. Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 07 92 00 JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nonsag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.
- C. Joint backings and accessories.

1.02 REFERENCE STANDARDS

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).
- B. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- D. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2023.
- E. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).
- F. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2022.
- G. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).
- H. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.
 - 3. Backing material recommended by sealant manufacturer.
 - 4. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - 5. Substrates the product should not be used on.
 - 6. Substrates for which use of primer is required.
 - 7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
- E. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.
- F. Installation Plan: Submit at least four weeks prior to start of installation.
- G. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.
- H. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.

- I. Installation Log: Submit filled-out log for each length or instance of sealant installed.
- J. Executed warranty.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.
- C. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
 - 1. Adhesion Testing: In accordance with ASTM C794.
 - 2. Compatibility Testing: In accordance with ASTM C1087.
 - 3. Allow sufficient time for testing to avoid delaying the work.
 - 4. Deliver sufficient samples to manufacturer for testing.
 - 5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
- D. Installation Plan: Include schedule of sealed joints, including the following:
 - 1. Installation Log Form: Include the following data fields, with known information filled out.
 - a. Unique identification of each length or instance of sealant installed.
 - b. Location on project.
 - c. Substrates.
 - d. Stated movement capability of sealant.
 - e. Primer to be used, or indicate no primer is used.
 - f. Size and actual backing material used.
 - g. Date of installation.
 - h. Name of installer.
 - i. Actual joint width; provide space to indicate maximum and minimum width.
 - j. Actual joint depth to face of backing material at centerline of joint.
 - k. Air temperature.

1.05 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.
- C. Extended Correction Period: Correct defective work within five period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 JOINT SEALANT APPLICATIONS

- A. Scope:
 - 1. Exterior Joints:
 - a. Seal open joints except open joints indicated on drawings as not sealed.
 - 2. Interior Joints:
 - a. Seal open joints except specific open joints indicated on drawings as not sealed.
 - 3. Do Not Seal:
 - a. Intentional weep holes in masonry.
 - b. Joints indicated to be covered with expansion joint cover assemblies.
 - c. Joints where sealant is specified to be furnished and installed by manufacturer of product to be sealed.
 - d. Joints where sealant installation is specified in other sections.

- e. Joints between suspended ceilings and walls.

2.02 JOINT SEALANTS - GENERAL

- A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.
- B. Colors: As selected by architect from manufacturer standard range to match adjacent surfaces.

2.03 NONSAG JOINT SEALANTS

- A. Nonstaining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus 100 percent and minus 50 percent, minimum.
 - 2. Nonstaining to Porous Stone: Nonstaining to light-colored natural stone when tested in accordance with ASTM C1248.
 - 3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
 - 4. Color: To be selected by Architect from manufacturer's standard range.
 - 5. Products:
 - a. Dow; DOWSIL 790 Silicone Building Sealant: www.dow.com/.
 - b. Dow; DOWSIL 791 Silicone Weatherproofing Sealant: www.dow.com/.
 - c. Dow; DOWSIL 795 Silicone Building Sealant: www.dow.com/.
- B. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
 - 1. Color: White.
 - 2. Products:
 - a. Sika Corporation; Sikasil GP: www.usa.sika.com/#sle.
- C. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 50 percent, minimum.
 - 2. Color: To be selected by Architect from manufacturer's standard range.
 - 3. Service Temperature Range: Minus 40 to 180 degrees F.
 - 4. Products:
 - a. Master Builders Solutions; MasterSeal NP1: www.master-builders-solutions.com/en-us/#sle.
 - b. Tremco Commercial Sealants & Waterproofing; Dymonic 100: www.tremcosealants.com/#sle.
- D. Acrylic-Urethane Sealant: ASTM C920, Grade NS, Uses M and A; single component; paintable; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 12-1/2 percent, minimum.
 - 2. Color: White.
 - 3. Products:
 - a. DAP Products Inc; DYNAFLEX 920 Sealant: www.dapspecline.com/#sle.
- E. Noncuring Butyl Sealant: Solvent-based, single component, nonsag, nonskinning, nonhardening, nonbleeding; nonvapor permeable; intended for fully concealed applications.
 - 1. Products:
 - a. Pecora Corporation; Pecora BA-98 Non-Skinning Butyl Sealant: www.pecora.com/#sle.
 - b. Tremco Commercial Sealants & Waterproofing; Acoustical/Curtainwall Sealant: www.tremcosealants.com/#sle.

2.04 SELF-LEVELING JOINT SEALANTS

- A. Self-Leveling Polyurethane Sealant for Horizontal Expansion Joints: ASTM C920, Grade P, Uses T, M, and O; multicomponent; explicitly approved by manufacturer for horizontal expansion joints.

1. Movement Capability: Plus and minus 25 percent, minimum.
2. Hardness Range: 30 to 35, Shore A, when tested in accordance with ASTM C661.
3. Color: To be selected by Architect from manufacturer's standard range.
4. Tensile Strength: 200 to 250 psi in accordance with ASTM D412.
5. Products:
 - a. Pecora Corporation; Urexpan NR-200: www.pecora.com/#sle.

2.05 ACCESSORIES

- A. Sealant Backing Materials, General: Materials placed in joint before applying sealants; assists sealant performance and service life by developing optimum sealant profile and preventing three-sided adhesion; type and size recommended by sealant manufacturer for compatibility with sealant, substrate, and application.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- C. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- D. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.

3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.
- E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in an inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

- A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Provide joint sealant installations complying with ASTM C1193.
- C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- D. Install bond breaker backing tape where backer rod cannot be used.
- E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Non-fire-rated hollow metal doors and frames.
- B. Fire-rated hollow metal doors and frames.
- C. Hollow metal borrowed lites glazing frames.

1.02 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2022.
- C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.
- D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2020.
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.
- F. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2023, with Editorial Revision.
- G. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.
- H. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2020.
- I. ASTM C476 - Standard Specification for Grout for Masonry; 2023.
- J. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.
- K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- L. ITS (DIR) - Directory of Listed Products; Current Edition.
- M. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.
- N. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.
- O. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2017.
- P. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.
- Q. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.
- R. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2022.
- S. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.
- T. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2023.
- U. UL (DIR) - Online Certifications Directory; Current Edition.
- V. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- W. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.
- C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.
- D. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than years experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least years of experience.
- C. Maintain at project site copies of reference standards relating to installation of products specified.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Hollow Metal Doors and Frames:
 - 1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com.
 - 2. Curries, an Assa Abloy Group company: www.assaabloydss.com.
 - 3. De La Fontaine Inc: www.delafontaine.com.
 - 4. Republic Doors, an Allegion brand: www.republicdoor.com.
 - 5. Steelcraft, an Allegion brand: www.allegion.com.

2.02 PERFORMANCE REQUIREMENTS

- A. Requirements for Hollow Metal Doors and Frames:
 - 1. Steel Sheet: Comply with one or more of the following requirements; galvanized steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
 - 2. Accessibility: Comply with ICC A117.1 and ADA Standards.
 - 3. Door Edge Profile: Manufacturers standard for application indicated.
 - 4. Typical Door Face Sheets: Flush.
 - 5. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturer's standard.
 - 6. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
 - 7. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvanized) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.

- a. Based on SDI Standards: Provide at least A40/ZF120 (galvannealed) when necessary, coating not required for typical interior door applications, and at least A60/ZF180 (galvannealed) for corrosive locations.
- B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

- A. Door Finish: Factory primed and field finished.
- B. Interior Doors, Non-Fire-Rated:
 - 1. Grade: ANSI A250.8 Level 2, physical performance Level B, Model 2, seamless.
 - a. Level 2 - Heavy-duty.
 - b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
 - c. Model 2 - Seamless.
 - d. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
 - 2. Door Thickness: 1-3/4 inches, nominal.
- C. Fire-Rated Doors:
 - 1. Grade: ANSI A250.8 Level 2, physical performance Level B, Model 2, seamless.
 - a. Level 2 - Heavy-duty.
 - b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
 - c. Model 2 - Seamless.
 - d. Door Face Metal Thickness: 18 gage, 0.042 inch, minimum.
 - e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
 - 2. Fire Rating: As indicated on Door Schedule, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").
 - a. Provide units listed and labeled by UL (DIR) or ITS (DIR).
 - b. Attach fire rating label to each fire rated unit.
 - c. Smoke and Draft Control Doors (Indicated with letter "S" on Drawings and/or Door Schedule): Self-closing or automatic closing doors in accordance with NFPA 80 and NFPA 105, with fire-resistance-rated wall construction rated the same or greater than the fire-rated doors, and the following:
 - 1) Maximum Air Leakage: 3.0 cfm/sq ft of door opening at 0.10 inch w.g. pressure, when tested in accordance with UL 1784 at both ambient and elevated temperatures.
 - 2) Gasketing: Provide gasketing or edge sealing as necessary to achieve leakage limit.
 - 3) Label: Include the "S" label on fire-rating label of door.
 - 3. Door Core Material:
 - 4. Door Thickness: 1-3/4 inches, nominal.

2.04 HOLLOW METAL FRAMES

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. Frame Finish: Factory primed and field finished.
- C. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
 - 1. Terminated Stops: Provide at interior doors; closed end stop terminated 6 inch, maximum, above floor at 45 degree angle.
 - 2. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
- D. Door Frames, Fire-Rated: Full profile/continuously welded type.
 - 1. Fire Rating: Same as door, labeled.

2. Terminated Stops: Provide at interior doors; closed end stop terminated 6 inch, maximum, above floor at 45 degree angle.
 3. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
- E. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.
 - F. Transom Bars: Fixed, of profile same as jamb and head.
 - G. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
 - H. Frames in Masonry Walls: Size to suit masonry coursing with head member 2 inch high to fill opening without cutting masonry units.
 - I. Frames Wider than 48 inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

2.05 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

2.06 ACCESSORIES

- A. Glazing: As specified in Section 08 80 00, field installed.
- B. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.
- C. Astragals for Double Doors: Specified in Section 08 71 00.
- D. Grout for Frames: Mortar grout complying with ASTM C476 with maximum slump of 4 inches as measured in accordance with ASTM C143/C143M for hand troweling in place; plaster grout and thinner pumpable grout are prohibited.
- E. Silencers: Resilient , ; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.
- F. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.
- G. Filler: Sandable body filler to fill all dimples and exposed fasteners.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 PREPARATION

- A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

- A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
- B. Install fire rated units in accordance with NFPA 80.
- C. Coordinate frame anchor placement with wall construction.
- D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.
- E. Install door hardware as specified in Section 08 71 00.
- F. Comply with glazing installation requirements of Section 08 80 00.
- G. Coordinate installation of electrical connections to electrical hardware items.

3.04 TOLERANCES

- A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.
- B. Requirements for Fire Rated Hollow Metal Doors:
 - 1. Maximum clearance at top and hinge edges: 1/8 inch.
 - 2. Maximum clearance at single door lock edge: 1/8 inch.
 - 3. Maximum clearance at pair meeting edge: 1/4 inch total, 1/8 inch per leaf.
 - 4. Maximum clearance at bottom edge: 1/2 inch from top of decorative floor covering; 3/4 inch from top of non-combustible floor; 3/8 inch from top of non-combustible sill or threshold.
- C. Maximum Diagonal Distortion: measured with straight edge, corner to corner.

3.05 ADJUSTING

- A. Adjust for smooth and balanced door movement.
- B. Adjust sound control doors so that seals are fully engaged when door is closed.
- C. Test sound control doors for force to close, latch, and unlatch; adjust as necessary in compliance with requirements.

3.06 SCHEDULE

- A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION

SECTION 08 16 13
FRP - ALUMINUM FLUSH DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. FRP (Fiberglass Reinforced Polyester) / Aluminum Hybrid doors.
- B. Aluminum Frames for FRP / Aluminum Hybrid doors.
- C. Accessories, including fasteners and brackets.

1.02 REFERENCE STANDARDS

- A. American Architectural Manufacturers Association:
 - 1. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
 - 2. AAMA 1304 - Voluntary Specification for Determining Forced Entry Resistance of Side-Hinged Door Systems.
 - 3. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
 - 4. AAMA 2604 - Voluntary specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
 - 5. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
 - 6. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site.
- B. ASTM International:
 - 1. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus.
 - 2. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 3. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 4. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 - 5. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
 - 6. ASTM D570 - Standard Test Method for Water Absorption of Plastics.
 - 7. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.
 - 8. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - 9. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
 - 10. ASTM D1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics.
 - 11. ASTM D1623 - Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.
 - 12. ASTM D2126 - Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
 - 13. ASTM D2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
 - 14. ASTM D5116 - Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products.
 - 15. 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).
 - 16. ASTM D 6670 - Standard Practice for Full-Scale Chamber Determination of Volatile Organic Emissions from Indoor Materials/Products.
 - 17. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

18. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
 19. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
 20. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.
 21. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
 22. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
 23. ASTM F476- Standard Test Methods for Security of Swinging Door Assemblies.
 24. ASTM F1642 - Standard Test Method for Glazing and Glazing Systems Subject to Airblast Loadings.
- C. National Fenestration Rating Council:
1. ANSI/NFRC 100 - Procedure for Determining Fenestration Product U-factors.
 2. ANSI/NFRC 400 - Procedure for Determining Fenestration Product Air Leakage.
- D. Local Codes:
1. Building Code of New York State:
 - a. Section 2603.4.1.7 - Doors not required to have a fire protection rating.

1.03 SYSTEM DESCRIPTION

- A. The extent of each type of door and frame is shown on the drawings and schedules.
- B. The following types of doors and frames are required:
 1. FRP/Aluminum Hybrid flush doors
 2. Aluminum frames.

1.04 PERFORMANCE REQUIREMENTS

- A. Provide door assemblies that have been designed and fabricated to comply with requirements for system performance characteristics listed below, as demonstrated by testing manufacturer's corresponding standard systems according to test methods designated.
- B. Submitted door shall have been manufactured for a minimum of 5 years. List of minimum (100) jobs shall be submitted for architect's review, upon his request.
- C. Air Leakage: Door shall not exceed 0.20 cfm infiltration per square foot when tested in accordance with AAMA/WDMA/CSA101/I.S.2/A440 or NFRC 400.
- D. Water Resistance: For a single door 3'-0" x 7'-0", test specimen tested in accordance with ASTM E 331 @ 7.50 psf. Door shall have no water leakage.
- E. Thermal Transmission (exterior doors): "U" value of not more than 0.29 (BTU/Hr. x sf x degrees F°) per AAMA 1503.98. Minimum of 55 CRF value.
- F. Surface Burning Characteristics, FRP Door face sheets, ASTM E 84. (Exterior skins only)
 1. Flame Spread: Maximum of 200, Class C.
 2. Smoke Developed: Maximum of 450, Class C.
- G. Flame Spread/Smoke Developed: Class A FRP faces sheets only for interior face of FRP Exterior doors & panels and both faces of FRP Interior doors & panels, ASTM 84 E:
 1. Flame Spread: Not greater than 25.
 2. Smoke Developed: Not greater than 450.
- H. Additional Criteria: Provide FRP doors and panels with the following performance
 1. Impact Strength: ASTM D 256 - Nominal Value, 15.0 foot-pounds per inch of notch.
 2. Water Absorption: ASTM D 570 - Nominal Value, 0.20% after 24 hours.

3. Indentation Hardness: ASTM D 2583 - Nominal Value, 55.
- I. Abrasion Resistance: Face Sheet to have no greater than .029 average weight loss percentage after Taber Abrasion Test - 25 cycles at 1000 gram weight with CS-17 Wheel.
- J. Salt Spray, Exterior Doors & Frames, ASTM B 117: Minimum of 500 hours.
- K. Stain Resistance, ASTM D 1308: Face Sheet unaffected after exposure to red cabbage, tea and tomato acid. Stain removed easily with mild abrasive or FRP cleaner when exposed to Sharpie ink pen and white spray paint.
- L. Sound Transmission, Exterior Doors, STC, ASTM E90: Minimum of 25
- M. Chemical Resistance: ASTM D 543 (Excellent)
 1. Acetic Acid, Concentrated.
 2. Ammonium Hydroxide, Concentrated.
 3. Sodium Hypochlorite, 4-6% solution.
 4. Citric Acid, 10% solution.
 5. Hydrochloric Acid, 10%
 6. Sodium Hypochlorite, 4-6% solution.
- N. Tensile Strength, FRP Doors and Panels, Nominal Value, ASTM D 638: 14,000 psi.
- O. Flexural Strength, FRP Doors and Panels, Nominal Value, ASTM D 790: 21,000 psi.
- P. Swinging Security Door Assembly, Doors & Frames, ASTM F 476: Grade 40.
- Q. Swinging Door Cycle Test, Doors & Frames, ANSI A250.4: Minimum of 25,000,000 cycles.
- R. Cycle Slam Test Method, NWWDA T.M. 7-90: Minimum of 5,000,000 cycles.
- S. Compressive Strength, Foam Core, Nominal Value, ASTM D 1621: 79.9 psi
- T. Compressive Modulus, foam Core, Nominal Value, ASTM D 1621: 370 psi.
- U. Tensile Adhesion, Foam Core, Nominal Value, ASTM D 1623: 45.3 psi.
- V. Thermal and Humid Aging, Foam Core, Nominal Value, 158 degrees F and 100 % humidity for 14 days, ASTM D 2126: Minus 5.14 % volume change.
- W. Single Flush Door shall have passed following tests: (protection systems such as shutters, canopies or overhangs will not be allowed to pass tests.) Documentation of having passed tests, as performed and documented by an independent testing laboratory, will be required.
 1. Uniform Static Load Test - ASTM E330, Minimum +75 psf and -75 psf design pressures
 2. Forced Entry Resistance Test - SFBC 3603.2 (b) (5), Minimum 300 lbs: Passed
 3. Large Missile Impact Test - Test Conditions PA 201: Passed
 4. Cyclic Load Test - SFBC P.A. 203, Plus or minus 53 psf.
- X. Door shall be marketed by manufacturer as a heavy duty door, appropriate for institutional and school construction subject to heavy usage.
- Y. Design Pressure (DP):
 1. Positive Design Wind Load: 20 psf.
 2. Negative Design Wind Load: 24 psf.

1.05 SUBMITTALS

- A. Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's standard literature showing materials and details of construction and finish.
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances in full scale, affected related Work and expansion and contraction joint location and details.
 1. Include details of core, stile and rail construction, trim for lites and all other components.
 2. Include details of finish hardware mounting.

- D. Samples: Submit samples of each aluminum alloy to be used on this project. Where normal finish color and texture variations are expected, include two or more samples to show the range of such variations.
- E. Samples: Submit color sample of FRP face sheets.
- F. Samples: Upon request, submit one sample of typical fabricated corner section, showing face sheets, core, framing, finish, joints, fasteners, accessory items (lites, integral hardware) and quality of workmanship for approval prior to fabrication.
- G. Manufacturers Certificate: Certify that products meet or exceed specified requirements.
- H. Test Reports: Furnish ICC Evaluation Report showing compliance with NYS Code, Section 2603.4.1.7 or independent laboratory testing showing compliance with NYS Code, Section 2603.9.
- I. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.
- C. GREENGUARD Certification: Doors and frames shall be certified by GREENGUARD Environmental Institute (GEI) for Indoor Air Quality Standard and Children & Schools Standard. This requirement does not apply to Fire-rated FRP doors.

1.07 PRE-INSTALLATION MEETING

- A. Convene one week before starting work of this section.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to jobsite in their original, unopened packages with labels intact. Inspect materials for damage and advise manufacturer immediately of any unsatisfactory materials.
- B. Package door assemblies in individual corrugated cartons so no portion of the door has contact with the outer shell of the container. Package and ship frames preassembled to the greatest possible extent.
- C. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.

1.09 FIELD CONDITIONS

- A. Do not install sealants nor glazing materials when ambient temperature is less than 40 degrees F during and 48 hours after installation.

1.10 COORDINATION

- A. Coordinate the Work with installation of air barrier, vapor retarder, and exterior wall components or materials.

1.11 WARRANTY

- A. Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Warrant doors and frames against failure in materials and workmanship, including excessive deflection, faulty operation, and deterioration of finish or construction in excess of normal weathering.
- C. Standard Period: Ten years.
- D. Limited Lifetime: Covers failure of corner joinery, core deterioration, and delamination or bubbling of door skin and corrosion of all-fiberglass products while the door is in its specified application in its original installation.

- E. Finishes:
 - 1. Kynar painted aluminum: 10 years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Kawneer North America: www.kawneer.com.
- B. Oldcastle Building Products: www.oldcastlebe.com.
- C. **Special Lite Inc.:** www.special-lite.com.
- D. United States Aluminum: www.usalum.com.

2.02 FRP PEBBLE TEXTURE FLUSH DOORS

- A. Basis of Design: **Special-Lite SL-17** Flush Doors with SpecLite3 fiberglass reinforced polyester (FRP) face sheets.
- B. Construction:
 - 1. Door Thickness: 1-3/4 inches.
 - 2. Stiles and Rails: Aluminum extrusions made from prime-equivalent billet that is produced from 100% reprocessed 6063-T6 alloy recovered from industrial processes, minimum of 2-5/16-inch depth.
 - 3. Corners: Mitered.
 - 4. Provide joinery of 3/8-inch diameter full-width tie rods through extruded splines top and bottom integral to standard tubular shaped stiles and rails reinforced to accept hardware as specified.
 - 5. Securing Internal Door Extrusions: 3/16-inch angle blocks and locking hex nuts for joinery. Welds, glue, or other methods are not acceptable.
 - 6. Furnish extruded stiles and rails with integral reglets to accept face sheets. Lock face sheets into place to permit flush appearance.
 - 7. Rail caps or other face sheet capture methods are not acceptable.
 - 8. Extrude top and bottom rail legs for interlocking continuous weather bar.
 - 9. Meeting Stiles: For pairs of doors manufacturer shall provide and install full height adjustable dual brush astragal on active leaf allowing for seasonal adjustment.
 - 10. Concealed Adjustable Door Bottom: Door Manufacturer to provide and install SL-301 concealed adjustable dual brush door bottom with up to 0.625 inch of adjustment.
 - a. Automatic door bottoms are not acceptable.
 - 11. Glue: Use of glue to bond sheet to core or extrusions is not acceptable.
- C. Face Sheet:
 - 1. Material: SpecLite3 FRP, 0.120-inch thickness, finish color throughout.
 - 2. Protective coating: Abuse-resistant engineered surface. Provide FRP with SpecLite3 protective coating, or equal.
 - 3. Texture: Pebble.
 - 4. Color: As selected by Architect.
 - 5. Adhesion: The use of glue to bond face sheet to foam core is prohibited.
 - 6. Supply Class C exterior face-sheets in accordance with ASTM 84 E. Supply Class A interior face-sheets in accordance with ASTM E84.
- D. Core:
 - 1. Material: Poured-in-place polyurethane foam.
 - 2. Density: Minimum of 5 pounds per cubic foot.
 - 3. U-Value: Maximum of 0.37.
 - 4. Core insulation shall have a flame spread of 75 or less and a smoke developed index of not more than 450.
 - 5. Provide 0.032 inch aluminum liner between foam core and FRP face sheet per NYS Code, Section 2603.4.1.7, if standard door construction does not pass independent testing

outlined in Section 2603.9.

- E. Cutouts:
 - 1. Manufacture doors with cutouts for required vision lites, louvers, and panels.
 - 2. Factory install vision lites, louvers, and panels.
- F. Hardware:
 - 1. Premachine doors in accordance with templates from specified hardware manufacturers and hardware schedule.

2.03 FRP CLAD FIRE-RATED DOORS

- A. Basis of Design: Special Lite SL-17FR.
- B. Construction:
 - 1. Door Thickness: 1-7/8 inches.
 - 2. Stiles and Rails: Stainless steel channel secured with stainless steel screws every 10 inches.
 - 3. Corners: Welded.
- C. Face Sheet:
 - 1. Material: Pebble Finish FRP.
 - 2. Thickness: 0.120 inch.
 - 3. Surface: Abuse-resistant engineered surface.
 - 4. Color: As selected by Architect.
 - 5. Supply Class A FRP face-sheets in accordance with ASTM 84 E.
- D. Core:
 - 1. Material: Mineral core.
 - 2. Density: Minimum of 30 pounds per cubic foot.
 - 3. Perimeter blocking: Minimum 1-1/2 inches wide.
- E. Cutouts:
 - 1. Manufacture doors with cutouts for required vision lites, louvers, and panels.
 - 2. Factory install vision lites, louvers, and panels.
- F. Door Perimeter Channel:
 - 1. Type 304 stainless steel, 3/4 inch by 1-7/8 inches by 0.062 inch.
- G. Fasteners:
 - 1. Material: Aluminum, 18-8 stainless steel, or other noncorrosive metal.
 - 2. Compatibility: Compatible with items to be fastened.
 - 3. Exposed Fasteners: Screws with finish matching items to be fastened.
- H. Hardware:
 - 1. Premachine doors in accordance with templates from specified hardware manufacturers and hardware schedule.
- I. Frame: Fire rated same as door
 - 1. Fiberglass fire rated framing system for fire rated doors
 - a. Basis of Design: Special Lite AF-FR Fiberglass Fire Rated Frame
 - b. Finish: Color as selected by architect to match aluminum frames.

2.04 MATERIALS

- A. Aluminum Members:
 - 1. Aluminum extrusions made from prime-equivalent billet that is produced from 100% reprocessed 6063-T6 alloy recovered from industrial processes: ASTM B 221.
 - 2. Sheet and Plate: ASTM B 209.
 - 3. Alloy and Temper: As required by manufacturer for strength, corrosion resistance, application of required finish, and control of color.
- B. Components: Door and frame components from same manufacturer.

- C. Fasteners:
 - 1. Material: Aluminum, 18-8 stainless steel, or other noncorrosive metal.
 - 2. Compatibility: Compatible with items to be fastened.
 - 3. Exposed Fasteners: Screws with finish matching items to be fastened.

2.05 FABRICATION

- A. Sizes and Profiles: Required sizes for door and frame units, and profile requirements shall be as indicated on the Drawings.
- B. Coordination of Fabrication: Field measure before fabrication and show recorded measurements on shop drawings.
- C. Assembly:
 - 1. Complete cutting, fitting, forming, drilling, and grinding of metal before assembly.
 - 2. Remove burrs from cut edges.
- D. Welding: Welding of doors or frames is not acceptable.
- E. Fit:
 - 1. Maintain continuity of line and accurate relation of planes and angles.
 - 2. Secure attachments and support at mechanical joints with hairline fit at contacting members.

2.06 VISION LITES

- A. Design System for Replacement of Glazing.
- B. Manufacturer's standard flush glazing system of recessed channels and captive glazing gaskets.
- C. Allow for thermal expansion on exterior units.
- D. Glass as shown and factory glazed into doors.
- E. Refer to section 08 80 00 for glass specifications.

2.07 ALUMINUM FRAMING SYSTEM

- A. Tubular Framing:
 - 1. Frame: Model SL-600TB Thermally Broken 2 inch by 6 inch as indicated on drawings.
 - 2. Material: Aluminum extrusions, ASTM B221, Alloy 6063-T6.
 - 3. Jambs, Mullions, Sills, Horizontal Intermediates, and Headers: 0.080-inch wall thickness.
 - 4. Lock Jambs, Hinge Jambs and Door Headers: 0.125-inch wall thickness, box type with four enclosed sides, 2 inch by 6 inch factory fabricated. Heavy-duty internal joint anchors shall be supplied. Open-back framing is not acceptable.
 - 5. Thermal Break: Fiberglass pultrusion thermal strut and pocket filler.
 - 6. Applied Door Stops: 0.625" high screw applied with integral weatherstrip. Wall thickness to be 0.125 inch. Reinforce at closer arm location with 1/2 inch aluminum bar stock for secure hardware attachment. Counterpunch fastener holes in the door stop to preserve full metal thickness under fastener head. Snap in blade stops are not acceptable.
 - 7. Caulk joints before assembling frame members. Secure joints with fasteners and provide a hairline butt joint appearance. Prefit doors to frame assembly and factory prior to shipment. Field fabrication of framing using "stick" material is not acceptable.
 - 8. Premachine and reinforce frame members for hardware in accordance with manufacturer's standards and the approved hardware schedule.
 - 9. Install with anchors appropriate for wall conditions to anchor framing to wall materials. Anchors shall be 24-inches on center maximum. Secure head and sill members of transom, sidelites and similar conditions.
 - 10. Factory preassemble frames and mark frame assemblies according to location.

2.08 COMPONENTS

- A. Extruded Aluminum: Alloy and temper as recommended by manufacturer for strength, corrosion resistance and application of required finish and control of color; ASTM B 221 for extrusions, ASTM B 209 for Sheet and Plate.
- B. Furnish door and frame components from the same manufacturer. "Splitting" of door and frame components is not permitted
- C. Fasteners: Aluminum, non-magnetic stainless steel or other non-corrosive metal fasteners, guaranteed by the manufacturer to be compatible with the doors, frames, stops, panels, hardware, anchors and other items being fastened. For exposed fasteners (if required) provide Phillips head screws with finish matching the item to be fastened.
- D. Glazing gaskets: For glazing factory-installed glass, and for gaskets, which are factory - installed in "captive" assembly of glazing stops, manufacturer's standard stripping of molded neoprene, complying with ASTM D2000 (designation 2BC415 to 3BC620), or molded PVC complying with ASTM C 509 Grade 4.
- E. Hardware: Furnished under section 08 71 00 as scheduled unless indicated otherwise.
- F. Sizes and Profiles: The required sizes for door and frame units, and profile requirements are shown on the drawings.
- G. Coordination of Fabrication: Field measure before fabrication, and show recorded measurements on final shop drawings.
- H. Complete the cutting, fitting, forming, drilling and grinding of all metal work prior to assembly. Remove burrs from cut edges, and ease edges and corners to a radius of approximately 1/64".
- I. No welding of doors or frames is acceptable.
- J. Maintain continuity of line and accurate relation of planes and angles. Secure attachments and support at mechanical joints, with hairline fit at contacting members.
- K. Complete fabrication, assembly, finishing and other work before shipment to project site. Disassemble components only as necessary for shipment and installation.

2.09 SHOP FINISHING

- A. Painted Aluminum Surfaces: AA-M12C12R1x non-specular as fabricated mechanical finish, chemically cleaned, and prepared for applied coating; with organic coating.
 - 1. High Performance Organic Coating: Fluoropolymer coating system complying with AAMA 2604 or 2605 minimum two-coat, with minimum 70 percent polyvinylidene fluoride resin.
 - 2. Color: As selected by Architect.
- B. Apply bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar metals.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other Work.
- B. Verify wall openings and adjoining air and vapor seal materials are ready to receive Work of this Section.

3.02 INSTALLATION

- A. Install wall system in accordance with AAMA MCWM-1 - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.

- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent Work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Coordinate attachment and seal of perimeter air and vapor retarder materials.
- G. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- H. Set thresholds in bed of mastic and secure.
- I. Install hardware using templates provided. Refer to Section 08 71 00 for installation requirements.
- J. Coordinate installation of glass with Section 08 80 00; separate glass from metal surfaces.
- K. Coordinate installation of perimeter sealants with Section 07 92 00.
- L. Provide Owner with all adjustment tools and instruction sheets. Arrange an in-service session to Owner at Owner's convenience. Provide a minimum one-year written warranty on all labor related to this section. Any workmanship which is defective or deficient shall be corrected to the Owner's satisfaction and at no additional cost to the Owner.

3.03 ADJUSTING

- A. Lubricate, test, and adjust doors to operate easily, free from warp, twist or distortion, and to fit watertight for entire perimeter.
- B. Adjust hardware for smooth and quiet operation.
- C. Adjust doors to fit snugly and close without sticking or binding.
 - 1. Maximum distance from bottom of door to top of threshold: 1/4 inch.

3.04 CLEANING

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Wash down surfaces with solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- C. Remove excess sealant by method acceptable to sealant manufacturer.

3.05 PROTECTION

- A. Protect products of this section from damage caused by subsequent construction until substantial completion.
- B. Replace damaged or defective components that cannot be repaired to a condition indistinguishable from undamaged components.

END OF SECTION

**SECTION 08 31 00
ACCESS DOORS AND PANELS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall- and ceiling-mounted access units.

1.02 REFERENCE STANDARDS

- A. ITS (DIR) - Directory of Listed Products; Current Edition.
- B. UL (FRD) - Fire Resistance Directory; Current Edition.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
- C. Shop Drawings: Indicate exact position of each access door and/or panel unit.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

PART 2 PRODUCTS

2.01 ACCESS DOORS AND PANELS ASSEMBLIES

- A. Wall-Mounted Units:
 - 1. Size: 12 by 12 inches.
 - a. 24x24 inches where entire person access is required.
 - 2. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
 - 3. Wall Mounting Criteria: Provide surface-mounted face frame and door surface flush with frame surface.
- B. Fire-Rated Wall-Mounted Units:
 - 1. Location: As indicated on drawings.
 - 2. Wall Fire-Rating: As indicated on drawings.
 - 3. Panel Material: Steel.
 - 4. Size: 12 by 12 inches.
 - 5. Door/Panel: Insulated double-surface panel, with tool-operated spring or cam lock and no handle.
- C. Ceiling-Mounted Units:
 - 1. Size - Lay-In Grid Ceilings: To match module of ceiling grid.
 - 2. Size - Other Ceilings: 12 by 12 inches.
 - 3. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.

2.02 WALL- AND CEILING-MOUNTED ACCESS UNITS

- A. Manufacturers:
 - 1. Activar Construction Products Group, Inc. - JL Industries: www.activarcpg.com/.
 - 2. ACUDOR Products Inc: www.acudor.com/.
 - 3. Babcock-Davis: www.babcockdavis.com/.
 - 4. Nystrom, Inc; HVAC - Access Doors: www.nystrom.com/#sle.
- B. Wall- and Ceiling-Mounted Units: Factory-fabricated door and frame, fully assembled units with corner joints welded, filled and ground flush; square and without rack or warp; coordinate requirements with type of installation assembly being used for each unit.

1. Style: Exposed frame with door surface flush with frame surface.
2. Door Style: Single thickness with rolled or turned in edges.
3. Frames: 16-gauge, 0.0598-inch minimum thickness.
4. Units in Fire-Rated Assemblies: Fire rating as required by applicable code for fire-rated assembly that access doors are being installed.
 - a. Provide products listed by ITS (DIR) or UL (FRD) as suitable for purpose indicated.
5. Steel Finish: Primed.
6. Primed and Factory Finish: Polyester powder coat; color as selected by Architect from manufacturer's standard colors.
7. Hardware:
 - a. Hardware for Fire-Rated Units: As required for listing.
 - b. Hinges for Non-Fire-Rated Units: Concealed, constant force closure spring type.
 - c. Number of Locks/Latches Required: As recommended by manufacturer for size of unit.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that rough openings are correctly sized and located.
- B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to proceeding with this work.
- B. Prepare surfaces using methods recommended by manufacturer for applicable substrates in accordance with project conditions.

3.03 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in openings, and secure units rigidly in place.
- C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION

SECTION 08 35 00
OPERABLE PARTITIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Operable individual, omni-directional partitions.
 - 2. Head track suspension.
 - 3. Hardware and accessories necessary to complete installation.
- B. Related Sections:
 - 1. Gypsum board: Section 09 29 00.

1.2 DESIGN REQUIREMENTS

- A. Track Suspension System: Design suspension system to:
 - 1. Carry weight of panels without sway or track deflection exceeding L/360 between supports or track twisting that causes excess wear or binding of carriers.
 - 2. Limit anchor loads to capacity of structural soffit with a 4x safety factor.
 - 3. Allow for adjustment and locking of track level.

1.3 REFERENCES

- A. The following standards are cited in this Section. They govern the Work of this Section only to the extent specified in each citation.
- B. American Society for Testing and Materials (ASTM):
 - 1. C423 Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room method.
 - 2. E90 Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
 - 3. E336 Measurement of Airborne Sound Insulation in Buildings.
 - 4. E413 Determination of Sound Transmission Class.
 - 5. E557 Standard Practice for Architectural Application and Installation of Operable Partitions.
- C. Aluminum Association (AA): DAF-45 Designation System for Aluminum Finishes.

1.4 SUBMITTALS

- A. Comply with Section 01 30 00 requirements.
- B. Shop Drawings:
 - 1. Show fabrication and installation details. Clearly show dimensioned relationship to adjoining construction, including required clearances.
 - 2. Identify materials, gages, weights sizes, and finishes.
 - 3. Show track suspension devices, methods of anchorage to building structure, and direction, intensity, and application points of static and dynamic loads on building construction.
 - 4. Furnish other data necessary to show compliance with Contract Documents, facilitate installation, and coordinate work of affected trades.
- C. Operation and Maintenance Data:
 - 1. Comply with Section 01 70 00 requirements.
 - 2. Describe step-by-step operation and routine maintenance that can be performed by Owner's personnel. Include parts list and location of maintenance service facility.
- D. Installer Qualification Data:
 - 1. List comparable installations with 5-year minimum service histories. Give equipment makes and models, installation dates, locations, owner/building manager names and addresses.
 - 2. List local service accounts; the location of nearest office from which proposed equipment would be serviced; and the location of nearest parts inventory.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Regularly engaged for at least 5 years designing and fabricating operable partitions and related work of the kind and quality required for the Project.
- B. Installer Qualifications: Manufacturer approved, locally based installation and service agency that provides complete service and rapid response to service calls.
- C. Performance Requirements:

1. Operable partition manufacturer/installer shall advise the contractor on the construction of the openings in which the partitions will be installed to verify that the openings conform to the requirements of ASTM E557.
2. Specified partition STC (Sound Transmission Classification) shall be achieved and measured in accordance with the standard test method described in ASTM E90.
3. Noise isolation classifications shall be achieved per the standard test methods described in ASTM E336 and ASTM E413.
4. The manufacturer shall have a quality system that is registered to the ISO 9001 standards.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 01 60 00 requirements.

1.6 PROJECT CONDITIONS

- A. Adjoining Work: Constructed to specified tolerances.
- B. Reference Points: Benchmarks and other required reference points shall be established.
- C. Field Measurements: Fabricate work to field dimensions where possible. Where field measurements cannot be made without delaying work, the Contractor shall provide guaranteed dimensions and coordinate work of affected trades/Sections to assure proper execution of adjoining work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Top supported, individual, omni-directional panels; Hufcor Series 600 Series, or approved equal manufactured by Modernfold, with the following characteristics:
 1. Panels: 4-inch nominal thickness, in required widths. Panel faces shall be one-piece rollformed electro-galvanized 20 ga. (min.) steel laminated to gypsum backing and assembled to welded 16 ga. (min.) steel frames. Face shall wrap around the vertical panel edges and require no vertical trim. Horizontal trim shall be clear anodized aluminum.
 2. Vertical one-inch (min.) interlock between panels shall be of painted steel in a tongue and groove configuration. The lead panel shall seal against adjacent wall surface without the need for wall mounted jambs.
 3. Horizontal top seals shall be retractable, provide one-inch (nom.) operating clearance, and exert 50 lbs. of upward force when fully extended.
 4. Horizontal bottom seals shall be retractable, provide 1-1/2 inch nominal operating clearance, and exert 60 lbs. downward force when fully extended.
 5. Top rail shall incorporate shock absorbing leveler beam.
- B. Suspension System: Track shall be clear anodized architectural grade extruded aluminum alloy 6063-T6. Track design shall provide integral support for adjoining ceiling soffit sound barrier. Track shall be connected to the structural support by paired 3/8-inch (min.) dia. threaded steel hanger rods separated by 5" (min.) at deck and 2-1/4" (min.) at steel.
 1. Each panel shall be supported by two 2-wheeled counter-rotating horizontal carriers. Wheels to be of precision ground steel ball bearing with heat treated and hardened cases encased with molded polymer tires.
- C. Panel Finishes:
 1. Writing surface (with no vertical trim): JustRite by Walltalkers (Barrington, IL); white.
 2. **Above writing surface: Maharam or Carnegie fabric.**
 3. **Below writing surface: Wilsonart laminate (Stainless steel 4830).**

2.2 OPERATION

- A. Panels shall be manually moved from the storage area, positioned in the opening, and the seals set.
- B. Retractable Horizontal Seals: Seals shall be activated by a removable quick-set operating handle located approximately 42" from the floor in the panel edge. Top and bottom seals shall be operated simultaneously. Seal activation requires approximately a 190 degree turn of the removable handle.
- C. Final partition closure to be by Expanding Jamb Closure Panel to compensate for minor wall irregularities and provides a minimum of 250 lbs. seal force against the adjacent wall for optimum sound control. The jamb activator shall be located approximately 45" from the floor in the panel

face with access from either side of the panel. The jamb is equipped with a mechanical rack and pinion gear drive mechanism and shall extend 4" - 6" by turning the removable operating handle.

- D. Stack/Store Panels: Retract seals with removable operating handle and move to storage area. Panels are stored on stacks in storage areas. Panels function as marker boards in stacked position through the use of drop seals.

2.3 ACOUSTICAL PERFORMANCE

- A. Acoustical performance shall be tested at an approved independent testing agency in accordance with ASTM E90 test standards.
- B. Operable panel assembly shall obtain an STC rating of 52 (min.).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Comply with Section 01 60 00 requirements.

3.2 INSTALLATION

- A. Properly coordinate work with affected trades. Install assemblies per manufacturer's instructions and approved shop drawings, in proper relation to adjoining work.
- B. Anchor work securely to satisfy specified design requirements.

3.3 ADJUSTING AND CLEANING

- A. Correct nonconforming and damaged work. Replace work that cannot be satisfactorily corrected in the field.
- B. Adjust work so that panels operate smoothly, without bind or wear.
- C. Touch up shop coat abrasions.
- D. Demonstrate manual operation: Installer shall demonstrate proper operation and maintenance procedures to owner's representative. One operating handle per unit and owner's manual shall be provided to owner's representative.
- E. Cleaning:
 - 1. During Installation: Clean work as often as necessary to prevent permanent staining, etching, and other damage.
 - 2. After Installation: Thoroughly clean all work. Polish metal and glazed surfaces with soft, dry cloths.
- C. Protection: Protect work from damage and abuse.

END OF SECTION

SECTION 08 36 13
SECTIONAL DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Overhead sectional doors, manually operated.
- B. Operating hardware and supports.

1.02 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.
- D. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.
- E. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2019.
- F. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- G. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).
- H. DASMA 102 - American National Standard Specifications for Sectional Doors; 2018.

1.03 PERFORMANCE REQUIREMENTS

- A. The maximum U Value for the assembly is to be 0.31 per the State Energy Conservation Construction Code of New York State.
- B. Air Infiltration: Limit air infiltration through assembly to 0.40 cfm per square foot, measured in accordance with ANSI/DASMA 105, NFRD 400, or ASTM E283 at test pressure difference of 1.57 psf.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
- C. Product Data: Show component construction, anchorage method, and hardware.
- D. Manufacturer's Installation Instructions: Include any special procedures required by project conditions.
- E. Specimen warranty.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of type specified and with at least three years documented experience.

1.06 WARRANTY

- A. Extended Correction Period: Correct defective work within a 2-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Sectional Doors:
 - 1. C.H.I. Overhead Doors; Model 3216 Micro-Grooved Sandwich Steel Insulated Doors: www.chiohd.com.
 - 2. Clopay Building Products; Model 3722: www.clopaydoor.com.
 - 3. Overhead Door Corporation; Model 430 - Sectional Steel Door: www.overheaddoor.com.
 - 4. Raynor Garage Doors; ThermalSeal Series, Model TM200: www.raynor.com.
 - 5. Wayne-Dalton, a Division of Overhead Door Corporation; Thermospan, Model 200: www.wayne-dalton.com.

2.02 PERFORMANCE REQUIREMENTS

- A. Performance: Withstand positive and negative wind loads equal to 1.5 times design wind loads specified by local code without damage or permanent set, when tested in accordance with ASTM E330/E330M, using 10 second duration of maximum load.
- B. Air Leakage Rate: Less than 0.40 cfm/sq ft when tested in accordance with ASTM E283/E283M at test pressure difference of 1.57 psf.
- C. Thermal Transmittance: U-factor of 0.31 Btu/hr sq ft degrees F, maximum, in accordance with DASMA 102.

2.03 STEEL DOORS

- A. Doors: Flush steel, insulated; standard lift or high lift operating style as shown on drawings with track and hardware; complying with DASMA 102, Commercial application.
 - 1. Door Panels: Steel construction; outer steel sheet of 20 gauge, 0.0359 inch minimum thickness, flush profile; inner steel sheet of 20 gauge, 0.0359 inch minimum thickness, flat profile; core reinforcement sheet steel roll formed to channel shape, rabbeted weather joints at meeting rails; polyurethane insulation.
 - 2. Door Nominal Thickness: 2 inches thick.
 - 3. Interior Finish:
 - a. Factory finished with acrylic baked enamel; color as selected from manufacturers standard line.
 - 4. Glazed Lites: Full panel width, one row; set in place with resilient glazing channel.
 - a. Glazing: Fully tempered glass; insulated glass units; clear; 1 inch nominal overall thickness.
 - 5. Manual Operation: Pull rope.
- B. Glazing: As specified in Section 08 80 00.

2.04 COMPONENTS

- A. Track: Rolled galvanized steel, 0.090 inch minimum thickness; 3 inch wide, continuous one piece per side; galvanized steel mounting brackets 1/4 inch thick.
- B. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.
- C. Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.
 - 1. For Manual Operation: Requiring maximum exertion of 25 lbs force to open.
- D. Sill Weatherstripping: Resilient hollow rubber strip, one piece; fitted to bottom of door panel, full length contact.
- E. Jamb Weatherstripping: Roll formed steel section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.
- F. Head Weatherstripping: EPDM rubber seal, one piece full length.

- G. Panel Joint Weatherstripping: Neoprene foam seal, one piece full length.
- H. Lock: Inside center mounted, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position; interior and exterior handle.
- I. Lock Cylinders: Master keyed to building keying system.

2.05 MATERIALS

- A. Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G60/Z180 coating, plain surface.
- B. Float Glass: Provide float glass glazing, unless noted otherwise.
 - 1. Heat-Strengthened and Fully Tempered Types: ASTM C1048.
- C. Laminated Safety Glass: ASTM C1172 with at least 0.030 inch thick polyvinyl butyral (PVB) interlayer, and in compliance with safety criteria 16 CFR 1201 Categories 1 and 2, and ANSI Z97.1.
- D. Insulation: Foamed-in-place polyurethane, bonded to facing.
 - 1. R-value of 17.54 (U-factor of 0.19).
- E. Metal Primer Paint: Zinc molybdate type.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.
- B. Verify that electric power is available and of the correct characteristics.

3.02 PREPARATION

- A. Prepare opening to permit correct installation of door unit to perimeter air and vapor barrier seal.
- B. Apply primer to wood frame.

3.03 INSTALLATION

- A. Install door unit assembly in accordance with manufacturer's instructions.
- B. Anchor assembly to wall construction and building framing without distortion or stress.
- C. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- D. Fit and align door assembly including hardware.
- E. Coordinate installation of electrical service with Division 26.
- F. Complete wiring from disconnect to unit components.

3.04 TOLERANCES

- A. Maximum Variation from Plumb: 1/16 inch.
- B. Maximum Variation from Level: 1/16 inch.
- C. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 ft straight edge.
- D. Maintain dimensional tolerances and alignment with adjacent work.

3.05 ADJUSTING

- A. Adjust door assembly for smooth operation and full contact with weatherstripping.
- B. Have manufacturer's field representative present to confirm proper operation and identify adjustments to door assembly for specified operation.

3.06 CLEANING

- A. Clean doors and frames and glazing.

- B. Remove temporary labels and visible markings.

3.07 PROTECTION

- A. Protect installed products from damage until Date of Substantial Completion.
- B. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

END OF SECTION

SECTION 08 43 13
ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aluminum doors and frames.
- B. Weatherstripping.
- C. Door hardware.

1.02 REFERENCE STANDARDS

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2015.
- B. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- C. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2020.
- D. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
- E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
- G. NFRC-100 - Procedure for Determining Fenestration Product U-factors.
- H. NFRC-200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with installation of other components that comprise the exterior enclosure.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
- D. An NFRC Component Modeling Approach (CMA) generated label certificate shall be provided by the manufacturer. The label certificate shall be project specific and will contain the thermal performance ratings of the manufacturer's framing combined with the specified glass, and the glass spacer used in the fabrication of the glass, at NFRC standard test size as defined in table 4-3 in NFRC 100-2010.
- E. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.
- F. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.
- G. Specimen warranty.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience and approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 BASIS OF DESIGN -- SWINGING DOORS

- A. Medium Stile, Insulating Glazing, Thermally-Broken:
 - 1. Basis of Design: EFCO Corporation; Series D302 Thermostile: www.efcocorp.com.
 - 2. Kawneer; AA 425 Thermal Entrance: www.kawneer.us
 - 3. Equivalent
 - 4. Thickness: 1-3/4 inches.

2.02 COMPONENTS

- A. Glazing: See Section 08 80 00.
- B. Swing Doors: Glazed aluminum.
 - 1. Thickness: 1-3/4 inches.
 - 2. Top Rail: 3.5 inches wide.
 - 3. Vertical Stiles: 3.5 inches wide.
 - 4. Bottom Rail: _____ inches wide.
 - 5. Glazing Stops: Square.
 - 6. Finish: Clear Anodized.
 - 7. Air Infiltration: <.5 CFM/SF @ 1.57 PSF.
 - 8. U-Factor: Maximum 0.66.

2.03 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Sheet Aluminum: ASTM B209/B209M.
- C. Fasteners: Stainless steel.
- D. Exposed Flashings: Aluminum sheet, 20 gauge, 0.032 inch minimum thickness; finish to match framing members.
- E. Concealed Flashings: Stainless steel, 26 gauge, 0.0187 inch minimum thickness.
- F. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

2.04 FINISHES

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

2.05 HARDWARE

- A. For each door, include weatherstripping, sill sweep strip, and threshold.
- B. Other Door Hardware: See Section 08 71 00.

- C. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.
- D. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.
- E. Threshold: Extruded aluminum, one piece per door opening, thermally broken; ribbed surface; provide on all doors.
- F. Continuous Hinges: A160 HD by ABH/EFCO, finish to match doors, factory installed.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that storefront wall openings and adjoining water-resistive and/or air barrier seal materials are ready to receive work of this section.

3.02 INSTALLATION

- A. Install wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
- H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- I. Set thresholds in bed of sealant and secure.
- J. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

- A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.
- C. Maximum distance from bottom of door to top of threshold: 1/4 inch.

3.04 FIELD QUALITY CONTROL

- A. Provide services of storefront manufacturer's field representative to observe for proper installation of system and submit report.

3.05 ADJUSTING

- A. Adjust operating hardware and sash for smooth operation.

3.06 CLEANING

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.
- C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.07 PROTECTION

- A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 08 44 13
GLAZED ALUMINUM CURTAIN WALLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aluminum-framed curtain wall, with vision glazing and infill panels.
- B. Mullion Parititon Cover

1.02 REFERENCE STANDARDS

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2015.
- B. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- C. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2020.
- D. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.
- E. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- F. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- G. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
- H. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- I. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
- J. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).
- K. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- L. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).
- M. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).
- N. NFRC-100 - Procedure for Determining Fenestration Product U-factors.
- O. NFRC-200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.
- P. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with installation of other components that comprise the exterior enclosure.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, internal drainage details, glazing, and infill.

- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.
- D. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.
- E. Design Data: Provide framing member structural and physical characteristics and engineering calculations, and identify dimensional limitations; include load calculations at points of attachment to building structure.
- F. Test Reports: Submit results of full-size mock-up testing. Reports of tests previously performed on the same design are acceptable.
- G. An NFRC Component Modeling Approach (CMA) generated label certificate shall be provided by the manufacturer. The label certificate shall be project specific and will contain the thermal performance ratings of the manufacturer's framing combined with the specified glass, and the glass spacer used in the fabrication of the glass, at NFRC standard test size as defined in table 4-3 in NFRC 100-2010.
- H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Designer Qualifications: Design curtain wall and its structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed at the State in which the Project is located.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with not less than three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience and approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.07 FIELD CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 5-year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units. Complete forms in Owner's name and register with installer.
- C. Finish Warranty: Provide 5-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.01 BASIS OF DESIGN - CURTAIN WALL SYSTEMS

- A. Pressure Cap Four Sides; Not Unitized, Field Assembled:
 - 1. Basis of Design: EFCO, a Pella Company; System 5600 XTherm, 2-1/2 inch wide face: www.efcocorp.com.
 - a. Kawneer Company, Inc: 1600 Wall System
 - b. YKK: YCW 750 XT

2.02 CURTAIN WALL

- A. Aluminum-Framed Curtain Wall: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
 - 1. Fabrication Method: Either shop/factory or field fabricated system.
 - 2. Glazing Method: Either shop/factory or field glazed system.
 - 3. Vertical Mullion Face Width: 2-1/2 inches.
 - 4. Vertical Mullion Depth From Face of Glazing to Back of Frame: 5 inches.
 - 5. Finish: Class I natural anodized.
 - a. Factory finish surfaces that will be exposed in completed assemblies.
 - b. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
 - 6. Provide flush joints and corners, weathersealed, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for imposed loads.
 - 7. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
 - 8. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
 - 9. Maintain continuous air barrier and/or vapor retarder seal throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel and heel bead of glazing compound.
 - 10. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
- B. Structural Performance Requirements: Design and size components to withstand the following load requirements without damage or permanent set.
 - 1. Design Wind Loads: Comply with the following:
 - a. Positive Design Wind Load: 20 lbf/sq ft.
 - b. Negative Design Wind Load: 24 lbf/sq ft.
 - c. Measure performance by testing in accordance with ASTM E330/E330M, using test loads equal to 1.5 times the design wind loads and 10 second duration of maximum pressure.
 - d. Member Deflection: For spans less than 13 feet 6 inches, limit member deflection to flexure limit of glass in any direction, and maximum of 1/175 of span or 3/4 inch, whichever is less and with full recovery of glazing materials.
 - e. Member Deflection: For spans over 13 feet 6 inches and less than 40 feet, limit member deflection to flexure limit of glass in any direction, and maximum of 1/240 of span plus 1/4 inch, with full recovery of glazing materials.
 - 2. Seismic Loads: Design and size components to withstand seismic loads and sway displacement in accordance with requirements of ASCE 7.
 - 3. Movement: Accommodate the following movement without damage to components or deterioration of seals:
 - a. Expansion and contraction caused by 180 degrees F surface temperature.
 - b. Expansion and contraction caused by cycling temperature range of 170 degrees F over a 12 hour period.
 - c. Movement of curtain wall relative to perimeter framing.
 - d. Deflection of structural support framing, under permanent and dynamic loads.
- C. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on indoor face when tested as follows:
 - 1. Test Pressure Differential: 10 psf.
 - 2. Test Method: ASTM E331.

- D. Air Leakage: 0.06 cfm/sq ft maximum leakage of wall area when tested in accordance with ASTM E283/E283M at 6.24 psf pressure difference across assembly.
- E. Thermal Performance Requirements:
 - 1. Condensation Resistance Factor of Framing: 70, minimum, measured in accordance with AAMA 1503.
 - 2. Overall U-value Including Glazing: .36 Btu/(hr sq ft deg F), maximum.

2.03 COMPONENTS

- A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
 - 1. Framing members for interior applications need not be thermally broken.
 - 2. Cross-Section: As indicated on drawings.
 - 3. Structurally Reinforced Members: Extruded aluminum with internal reinforcement of structural steel member.
- B. Glazing: See Section 08 80 00.
- C. Mullion Extender - Extruded aluminum partition closure.
 - 1. Finish: To match curtainwall.
 - 2. Provide end caps.
 - 3. Provide accoustic insulation as detailed.
 - 4. Configuration as detailed.
 - 5. Basis of Design Product:
 - a. Gordon Architectural Engineering Solutions: Mullion Mate.

2.04 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Sheet Aluminum: ASTM B209/B209M.
- C. Structural Steel Sections: ASTM A36/A36M; shop primed.
- D. Fasteners: Stainless steel; type as required or recommended by curtain wall manufacturer.
- E. Exposed Flashings: Aluminum sheet, 20-gauge, 0.032-inch minimum thickness; finish to match framing members.
- F. Concealed Flashings: Stainless steel, 26-gauge, 0.0187-inch minimum thickness.
- G. Weatherseal Sealant: Silicone, with adhesion in compliance with ASTM C794; compatible with glazing accessories.
- H. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, and compatible with flashing material.
- I. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.
- J. Glazing Accessories: See Section 08 80 00.
- K. Shop and Touch-Up Primer for Steel Components: Zinc oxide, alkyd, linseed oil primer appropriate for use over hand cleaned steel.
- L. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

2.05 FINISHES

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.
- B. Touch-Up Materials: As recommended by coating manufacturer for field application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other related work.
- B. Verify that curtain wall openings and adjoining water-resistive and air barrier seal materials are ready to receive work of this section.
- C. Verify that anchorage devices have been properly installed and located.

3.02 INSTALLATION

- A. Install curtain wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- H. Install louvers and associated flashings.
 - 1. Fit blank-off plates tight to ductwork.
- I. Install mullion cover assembly in accordance with manufacturer's instructions.
- J. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

- A. Maximum Variation from Plumb: 0.06 inch per 3 feet noncumulative or 0.5 inches per 100 feet, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.
- C. Sealant Space Between Curtain Wall Mullions and Adjacent Construction: Maximum of 3/4 inch and minimum of 1/4 inch.

3.04 FIELD QUALITY CONTROL

- A. Provide services of curtain wall manufacturer's field representative to observe for proper installation of system and submit report.
- B. Repair or replace curtain wall components that have failed designated field testing, and retest to verify performance complies with specified requirements.

3.05 ADJUSTING

- A. Adjust operating sash for smooth operation.

3.06 CLEANING

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, take care to remove dirt from corners, and wipe surfaces clean.
- C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.07 PROTECTION

- A. Protect installed products from damage until mm-dd-yyyy.

END OF SECTION

**SECTION 08 71 00
DOOR HARDWARE**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hardware for wood, aluminum, hollow metal, and FRP doors.
- B. Hardware for fire-rated doors.
- C. Electrically operated and controlled hardware.
- D. Thresholds.
- E. Weatherstripping and gasketing.
- F. Gate locks.

1.02 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. BHMA (CPD) - Certified Products Directory; Current Edition.
- C. BHMA A156.1 - Standard for Butts and Hinges; 2021.
- D. BHMA A156.2 - Bored and Preamsembled Locks and Latches; 2022.
- E. BHMA A156.3 - Exit Devices; 2020.
- F. BHMA A156.4 - Door Controls - Closers; 2019.
- G. BHMA A156.5 - Cylinders and Input Devices for Locks; 2020.
- H. BHMA A156.6 - Standard for Architectural Door Trim; 2021.
- I. BHMA A156.7 - Template Hinge Dimensions; 2016.
- J. BHMA A156.8 - Door Controls - Overhead Stops and Holders; 2021.
- K. BHMA A156.13 - Mortise Locks & Latches Series 1000; 2022.
- L. BHMA A156.16 - Auxiliary Hardware; 2023.
- M. BHMA A156.18 - Materials and Finishes; 2020.
- N. BHMA A156.21 - Thresholds; 2019.
- O. BHMA A156.22 - Standard for Gasketing; 2021.
- P. BHMA A156.25 - Electrified Locking Devices; 2023.
- Q. BHMA A156.26 - Standard for Continuous Hinges; 2021.
- R. BHMA A156.28 - Standard for Recommended Practices for Mechanical Keying Systems; 2023.
- S. BHMA A156.36 - Auxiliary Locks; 2020.
- T. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.
- U. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.
- V. DHI (H&S) - Sequence and Format for the Hardware Schedule; 2019.
- W. DHI (KSN) - Keying Systems and Nomenclature; 2019.
- X. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames; 2004.
- Y. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; 1993; also in WDHS-1/WDHS-5 Series, 1996.
- Z. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- AA. ITS (DIR) - Directory of Listed Products; Current Edition.

- BB. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- CC. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.
- DD. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- EE. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2022.
- FF. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.
- GG. UL (DIR) - Online Certifications Directory; Current Edition.
- HH. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- II. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.
- B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.
- C. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; attendance is required by affected installers and the following:
 - 1. Architect.
 - 2. Installer's Architectural Hardware Consultant (AHC).
 - 3. Hardware Installer.
 - 4. Owner's Security Consultant.
- D. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
- E. Keying Requirements Meeting:
 - 1. Schedule meeting at project site prior to Contractor occupancy.
 - 2. Attendance Required:
 - a. Installer's Architectural Hardware Consultant (AHC).
 - b. Hardware Installer.
 - c. Owner's Security Consultant.
 - 3. Agenda:
 - a. Establish keying requirements.
 - b. Verify locksets and locking hardware are functionally correct for project requirements.
 - c. Verify that keying and programming complies with project requirements.
 - d. Establish keying submittal schedule and update requirements.
 - 4. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
 - a. Access control requirements.
 - b. Key control system requirements.
 - c. Flow of traffic and extent of security required.
 - 5. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.
 - 6. Deliver established keying requirements to manufacturers.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

- B. Hardware Suppliers Qualifications: Submit verification that hardware submittals have been prepared by a DHI certified Architectural Hardware Consultant (AHC) or a DHI certified Door & Hardware Consultant (DHC). When applicable, submit verification that electrified hardware has been prepared by a DHI certified Electrified Hardware Consultant (EHC).
- C. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
- D. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
 - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
 - 2. Comply with DHI (H&S) using door numbers and hardware set numbers as indicated in construction documents.
 - 3. List groups and suffixes in proper sequence.
 - 4. Provide complete description for each door listed.
 - 5. Provide manufacturer name, product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
 - 6. Include account of abbreviations and symbols used in schedule.
- E. Shop Drawings - Electrified Door Hardware: Submit diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:
 - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC).
 - 2. Elevations: Submit front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
 - 3. Diagrams: Submit point-to-point wiring diagram that shows each device in door opening system with related colored wire connections to each device.
- F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- G. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
 - 1. Submit manufacturer's parts lists and templates.
 - 2. Bitting List: List of combinations as furnished.
- H. Keying Schedule:
 - 1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.
- I. Specimen warranty.
- J. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.
- K. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Lock Cylinders: 4 for each master keyed group.
 - 3. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.05 QUALITY ASSURANCE

- A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Architect and Contractor.

- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience and approved by manufacturer.
- D. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) to assist in work of this section.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer's Warranty: Provide warranty against defects in material and workmanship for period indicated. Complete forms in Owner's name and register with manufacturer.
 - 1. Closers: Twenty-five years, minimum.
 - 2. Exit Devices: Three years, minimum.
 - a. One year for electrical components.
 - 3. Locksets and Cylinders: Seven years, minimum.
 - 4. Other Hardware: One year, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

- A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
- B. Provide individual items of single type, of same model, and by same manufacturer.
- C. Provide door hardware products that comply with the following requirements:
 - 1. Applicable provisions of federal, state, and local codes.
 - 2. Accessibility: ADA Standards and ICC A117.1.
 - 3. Applicable provisions of NFPA 101.
 - 4. Fire-Rated Doors: NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
 - 5. Hardware on Fire-Rated Doors: Listed and classified by UL (DIR) or ITS (DIR) as suitable for application indicated.
 - 6. Hardware for Smoke and Draft Control Doors (Indicated as "S" on Drawings): Provide door hardware that complies with local codes, and requirements of assemblies tested in accordance with UL 1784.
 - a. Air Leakage Rate: Tested in accordance with UL 1784, with air leakage rate not to exceed 3.0 cfm/sf of door opening at 0.10 inch of water for both ambient and elevated temperature tests.
 - 7. Listed and certified compliant with specified standards by BHMA (CPD).
 - 8. Auxiliary Hardware: BHMA A156.16.
 - 9. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
 - 10. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
 - 11. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.
- D. Electrically Operated and/or Controlled Hardware: Provide necessary power supplies, power transfer hinges, relays, and interfaces as required for proper operation; provide wiring between hardware and control components and to building power connection in compliance with NFPA 70.

1. See Section 28 10 00 for additional access control system requirements.
- E. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. See Door Hardware Schedule.
- F. Fasteners:
 1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
 - a. Aluminum fasteners are not permitted.
 - b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
 2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
 - a. Self-drilling (Tek) type screws are not permitted.
 3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
 4. Provide wall grip inserts for hollow wall construction.
 5. Provide spacers or sex bolts with sleeves for through bolting of hollow metal doors and frames.
 6. Fire-Rated Applications: Comply with NFPA 80.
 - a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
 - b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.
 7. Concealed Fasteners: Do not use through or sex bolt type fasteners on door panel sides indicated as concealed fastener locations, unless otherwise indicated.
 8. Provide sex bolts for attachment of closers and vertical rod exit devices on wood doors.

2.02 HINGES

- A. Manufacturers:
 1. McKinney; an Assa Abloy Group company; T4B3786: www.assaabloydss.com.
 2. Ives, an Allegion brand; 5BB1HW: us.allegion.com/us.
 3. Stanley, dormakaba Group; FBB 168: www.stanleyhardwarefordoors.com.
- B. Hinges: Comply with BHMA A156.1, Grade 1.
 1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
 - a. Provide hinge width required to clear surrounding trim.
 2. Continuous Hinges: Comply with BHMA A156.26.
 3. Provide hinges on every swinging door.
 4. Provide ball-bearing hinges at each door with closer.
 5. Provide non-removable pins on exterior outswinging doors.
 6. Provide power transfer hinges where electrified hardware is mounted in door leaf.
 7. Provide following quantity of butt hinges for each door:
 - a. Doors up to 60 inches High: Two hinges.
 - b. Doors From 60 inches High up to 90 inches High: Three hinges.
 - c. Doors 90 inches High up to 120 inches High: Four hinges.

2.03 CONTINUOUS GEARED HINGES

- A. Manufacturers:
 1. ABH Manufacturing Inc.; A160HD: www.abhmfg.com.
 2. Assa Abloy McKinney; MCK-25HD: www.assaabloydss.com.
 3. Assa Abloy Pemko; FMHD: www.assaabloydss.com.
 4. Ives; 224HD: us.allegion.com.
 5. Roton; 24HD: www.hagerco.com.
 6. Select Products; SL-24HD: www.select-hinges.com.
- B. Continuous Hinges: Comply with BHMA A156.26.

2.04 FLUSH BOLTS

- A. Manufacturers:
 - 1. Rockwood, an Assa Abloy Group company: www.assaabloydss.com.
 - 2. Hager Companies: www.hagerco.com.
 - 3. Ives, an Allegion brand: www.allegion.com/us.
 - 4. Trimco: www.trimcohardware.com.
- B. Flush Bolts: Comply with BHMA A156.16, Grade 1.
 - 1. Flush Bolt Throw: 3/4 inch, minimum.
 - 2. Provides extension bolts in leading edge of door, one bolt into floor, one bolt into top of frame.
 - a. Pairs of Swing Doors: At inactive leaves, provide flush bolts of type as required to comply with code.
 - 3. Provide dustproof floor strike for bolt into floor, except at metal thresholds.
 - 4. Manual Flush Bolts: Provide lever extensions for top bolt at over-sized doors.
 - 5. Self-Latching Flush Bolts: Automatically latch upon closing of door; manually retracted; located on inactive leaf of pair of doors.
 - 6. Automatic Flush Bolts: Automatically latch upon closing of door; automatic retraction of bolts when active leaf is opened; located on inactive leaf of pair of doors.

2.05 EXIT DEVICES

- A. Manufacturers:
 - 1. Corbin Russwin; an Assa Abloy Group company; ED5000: www.assaabloydss.com.
 - 2. Sargent; an Assa Abloy Group company; 80 Series: www.assaabloydss.com.
 - 3. Precision, dormakaba Group; Apex 2000 Series: www.precisionhardware.com.
 - 4. Von Duprin, an Allegion brand; 98 Series: www.allegion.com/us.
- B. Exit Devices: Comply with BHMA A156.3, Grade 1.
 - 1. Lever design to match lockset trim.
 - 2. Provide cylinder with cylinder dogging or locking trim.
 - 3. Provide exit devices properly sized for door width and height.
 - 4. Provide strike as recommended by manufacturer for application indicated.
 - 5. Provide less bottom rod (LBR) at scheduled locations to eliminate use of floor mounted strikes.
 - 6. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.
 - 7. For electrical options, provide quick connect plug-in pre-wired connectors.

2.06 LOCK CYLINDERS

- A. Manufacturers:
 - 1. Best, dormakaba Group: www.bestaccess.com.
 - a. Keyed to coordinate with Owner's existing grand master system.
- B. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
 - 1. Provide small format interchangeable core (SFIC) type cylinders, Grade 1, with seven-pin core in compliance with BHMA A156.5 at locations indicated.
 - 2. Provide cylinders from same manufacturer as locking device.
 - 3. Provide cams and/or tailpieces as required for locking devices.
 - 4. Within specific Door Sections, when provisions for lock cylinder are being referenced to this Section, provide specified lock cylinder and keyed to building keying system, unless otherwise indicated.

2.07 CYLINDRICAL LOCKS

- A. Manufacturers:
 - 1. Basis of Design: Best, dormakaba Group; 9K Series: www.bestaccess.com..

2. Corbin Russwin; an Assa Abloy Group company; CL3300: www.assaabloydss.com.
 3. Schlage, an Allegion brand; ND Series: www.allegion.com/us.
- B. Cylindrical Locks (Bored): Comply with BHMA A156.2, Grade 1, 4000 Series.
1. Bored Hole: 2-1/8 inch diameter.
 2. Latchbolt Throw: 1/2 inch, minimum.
 3. Backset: 2-3/4 inch unless otherwise indicated.
 4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
 - a. Finish: To match lock or latch.
 5. Provide a lock for each door, unless otherwise indicated that lock is not required.
 6. Provide an classroom lockset for swinging door where hardware set is not indicated.
 7. Trim: Provide lever handle or pull trim on outside of each lock, unless otherwise indicated.

2.08 MORTISE LOCKS

- A. Manufacturers:
1. Schlage, an Allegion brand; L Series: www.allegion.com/us.
- B. Mortise Locks: Comply with BHMA A156.13, Grade 1, Security, 1000 Series.
1. Latchbolt Throw: 3/4 inch, minimum.
 2. Deadbolt Throw: 1 inch, minimum.
 3. Backset: 2-3/4 inch unless otherwise indicated.
 4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
 - a. Finish: To match lock or latch.

2.09 ELECTROMECHANICAL LOCKS

- A. Manufacturers:
1. Best, dormakaba Group; 9K Series: www.bestaccess.com.
 2. Schlage, an Allegion brand: www.allegion.com/us.
- B. Electromechanical Locks: Comply with BHMA A156.25, Grade 1.
1. Provide motor-driven or solenoid-driven locks, with strike that is applicable to frame.
 2. Type: Cylindrical (Bored).

2.10 AUXILIARY LOCKS (DEADLOCKS)

- A. Manufacturers:
1. Best, dormakaba Group; T Series: www.bestaccess.com.
- B. Auxiliary Locks (Deadlocks): Comply with BHMA A156.36, Grade 1.
1. Type: Bored (cylindrical).
 2. Application: Bored.
 3. Bolt Throw: 1/2 inch, with latch made of hardened steel.
 4. Provide strike that matches frame.

2.11 DOOR PULLS AND PUSH PLATES

- A. Manufacturers:
1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com.
 2. Burns Architectural Hardware: www.burnsmfg.com.
 3. Trimco: www.trimcohardware.com.
- B. Door Pulls and Push Plates: Comply with BHMA A156.6.
1. Pull Type: Straight, unless otherwise indicated.
 2. Push Plate Type: Flat, with square corners, unless otherwise indicated.
 - a. Edges: Beveled, unless otherwise indicated.
 3. Material: Aluminum, unless otherwise indicated.

4. Provide door pulls and push plates on doors without a lockset, latchset, exit device, or auxiliary lock unless otherwise indicated.
5. On solid doors, provide matching door pull and push plate on opposite faces.
6. On glazed storefront doors, provide matching door pulls/push plates on both faces unless otherwise indicated.

2.12 COORDINATORS

- A. Manufacturers:
 1. DORMA USA, Inc; TS93 GSR: www.dorma.com.
 2. Ives, an Allegion brand: www.allegion.com/us.
- B. Coordinators: Provide on doors having closers and self-latching or automatic flush bolts to ensure that inactive door leaf closes before active door leaf.
 1. Type: Bar, unless otherwise indicated.
 2. Material: Aluminum, unless otherwise indicated.
 3. Ensure that coordination of other door hardware affected by placement of coordinators and carry bar is applied properly for completely operable installation.

2.13 CLOSERS

- A. Manufacturers; Surface Mounted:
 1. Best, dormakaba Group; HD8000: www.bestaccess.com.
 2. Corbin Russwin; an Assa Abloy Group company; DC8000: www.assaabloydss.com.
 3. LCN, an Allegion brand; 4040XP: www.allegion.com/us.
- B. Manufacturers; Concealed - Overhead:
 1. DORMA USA, Inc; ITS96: www.dorma.com.
- C. Closers: Comply with BHMA A156.4, Grade 1.
 1. Type: Surface mounted to door.
 2. Material: Cast-iron cylinder body.
 3. Provide door closer on each exterior door.
 4. Provide door closer on each fire-rated and smoke-rated door.
 5. At outswinging exterior doors, mount closer on interior side of door.
 6. Provide drop plate where back of closer is exposed to view.
 7. Provide brackets where required by frame condition.

2.14 OVERHEAD STOPS AND HOLDERS

- A. Manufacturers:
 1. Rixson or Sargent; an Assa Abloy Group company: www.assaabloydss.com.
 2. DORMA USA, Inc; 900 Series: www.dorma.com.
- B. Overhead Stops and Holders (Door Checks): Comply with BHMA A156.8, Grade 1.
 1. Stop is not required if positive stop feature is specified for door closer; positive stop feature of door closer is not an acceptable substitute for a stop, unless otherwise indicated.

2.15 POWER DOOR OPERATORS

- A. See Section 08 71 13.

2.16 KICK PLATES

- A. Manufacturers:
 1. Ives, an Allegion brand: www.allegion.com/us.
 2. Standard Metal Hardware Manufacturing Ltd; Door Plates: www.smhardware.com.
 3. Trimco: www.trimcohardware.com.
 4. Rockwood: www.rockwood.com
- B. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.

1. Size: 12 inch high by 2 inch less door width (LDW) on push side of door.

2.17 WALL STOPS

- A. Manufacturers:
 1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com.
 2. Hager Companies: www.hagerco.com.
 3. Ives, an Allegion brand: www.allegion.com/us.
 4. Trimco: www.trimcohardware.com.
- B. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
 1. Type: Bumper, concave, wall stop.
 2. Material: Aluminum housing with rubber insert.

2.18 THRESHOLDS

- A. Manufacturers:
 1. Pemko; an Assa Abloy Group company: www.assaabloydss.com.
 2. Hager Companies: www.hagerco.com.
 3. National Guard Products, Inc: www.ngpinc.com.
- B. Thresholds: Comply with BHMA A156.21.
 1. Provide threshold at each exterior door, unless otherwise indicated.
 2. Type: Flat surface.
 3. Material: Aluminum.
 4. Threshold Surface: Thermally broken.
 5. Field cut threshold to profile of frame and width of door sill for tight fit.
 6. Provide non-corroding fasteners at exterior locations.

2.19 WEATHERSTRIPPING AND GASKETING

- A. Manufacturers:
 1. Pemko; an Assa Abloy Group company: www.assaabloydss.com.
 2. Hager Companies: www.hagerco.com.
 3. Zero International, Inc: www.zerointernational.com.
- B. Weatherstripping and Gasketing: Comply with BHMA A156.22.
 1. Head and Jamb Type: Encased in retainer.
 2. Door Sweep Type: Encased in retainer.
 3. Material: Aluminum, with brush weatherstripping.
 4. Provide gasketing for smoke and draft control doors that complies with local codes, requirements of assemblies tested in accordance with UL 1784.
 5. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.
 6. Provide door bottom sweep on each exterior door, unless otherwise indicated.
 7. Provide sound-rated gasketing and automatic door bottom on doors indicated as "Sound-Rated", "Acoustical", or with "Sound Transmission Class (STC) rating"; fabricate as continuous gasketing, do not cut or notch gasketing material.

2.20 COAT HOOKS

- A. Manufacturers:
 1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com.
- B. Coat Hooks: Provide on room side of private bathroom doors and private office doors, screw fastened.
 1. Material: Stainless steel.

2.21 GATE LATCH

- A. Gate Latch: Provide to secure a gate used for traffic control to prevent pedestrian traffic into an area, located on inside of gate with turn piece as detailed on drawings.
 - 1. Material: Steel.

2.22 PADLOCKS

- A. Padlocks: Solid extruded brass case with shackle that locks at heel and toe.
 - 1. Shackle Height: 3/4 inch, and width of opening is 7/8 inch.
 - 2. Shackle Diameter: 1/4 inch.
 - 3. Finish: 626 - Satin Chrome.
 - 4. Keying: 7-pin SFIC (Small Format Interchangeable Core).
 - 5. Lock Functions:
 - a. Key retained (T).
 - b. Weather cover (WC).

2.23 SILENCERS

- A. Manufacturers:
- B. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
 - 1. Single Door: Provide three on strike jamb of frame.
 - 2. Pair of Doors: Provide two on head of frame, one for each door at latch side.
 - 3. Material: Rubber, gray color.

2.24 KEY CONTROL SYSTEMS

- A. Manufacturers:
 - 1. Best, dormakaba Group: www.bestaccess.com.
- B. Key Control Systems: Comply with guidelines of BHMA A156.28.
 - 1. Provide keying information in compliance with DHI (KSN) standards.
 - 2. Keying: Key to Owner's existing keying system.
 - 3. Include construction keying and control keying with removable core cylinders.
 - 4. Key to existing keying system.
 - 5. Supply keys in following quantities:
 - a. 4 each Master keys.
 - b. 2 Grand Master keys.
 - c. 6 each Construction Master keys.
 - d. 15 each Construction keys.
 - e. 2 each Construction Control keys.
 - f. 2 each Control keys if new system.
 - 6. Deliver keys with identifying tags to Owner by security shipment direct from hardware supplier.
 - 7. Permanent Keys and Cores: Stamped with applicable key marking for identification. Do not include actual key cuts within visual key control marks or codes. Stamp permanent keys "Do Not Duplicate."
 - 8. Owner or Owner's agent install permanent cores and return construction cores to hardware supplier. Construction cores and keys to remain property of hardware supplier.

2.25 FIRE DEPARTMENT LOCK BOX

- A. Manufacturers:
 - 1. Knox Company; Knox-Box Rapid Entry System: www.knoxbox.com.
- B. Fire Department Lock Box:
 - 1. Capacity: Holds 10 keys.
 - 2. Finish: Manufacturer's standard silver.

2.26 DOOR CONTACT

- A. Manufacturers:
 - 1. Dormakaba; 9450 Recessed Contact
 - 2. Bosch; ISN-CSD-70
- B. Recessed Door Contact:
 - 1. Power: 200mA Max
 - 2. Diameter: 3/4"
 - 3. Operating Temperature: -40 to 140 degrees F

2.27 POWER SUPPLY

- A. Manufacturers:
 - 1. Securitron; an Assa Abloy Group company; _____: www.assaabloydss.com.
- B. Power Supply: Hard wired, with multiple zones providing eight (8) breakers for each output panel with individual control switches and LED's; UL (DIR) Class 2 listed.
 - 1. Power: 24 VAC, 10 Amp; with 120 VAC power supply.
 - 2. Operating Temperature: 32 to 110 degrees F.
 - 3. Provide with emergency release terminals that release devices upon activation of fire alarm system.

2.28 FINISHES

- A. Finishes: Provide door hardware of same finish, unless otherwise indicated.
 - 1. Primary Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26D); BHMA A156.18.
 - 2. Secondary Finish: (former US equivalent US32D); BHMA A156.18.
 - a. Use secondary finish in kitchens, bathrooms, and other spaces containing chrome or stainless steel finished appliances, fittings, and equipment; provide primary finish on one side of door and secondary finish on other side if necessary.
 - 3. Exceptions:
 - a. Where base material metal is specified to be different, provide finish that is an equivalent appearance in accordance with BHMA A156.18.
 - b. Hinges for Fire-Rated Doors: Steel base material with painted finish, in compliance with NFPA 80.
 - c. Door Closer Covers and Arms: Color as selected by Architect from manufacturer's standard colors unless otherwise indicated.
 - d. Aluminum Surface Trim and Gasket Housings: Anodized to match door panel finish, not other hardware, unless otherwise indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.
- B. Verify that electric power is available to power operated devices and of correct characteristics.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.
- C. Install hardware for smoke and draft control doors in accordance with NFPA 105.
- D. Use templates provided by hardware item manufacturer.
- E. Do not install surface mounted items until application of finishes to substrate are fully completed.

- F. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
 - 1. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.
 - 2. For Aluminum-Framed Storefront Doors and Frames: See Section 08 43 13.
 - 3. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.
 - 4. Mounting heights in compliance with ADA Standards:
- G. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Section 01 40 00 - Quality Requirements.
- B. Provide an Architectural Hardware Consultant (AHC) to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING

- A. Adjust work under provisions of Section 01 70 00 - Execution and Closeout Requirements.
- B. Adjust hardware for smooth operation.
- C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.05 CLEANING

- A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.06 PROTECTION

- A. Protect finished Work under provisions of Section 01 70 00 - Execution and Closeout Requirements.
- B. Do not permit adjacent work to damage hardware or finish.

3.07 SCHEDULE

- A. Refer to schedule attached to end of this section.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE SCHEDULE

The following is a general listing of hardware requirements and is not intended for use as a final hardware schedule. Any items of hardware required by established standards or practices, or to meet state and local codes or proper door operation shall be furnished whether or not specifically called out in the following listed groups.

- A. The following hardware sets are for interior doors. Doors with electrical components and exterior doors are in the next section.

HARDWARE SET #1

Each to have:

	Hinges	Stanley (see description) x 626
1	Storeroom Lock	Best 9K37D15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Overhead Stop	Dorma 710S x 626
1	Kick Plate	Rockwood K1050 (see description) x 630
3	Silencers	Rockwood 608-RKW

HARDWARE SET #1A

Each to have:

	Hinges	Stanley (see description) x 626
1	Storeroom Lock	Best 9K37D15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Stop	Rockwood 405 x 630
1	Kick Plate	Rockwood K1050 (see description) x 630
3	Silencers	Rockwood 608-RKW

HARDWARE SET #1B

Each to have:

	Hinges	Stanley (see description) x 626
1	Storeroom Lock	Best 9K37D15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Closer/Stop	LCN 4040XP Cush x 689
1	Kick Plate	Rockwood K1050 (see description) x 630
1	set Smoke Seals	NGP 2525C @ jambs/head

HARDWARE SET #2

Each to have:

1	Continuous Hinge	Stanley 661HD x 626
1	Deadlock	Best 8T3-7-S-STK-626
1	Permanent Core	Best (to suit) x 626
1	set Push Pulls	Trimco 1894-4B x 630
1	Closer	LCN 4040XP x 689
1	Stop	Rockwood 405 x 630
2	Kick Plate	Rockwood K1050 (see description) x 630
3	Silencers	Rockwood 608-RKW

HARDWARE SET #3

Each to have:

	Hinges	Stanley (see description) x 626
1	Exit Device	Precision FL2408 x 2900A x S988
1	Cylinder Housing	Best (to suit) x 626
1	Temporary Core	Best (to suit) x 626
1	Permanent Core	Best (to suit) x 626
1	Closer	LCN 4040XP Cush x 689
1	Stop	Rockwood 405 x 630
1	Kick Plate	Rockwood K1050 (see description) x 630
1	set Smoke Seals	NGP 2525C @ jambs/head

HARDWARE SET #4

Each to have:

	Hinges	Stanley (see description) x 626
2	Set Manual Flush Bolts	Rockwood 2845 x 626
1	Dustproof Strike	Rockwood 570 x 630
1	Storeroom Lock	Best 9K37D15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Overhead Stop	Dorma 710S series x 626
2	Kick Plate	Rockwood 1050 (see description) x 630
2	Silencers	Rockwood 608-RKW

HARDWARE SET #4B

Each to have:

	Hinges	Stanley (see description) x 626
1	Set Manual Flush Bolts	Rockwood 2845 (see description) x 626
1	Dustproof Strike	Rockwood 570 x 630
1	Storeroom Lock	Best 9K37D15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Stop	Rockwood 405 x 630
2	Kick Plate	Rockwood 1050 (see description) x 630
2	Silencers	Rockwood 608-RKW

HARDWARE SET #5

Each to have:

	Hinges	Stanley (see description) x 626
1	Passage Set	Best 9K30N15CS3 x 626
1	Closer	LCN 4040XP series x 689
1	Stop	Rockwood 405 x 630
2	Kick Plate	Rockwood 1050 (see description) x 630
3	Silencers	Rockwood 608-RKW

HARDWARE SET #6

Each to have:

	Hinges	Stanley (see description) x 626
1	Privacy Set	Schlage 940 L283-722 x 626
1	Closer	LCN 4040XP series x 689
1	Stop	Rockwood 405 x 630
2	Kick Plate	Rockwood 1050 (see description) x 630
3	Silencers	Rockwood 608-RKW

HARDWARE SET #7

Each to have:

2	Continuous Hinge	Stanley 661HD x 626
2	Set Push Pulls	Rockwood 110x73C x 630
2	Closer	LCN 4040XP Cush x 689
2	Silencers	Rockwood 608-RKW

HARDWARE SET #8

Each to have:

	Hinges	(by GMPS) x 626
2	Flush Bolts	Rockwood 2845 (see description) x 626
1	Dustproof Strike	Rockwood 570 x 630
1	Storeroom Lock	Best 9K37D15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Stop	Rockwood 405 x 630
1	Set Seals	(by GMPS) x 626

HARDWARE SET #9

Each to have:

	Hinges	Stanley (see description) x 626
1	set Manual Flush Bolts	Rockwood 2845 (see description) x 626
1	Dustproof Strike	Rockwood 570 x 630
1	Classroom Intruder Lock	Best 9K37IN15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Coordinating Closer	Dorma TS93GSR x 689
1	Stop	Rockwood 405 x 630
4	Kick Plate	Rockwood 1050 (see description) x 630
2	Silencers	Rockwood 608-RKW

HARDWARE SET #9A

Each to have:

	Hinges	Stanley (see description) x 626
1	set Manual Flush Bolts	Rockwood 2845 (see description) x 626
1	Dustproof Strike	Rockwood 570 x 630
1	Classroom Intruder Lock	Best 9K37IN15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Coordinating Closer	Dorma TS93GSR x 689
1	Overhead Stop	Dorma 710S series x 626
4	Kick Plate	Rockwood 1050 (see description) x 630
2	Silencers	Rockwood 608-RKW

HARDWARE SET #9B

Each to have:

	Hinges	Stanley (see description) x 626
1	set Manual Flush Bolts	Rockwood 2845 (see description) x 626
1	Dustproof Strike	Rockwood 570 x 630
1	Classroom Intruder Lock	Best 9K37IN15CS3 x 626
1	Permanent Core	Best (to suit) x 626
2	Coordinating Closer	Dorma TS93GSR x 689
4	Kick Plate	Rockwood 1050 (see description) x 630
2	Silencers	Rockwood 608-RKW2
2	set Smoke Seals	NGP 2525C @ jambs/head

HARDWARE SET #10

Each to have:

	Hinges	(by GMPS) x 626
1	Office Lock	Best 9K37AB15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Stop	Rockwood 405 x 630
1	Set Seals	(by GMPS) x 626

HARDWARE SET #10A

Each to have:

	Hinges	(by GMPS) x 626
1	Classroom Intruder Lock	Best 9K37IN15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Concealed Closer	(by GMPS) x 626
1	Stop	Rockwood 405 x 630
1	Set Seals	(by GMPS) x 626
1	Kickplate	(by GMPS) x 626

HARDWARE SET #10B

Each to have:

	Hinges	(by GMPS) x 626
1	Classroom Intruder Lock	Best 9K37IN15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Stop	Rockwood 405 x 630
1	Set Seals	(by GMPS) x 626
1	Kickplate	(by GMPS) x 626

HARDWARE SET #11

Each to have:

	Hinges	Stanley (see description) x 626
1	Classroom Intruder Lock	Best 9K37IN15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Closer/Stop	LCN 4040XP Cush x 689
2	Kick Plate	Rockwood K1050 (see description) x 630
1	Stop	Rockwood 405 x 630
1	set Sound Seals	NGP 106NA @jambs/head
1	Door Bottom	NGP 320N

HARDWARE SET #11A

Each to have:

	Hinges	Stanley (see description) x 626
1	Classroom Intruder Lock	Best 9K37IN15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Closer/Stop	LCN 4040XP Cush x 689
2	Kick Plate	Rockwood K1050 (see description) x 630
1	Overhead Stop	Dorma 710S series x 626
1	set Sound Seals	NGP 106NA @jambs/head
1	Door Bottom	NGP 320N

HARDWARE SET #11B

Each to have:

	Hinges	Stanley (see description) x 626
1	Classroom Intruder Lock	Best 9K37IN15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Closer/Stop	LCN 4040XP Cush x 689
2	Kick Plate	Rockwood K1050 (see description) x 630
1	Overhead Stop	Dorma 710S series x 626

HARDWARE SET #12

Each to have:

	Hinges	Stanley (see description) x 626
1	Office Lock	Best 9K37AB15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Stop	Rockwood 405 x 630
4	Kick Plate	Rockwood 1050 (see description) x 630
2	Silencers	Rockwood 608-RKW

HARDWARE SET #13

Each to have:

	Hinges	Stanley (see description) x 626
2	Set Manual Flush Bolts	Rockwood 2845 x 626
1	Dustproof Strike	Rockwood 570 x 630
1	Passage Lock	Best 9K37015CS3 x 626
1	Overhead Stop	Dorma 710S series x 626
1	Stop	Rockwood 405 x 630
4	Kick Plate	Rockwood 1050 (see description) x 630
4	Silencers	Rockwood 608-RKW

- B. The following hardware sets contain electrical components and need to be coordinated with the electrical and security drawings.

HARDWARE SET #E1

Each to have:

	Hinges	Stanley (see section 2.2) x 626
1	Electric Hinge	Stanley 6 Wire to match x 626
1	Electric Lock	Best 9K37DEU15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Closer	LCN 4040XP series x 689
1	Stop	Rockwood 405 x 630
2	Kick Plate	Rockwood 1050 (see description) x 630
3	Silencers	Rockwood 608-RKW
1	Door Contact	Dorma 9450 Recessed
1	Card Access System	(by security vendor)

Note: Card reader unlocks electric lock.

HARDWARE SET #E1C

Each to have:

	Hinges	Stanley (see section 2.2) x 626
1	Electric Hinge	Stanley 6 Wire to match x 626
1	Electric Lock	Best 9K37DEU15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Closer	LCN 4040XP series x 689
1	Overhead stop	Dorma 710S series x 626
2	Kick Plate	Rockwood 1050 (see description) x 630
3	Silencers	Rockwood 608-RKW
1	Door Contact	Dorma 9450 Recessed
1	Card Access System	(by security vendor)

Note: Card reader unlocks electric lock.

HARDWARE SET #E2

Each to have:

	Hinges	Stanley (see section 2.2) x 626
1	Electric Hinge	Stanley 6 Wire to match x 626
1	set Manual Flush Bolts	Rockwood 2845 (see description) x 626
1	Dustproof Strike	Rockwood 570 x 630
1	Electric Lock	Best 9K37DEU15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Closer	LCN 4040XP series x 689
1	Stop	Rockwood 405 x 630
2	Kick Plate	Rockwood 1050 (see description) x 630
3	Silencers	Rockwood 608-RKW
1	Door Contact	Dorma 9450 Recessed
1	Card Access System	(by security vendor)

Note: Card reader unlocks electric lock.

HARDWARE SET #E3

Each to have:

	Hinges	Stanley (see section 2.2) x 626
1	Electric Hinge	Stanley 6 Wire to match x 626
1	Electric Lock	Best 9K37DEU15CS3 x 626
1	Permanent Core	Best (to suit) x 626
1	Concealed Closer	Dorma ITS96 (by Zona)
1	Stop	Rockwood 405 x 630
2	Kick Plate	(by Zona)
1	Set Seals/Gasketing	(by Zona)
1	Drop Seal	Planet KT (by Zona)
1	Door Contact	Dorma 9450 Recessed
1	Card Access System	(by security vendor)

Note: Card reader unlocks electric lock.

- C. The following hardware sets are for exterior doors. Some contain electrical components and need to be coordinated with the electrical and security drawings.

HARDWARE SET #A

Each to have:

2	Hinges	Stanley 661HD x 626
2	Exit Device	Precision 2408 x 2900A x S988 x MLR
2	Cylinder & Core	Best
2	Closer	LCN 4040xp Cush x 689
2	Weatherstripping	NGP 700NA at Jambs, Head, and Meeting Rail
2	Door Bottom	NGP 370N
1	Threshold	Pemko 252x3AFG
2	Door Contact	(by security vendor)
1	Keyed Removable Mullion	VD KR-4954
1	Power door operator	Stanley Magic E, Heavy Duty
	Power Supply	As required
2	Actuators	BEA 10PBS1AL, 4.75" sq., wireless, blue
1	Door Contact	Dorma 9450 Recessed
1	Card Access System	(by security vendor)

Note: Card reader unlocks electric lock. Coordinate access control with power door operator

HARDWARE SET #B

Each to have:

2	Hinges	Stanley 661HD x 626
2	Push Pull	Rockwood 110x73C x 630
2	Closer	LCN 4040xp Cush x 689
1	Threshold	Pemko 252x3AFG
1	Power door operator	Stanley Magic E, Heavy Duty
2	Actuators	BEA 10PBS1AL, 4.75" sq., wireless, blue

HARDWARE SET #C

Each to have:

1	Hinges	Stanley 661HD x 626
1	Classroom Lock	Best 9K37R15CS3 x 626
1	Cylinder & Core	Best
1	Closer	LCN 4040xp Cush x 689
1	Weatherstripping	NGP 700NA at Jambs and Head
1	Door Bottom	NGP 370N
1	Threshold	Pemko 254x3AFG

HARDWARE SET #D

Each to have:

1	Hinges	Stanley 661HD x 626
1	Storeroom Lock	Best 9K37D15CS3 x 626
1	Cylinder & Core	Best
1	Closer	LCN 4040xp Cush x 689
1	Weatherstripping	NGP 700NA at Jambs and Head
1	Door Bottom	NGP 370N
1	Threshold	Pemko 254x3AFG

HARDWARE SET #E

Each to have:

1	Hinges	By Door Mfg
1	Storeroom Lock	Best 9K37D15CS3 x 626
1	Cylinder & Core	Best
1	Closer	LCN 4040xp Cush x 689
1	Weatherstripping	NGP 700NA at Jambs and Head
1	Door Bottom	NGP 370N
1	Threshold	Pemko 254x3AFG
1	Door Contact	Dorma 9450 Recessed

HARDWARE SET #F

Each to have:

1	Hinges	By Door Mfg
1	Exit Device (fire rated)	Precision FL2408 x 2900A x S988NGP
1	Cylinder & Core	Best
1	Closer	LCN 4040xp Cush x 689
1	Weatherstripping	NGP 700NA at Jambs and Head
1	Set Smoke Seals	2525C @ jambs/head
1	Door Bottom	NGP 370N
1	Threshold	Pemko 254x3AFG
1	Door Contact	Dorma 9450 Recessed

HARDWARE SET #G

Each to have:

1	Hinges	By Door Mfg
1	Exit Device	Precision 2408 x 2900A x S988NGP
1	Cylinder & Core	Best
1	Closer	LCN 4040xp Cush x 689
1	Weatherstripping	NGP 700NA at Jambs and Head
1	Door Bottom	NGP 370N
1	Threshold	Pemko 254x3AFG
1	Door Contact	Dorma 9450 Recessed

HARDWARE SET #H

Each to have:

2	Hinges	By Door Mfg
1	Storeroom Lock	Best 9K37D15CS3 x 626
1	Flush Bolts – Manual	Ives SB360 12" US2C
1	Cylinder & Core	Best
1	Closer	LCN 4040xp Cush x 689
2	Weatherstripping	NGP 700NA at Jamb and Head
2	Door Bottom	NGP 370N
1	Threshold	Pemko 254x3AFG
1	Door Contact	Dorma 9450 Recessed

HARDWARE SET #J

Each to have:

1	Hinges	By Door Mfg
1	Storeroom Lock	Best 9K37Y15CS3 x 626. No lever on exterior
1	Cylinder & Core	Best
1	Closer	LCN 4040xp Cush x 689
1	Weatherstripping	NGP 700NA at Jamb and Head
1	Door Bottom	NGP 370N
1	Threshold	Pemko 254x3AFG
1	Door Contact	Dorma 9450 Recessed

END OF SECTION

SECTION 08 71 13
POWER DOOR OPERATORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Operators for swinging doors.
- B. Controllers, actuators, and safety devices.
- C. Maintenance.

1.02 DEFINITIONS

- A. Activation Device: Device that sends an electrical signal to door operator to open door when actuated.
- B. Knowing Act: Consciously initiating the opening of a power-operated door using acceptable methods, including wall-mounted switches such as push plates and controlled access devices such as keypads, card readers, and key switches.

1.03 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2020.
- B. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- C. BHMA A156.10 - Power Operated Pedestrian Doors; 2017.
- D. ITS (DIR) - Directory of Listed Products; Current Edition.
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL (DIR) - Online Certifications Directory; Current Edition.
- H. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate power door operators with balance of door hardware and electrical work required for each affected door opening.
 - 1. Templates: Check other sections' shop drawings to confirm that adequate provisions are in place for locating and installing power door operators.
- B. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; require attendance by affected installers and the following parties.
 - 1. Architect.
 - 2. Installer's Architectural Hardware Consultant (AHC).
 - 3. Owner's Security Consultant.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Shop Drawings:
 - 1. Indicate layout and dimensions; head, jamb, and sill conditions; elevations; components, anchorage, recesses, materials, and finishes, electrical characteristics and connection requirements.
 - 2. Identify installation tolerances required, assembly conditions, routing of service lines and conduit, and locations of operating components and boxes.
- C. Product Data: Provide data on system components, sizes, features, and finishes.

- D. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and manufacturer's hardware and component templates.
- E. Manufacturer's qualification statement.
- F. Installer's qualification statement.
- G. Maintenance Data: Include manufacturer's parts list and maintenance instructions for each type of hardware and operating component.
- H. Specimen warranty.
- I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements for additional provisions.
 - 2. Wrenches and other tools required for maintenance of equipment.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience and approved by manufacturer.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty for components of power door operators. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Operators for Swinging Doors:
 - 1. ASSA ABLOY Entrance Solutions; Besam SW200i: www.besam-usa.com/#sle.
 - 2. LCN, an Allegion brand: www.allegion.com/us/#sle.
 - 3. Stanley Access Technologies; Magic Access LE (Low Energy): www.stanleyaccess.com/#sle.

2.02 POWER DOOR OPERATORS - GENERAL

- A. Electrically Operated or Controlled Hardware: Provide necessary power supplies, relays, and interfaces as required for proper operation; provide wiring between control components and to building power connection in compliance with NFPA 70.
- B. Comply with ADA Standards for egress requirements.
- C. Comply with NFPA 101 and requirements of authorities having jurisdiction; provide units selected for actual door weight and for light pedestrian traffic unless otherwise indicated.
- D. Exterior and Vestibule Doors: Provide equipment suitable for ambient operating temperature range of minus 20 to plus 140 degrees F.
- E. Exterior Doors: Provide units capable of operating, closing, and holding doors closed under positive and negative differential pressure; if necessary, provide power closing.
- F. System Integration: Integrate operator functionality with other systems as required for a complete working installation.
 - 1. Provide time delay relay to signal automatic door operator to activate only after electric lock system is released.
 - 2. Provide controller output signals at the door closed or door open positions to facilitate interaction with security and access control systems.

2.03 OPERATORS FOR SWINGING DOORS

- A. Door Operator: Electromechanical.
 - 1. Applications: Include operators for single and double doors.
 - 2. Electromechanical Operators: ____ hp minimum, self-contained, chain driven, with release clutch.

3. Speed Control: Variable, field-adjustable opening and closing cycles.
4. Functionality: Full-power open, spring close operation.
 - a. Full-Power Operators: Comply with BHMA A156.10; safeties required.
 - 1) Comply with UL 325; acceptable evidence of compliance includes UL (DIR) or ITS (DIR) listing or test report by testing agency acceptable to authorities having jurisdiction.
5. Mounting: Surface mounted overhead.
6. Components:
 - a. Header Case: Manufacturer's standard extruded aluminum profile containing door operator and door mounting components.
 - b. Motor and Gearbox Assembly: Manufacturer's standard sealed motor, gearbox, and drive belt.
7. Power Supply Units: Self-contained, electrically operated, and independent of door operator.
8. Actuators: Manufacturer's standard.

2.04 CONTROLLERS, ACTUATORS, AND SAFETY DEVICES

- A. Controllers: Manufacturer's standard for products specified.
 1. Provide microprocessor operated controller for each door.
- B. Actuators: Manufacturer's standard for products specified.
 1. Comply with BHMA A156.10 for actuator and safety types and zones.
 2. Push Button Actuator: Standard, momentary contact type, wall mounted, surface; stainless steel escutcheon plate.
- C. Safety Devices: Manufacturer's standard units recommended for project applications and conditions.
 1. Swinging Door Safety Device: Door-mounted proximity detector device arranged to prevent operation of door when persons or obstructions are in the swing zone.

2.05 ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Provide shielded electrical devices at all location.
- B. Electrical Characteristics:
- C. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70.
- D. Disconnect Switch: Factory mount disconnect switch in control panel.

2.06 FINISHES

- A. Aluminum Finishes: Manufacturer's standard.
 1. Class I Natural Anodized Finish: Clear anodic coating; AAMA 611 AA-M12C22A41, minimum dry film thickness (DFT) of 0.7 mil, 0.0007 inch.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify installation conditions including, but not limited to the following: opening sizes, floor conditions, plumb and level mounting surfaces.
- B. Verify that surfaces are ready to receive work and dimensions are as indicated on shop drawings.
- C. Verify that electric power is available, in the correct location, and of the correct characteristics.

3.02 INSTALLATION

- A. Coordinate installation of components with related and adjacent work.
- B. Install equipment in accordance with manufacturer's instructions.

- C. Provide for thermal expansion and contraction of door and frame units and live and dead loads that may be transmitted to operating equipment.
- D. Provide for dimensional distortion of components during operation.
- E. Install pneumatic lines and door power units in a manner to prevent condensation or freezing.

3.03 ADJUSTING

- A. Adjust door equipment for correct function and smooth operation.

3.04 CLEANING

- A. Remove temporary protection, clean exposed surfaces.

3.05 CLOSEOUT ACTIVITIES

- A. Demonstrate to Owner's representative equipment operation, operating components, adjustment features, and lubrication requirements.

3.06 MAINTENANCE

- A. Provide service and maintenance of operating equipment for one year from Date of Substantial Completion, at no extra charge to Owner.

END OF SECTION

**SECTION 08 80 00
GLAZING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Insulating glass units.
- B. Glazing units.
- C. Plastic films.
- D. Glazing compounds.

1.02 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).
- C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2019).
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- F. ASTM C1036 - Standard Specification for Flat Glass; 2021.
- G. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.
- H. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).
- I. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021a.
- J. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.
- K. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.
- L. GANA (GM) - GANA Glazing Manual; 2022.
- M. GANA (SM) - GANA Sealant Manual; 2008.
- N. GANA (LGRM) - Laminated Glazing Reference Manual; 2019.
- O. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use; 1990 (2016).
- P. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.
- Q. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2023.
- R. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2023.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by each of the affected installers.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data on Insulating Glass Unit and Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation

requirements.

- C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
- D. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA (GM), GANA (SM), GANA (LGRM), and IGMA TM-3000 for glazing installation methods. Maintain one copy on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Float Glass Manufacturers:
 - 1. Cardinal Glass Industries: www.cardinalcorp.com/#sle.
 - 2. Guardian Glass, LLC: www.guardianglass.com/#sle.
 - 3. Pilkington North America Inc: www.pilkington.com/na/#sle.
 - 4. Saint Gobain North America: www.saint-gobain.com/#sle.
 - 5. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
- B. Plastic Films Manufacturers:
 - 1. Solyx Film: www.solyxfilm.com
 - 2. 3M Window Film: solutions.3m.com/

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

- A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
 - 1. Design Pressure: Calculated in accordance with ASCE 7.
 - 2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
 - 3. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
 - 4. Glass thicknesses listed are minimum.
- B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
 - 1. In conjunction with weather barrier related materials described in other sections, as follows:
- C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
 - 1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.

2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

- A. Float Glass: Provide float glass based glazing unless otherwise indicated.
 1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
 2. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
 3. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
 4. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.

2.04 INSULATING GLASS UNITS

- A. Manufacturers:
 1. Glass: Any of the manufacturers specified for float glass.
- B. Insulating Glass Units: Types as indicated.
 1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
 2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
 3. Warm-Edge Spacers: Low-conductivity thermoplastic with desiccant warm-edge technology design.
 - a. Spacer Width: As required for specified insulating glass unit.
 - b. Spacer Height: Manufacturer's standard.
 4. Spacer Color: Black.
 5. Edge Seal:
 - a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
 - b. Color: Black.
 6. Purge interpane space with dry air, hermetically sealed.
 7. Capillary Tubes: Provide tubes from air space for insulating glass units without inert type gas that have a change of altitude greater than 2500 feet between point of fabrication and point of installation to permit pressure equalization of air space.
 - a. Capillary Tubes: Tubes to remain open and be of length and material type in accordance with insulating glass fabricator's requirements.
- C. Type IG-1 - Insulating Glass Units: Vision glass, double glazed.
 1. Applications: Exterior glazing unless otherwise indicated.
 2. Space between lites filled with air.
 3. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
 - a. Tint: Clear.
 - b. Coating: Low-E (passive type), on #2 surface.
 4. Inboard Lite: Annealed float glass, 1/4 inch thick, minimum.
 - a. Tint: Clear.
 5. Total Thickness: 1 inch.
 6. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.28, nominal.
 7. Visible Light Transmittance (VLT): 68 percent, nominal.
 8. Solar Heat Gain Coefficient (SHGC): .38, nominal.
- D. Type IG-2 - Insulating Glass Units: Safety glazing.
 1. Applications:
 - a. Glazed lites in exterior doors.
 - b. Glazed sidelights and panels next to doors.

- c. Other locations required by applicable federal, state, and local codes and regulations.
- 2. Space between lites filled with air.
- 3. Glass Type: Same as Type IG-1 except use fully tempered float glass for both outboard and inboard lites.
- 4. Total Thickness: 1 inch.
- 5. Thermal Transmittance (U-Value), Summer - Center of Glass: .28, nominal.
- 6. Visible Light Transmittance (VLT): 68 percent, nominal.
- 7. Solar Heat Gain Coefficient (SHGC): .38, nominal.
- E. Type IG-3-Insulated Glass Units: Frosted Glazing
 - 1. Applications: As shown on drawings
 - 2. Space between lites filled with air
 - 3. Outboard Lite: Annealed float glass, 1/
 - a. Tint: Clear
 - b. Coating: Same as on vision units, on #2 surface
 - 4. Inboard Lite: Annealed flat glass, 1/4" thick
 - a. Tint: Clear
 - b. Opacifier: sandblast to 50% opacity
 - 5. Total Thickness: 1 inch.
 - 6. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.28, nominal
 - 7. Solar Heat Gain Coefficient (SHGC): .38, nominal.

2.05 GLAZING UNITS

- A. Type G-1 - Monolithic Interior Vision Glazing:
 - 1. Applications: Interior glazing unless otherwise indicated.
 - 2. Glass Type: Annealed float glass.
 - 3. Tint: Clear.
 - 4. Thickness: 1/4 inch, nominal.
 - 5. Film: See elevations for glass film locations
- B. Type G-2 - Fire rated glazing - See specification section 08 88 13
- C. Type G-3 - Monolithic Safety Glazing: Non-fire-rated.
 - 1. Applications:
 - a. Glazed lites in doors, except fire doors.
 - b. Glazed sidelights to doors, except in fire-rated walls and partitions.
 - c. Other locations required by applicable federal, state, and local codes and regulations.
 - d. Other locations indicated on drawings.
 - 2. Glass Type: Fully tempered safety glass as specified.
 - 3. Tint: Clear.
 - 4. Thickness: 1/4 inch, nominal.
- D. Type G-4 - Glass for Display Cases as detailed on drawings:
 - 1. Glass Type: Fully Tempered
 - 2. Tint: Clear Low-Iron
 - 3. Thickness: 1/2"
- E. Type G-5 - Glass for GMPS Partition system as detailed on drawings
 - 1. Glass Type: Tempered.
 - 2. Thickness: 1/2".
 - 3. Basis of design manufacturer: ACME 50+
 - 4. Film: See elevations for glass film locations.

2.06 PLASTIC FILMS

- A. Type F-1 - Decorative Plastic Film: Polyvinyl butyral (PVB) type.
 - 1. Application: Locations as indicated on drawings.

2. Series Type: Frost.
3. Color: Acid Etch.
4. Manufacturers:
 - a. Solyx; SX-2040 Fog

2.07 GLAZING COMPOUNDS

- A. Type GC-1 - Glazing Putty: Polymer modified latex recommended by manufacturer for outdoor use, knife grade consistency; gray color.
- B. Type GC-2 - Butyl Sealant: Single component; ASTM C920 Grade NS, Class 12-1/2, Uses M and A, Shore A hardness of 10 to 20; black color.
- C. Type GC-3 - Polysulfide Sealant: Two component; chemical curing, nonsagging type; ASTM C920 Type M, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.
- D. Type GC-4 - Polyurethane Sealant: Single component, chemical curing, nonstaining, nonbleeding; ASTM C920 Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 20 to 35; color as selected.
- E. Type GC-5 - Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; nonbleeding, nonstaining; ASTM C920 Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; _____ color.

2.08 ACCESSORIES

- A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.
- B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.
- C. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.
- D. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.
- E. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

- A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

3.02 PREPARATION

- A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

- A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in

glazing referenced standards.

- B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.
- C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
- D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.
- E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.
- F. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, and paint.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

- A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 INSTALLATION - DRY GLAZING METHOD (TAPE AND GASKET SPLINE GLAZING)

- A. Application - Exterior Glazed: Set glazing infills from the exterior of the building.
- B. Cut glazing tape to length; install on glazing pane. Seal corners by butting tape and sealing junctions with butyl sealant.
- C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- D. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
- E. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.
- F. Carefully trim protruding tape with knife.

3.06 INSTALLATION - DRY GLAZING METHOD (TAPE AND TAPE)

- A. Application - Interior Glazed: Set glazing infills from the interior of the building.
- B. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sight line.
- C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- D. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.
- E. Place glazing tape on free perimeter of glazing in same manner described above.
- F. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- G. Carefully trim protruding tape with knife.

3.07 INSTALLATION - WET GLAZING METHOD (SEALANT AND SEALANT)

- A. Application - Exterior Glazed: Set glazing infills from the exterior of the building.
- B. Place setting blocks at 1/4 points and install glazing pane or unit.
- C. Install removable stops with glazing centered in space by inserting spacer shims both sides at 24 inch intervals, 1/4 inch below sight line.

- D. Fill gaps between glazing and stops with _____ type sealant to depth of bite on glazing, but not more than 3/8 inch below sight line to ensure full contact with glazing and continue the air and vapor seal.
- E. Apply sealant to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.08 INSTALLATION - WET GLAZING METHOD (COMPOUND AND COMPOUND)

- A. Application - Interior Glazed: Set glazing infills from the interior of the building.
- B. Install glazing resting on setting blocks. Install applied stop and center pane by use of spacer shims at 24 inch centers, kept 1/4 inch below sight line.
- C. Locate and secure glazing pane using glazers' clips.
- D. Fill gaps between glazing and stops with glazing compound until flush with sight line. Tool surface to straight line.

3.09 INSTALLATION - WET/DRY GLAZING METHOD (PREFORMED TAPE AND SEALANT)

- A. Application - Exterior Glazed: Set glazing infills from the exterior of the building.
- B. Cut glazing tape to length and set against permanent stops, 3/16 inch below sight line. Seal corners by butting tape and dabbing with butyl sealant.
- C. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete the continuity of the air and vapor seal.
- D. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- E. Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of pane or glass unit.
- F. Install removable stops, with spacer strips inserted between glazing and applied stops 1/4 inch below sight lines.
 - 1. Place glazing tape on glazing pane of unit with tape flush with sight line.
- G. Fill gap between glazing and stop with _____ type sealant to depth equal to bite of frame on glazing, but not more than 3/8 inch below sight line.
- H. Apply cap bead of _____ type sealant along void between the stop and the glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.10 INSTALLATION - PLASTIC FILM

- A. Install plastic film with adhesive, applied in accordance with film manufacturer's instructions.
- B. Place without air bubbles, creases or visible distortion.
- C. Install film tight to perimeter of glass and carefully trim film with razor sharp knife. Provide 1/16 inch to 1/8 inch gap at perimeter of glazed panel unless otherwise required. Do not score the glass.

3.11 FIELD QUALITY CONTROL

- A. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.
- B. Monitor and report installation procedures and unacceptable conditions.

3.12 CLEANING

- A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
- B. Remove nonpermanent labels immediately after glazing installation is complete.
- C. Clean glass and adjacent surfaces after sealants are fully cured.
- D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.13 PROTECTION

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.
- B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

SECTION 08 88 13
FIRE-RATED GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire-rated glazing units.
- B. Glazing compounds.

1.02 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).
- C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2019).
- D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- E. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2019.
- F. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).
- G. GANA (GM) - GANA Glazing Manual; 2022.
- H. GANA (SM) - GANA Sealant Manual; 2008.
- I. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use; 1990 (2016).
- K. ITS (DIR) - Directory of Listed Products; Current Edition.
- L. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.
- M. NFPA 257 - Standard on Fire Test for Window and Glass Block Assemblies; 2022.
- N. UL (DIR) - Online Certifications Directory; Current Edition.
- O. UL 9 - Standard for Fire Tests of Window Assemblies; Current Edition, Including All Revisions.
- P. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- Q. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene preinstallation meeting one week before starting work of this section; require attendance by each of affected installers.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data on Glazing Unit Glazing Types: Provide structural, physical, and environmental characteristics, size limitations, special handling and installation requirements.
- C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
- D. Manufacturer's qualification statement.
- E. Installer's qualification statement.
- F. Specimen warranty.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with GANA (GM), GANA (SM), GANA (LGRM), and IGMA TM-3000 for glazing installation methods.

1.06 FIELD CONDITIONS

- A. Ambient Conditions: Do not install glazing when ambient temperature is less than 40 degrees F.
- B. Maintain minimum ambient temperature before, during, and 24 hours after installation of glazing compounds.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty for Laminated Glass: Provide 5-year manufacturer warranty coverage for delamination, including providing products to replace failed units, and commencing on the Date of Substantial Completion. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fire-Protection-Rated Glass:
 - 1. Manufacturers:
 - a. McGrory Glass, Inc: www.mcgrory.com.
 - b. SAFTIFIRST, a division of O'Keeffe's Inc: www.safti.com.
 - c. SCHOTT North America Inc: www.us.schott.com.
 - d. Technical Glass Products: www.fireglass.com.
 - e. Vetrotech North America: www.vetrotechusa.com.

2.02 GLASS MATERIALS

- A. Float Glass: Provide float glass based glazing unless otherwise indicated.
- B. Laminated Glass: Float glass laminated in accordance with ASTM C1172.
 - 1. Laminated Safety Glass: Comply with ANSI Z97.1 - Class B or 16 CFR 1201 - Category I impact test requirements.

2.03 GLAZING UNITS

- A. Type G2 - Fire-Protection-Rated Glazing: Type, thickness, and configuration of glazing that contains flame, smoke, and does not block radiant heat, as required to achieve indicated fire rating period of 90 minutes or less.
 - 1. Applications:
 - a. Glazing in fire-resistance-rated doors and sidelite assembly.
 - 2. Provide products listed by ITS (DIR) or UL (DIR) and approved by authorities having jurisdiction.
 - 3. Safety Glazing Certification: 16 CFR 1201 Category II.
 - 4. Glazing Method: As required for fire rating.
 - 5. Fire-Rating Period: As indicated on drawings.
 - 6. Markings for Fire-Protection-Rated Glazing Assemblies: Provide permanent markings on fire-protection-rated glazing in compliance with ICC (IBC) and local building code
 - a. "D" - meets fire door assembly criteria of NFPA 252, UL 10B, or UL 10C fire test standards.
 - b. "OH" - meets fire window assembly criteria, including hose stream test of NFPA 257 or UL 9 fire test standards.
 - c. "H" - meets fire door assembly hose stream test of NFPA 252, UL 10B, or UL 10C fire tests standards.
 - d. "XXX" - placeholder that represents fire-rating period, in minutes.

7. Products; 45 and 90 minute:
 - a. McGrory Glass, Inc: www.mcgrory.com.
 - b. SAFTIFIRST, a division of O'Keeffe's Inc; SuperLite II-XL 45: www.safti.com.
 - c. SCHOTT North America Inc; PYRAN Platinum: www.us.schott.com.
 - d. Technical Glass Products; Firelite Plus: www.fireglass.com.
 - e. Vetrotech North America; Pyroswiss 45: www.vetrotechusa.com.

2.04 GLAZING COMPOUNDS

- A. Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; nonbleeding, nonstaining; ASTM C920 Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.

2.05 ACCESSORIES

- A. Setting Blocks: Aluminum silicate, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.
- B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Continuous by one half the height of glazing stop by thickness to suit application, self adhesive on one face.
- C. Glazing Tape: Flexible tape made from spun calcium-magnesium-silica fibers in binder; designed to remain stable at temperatures up to 2,012 degrees F.
 1. Thickness: As recommended by framing manufacturer for glazing application.
- D. Glazing Gaskets: Flexible intumescent seals.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.
- C. Verify that sealing between joints of glass framing members has been completed effectively.
- D. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION - GENERAL

- A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers unless more stringent requirements are indicated, including those in referenced glazing standards.
- B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.
- C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
- D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

- E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.
- F. Prevent glass from contact with contaminating substances that may result from construction operations including, but not limited to weld spatter, fire-safing, plastering, mortar droppings, etc.

3.04 CLEANING

- A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
- B. Remove nonpermanent labels immediately after glazing installation is complete.
- C. Clean glass and adjacent surfaces after sealants are fully cured.
- D. Clean glass on both exposed surfaces not more than four days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.05 PROTECTION

- A. After installation, mark pane with 'X' by using removable plastic tape or paste; do not mark heat-absorbing or reflective glass units.
- B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

SECTION 09 05 61
COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
 - 1. Resilient tile and sheet.
 - 2. Thin-set ceramic tile and porcelain tile.
- B. Preparation of new concrete floor slabs for installation of floor coverings.
- C. Testing of concrete floor slabs for moisture and alkalinity (pH).
- D. Patching compound.
- E. Remedial floor coatings.
- F. Remedial floor treatment.

1.02 REFERENCE STANDARDS

- A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens); 2021.
- B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete; 2020.
- C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.
- D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.
- E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.
- F. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2018.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Visual Observation Report: For existing floor coverings to be removed.
- C. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
 - 1. Moisture and alkalinity (pH) limits and test methods.
 - 2. Manufacturer's required bond/compatibility test procedure.
- D. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.
 - 1. Manufacturer's qualification statement.
 - 2. Certificate: Manufacturer's certification of compatibility with types of flooring applied over remedial product.
 - 3. Test reports indicating compliance with specified performance requirements, performed by nationally recognized independent testing agency.
 - 4. Manufacturer's installation instructions.
 - 5. Specimen Warranty: Copy of warranty to be issued by coating manufacturer and certificate of underwriter's coverage of warranty.

- E. Testing Agency's Report:
 - 1. Description of areas tested; include floor plans and photographs if helpful.
 - 2. Summary of conditions encountered.
 - 3. Moisture and alkalinity (pH) test reports.
 - 4. Copies of specified test methods.
 - 5. Recommendations for remediation of unsatisfactory surfaces.
 - 6. Submit report to Architect.
 - 7. Submit report to owner, architect, & construction manager not more than two business days after conclusion of testing.
- F. Adhesive Bond and Compatibility Test Report.
- G. Copy of RFCI (RWP).

1.05 QUALITY ASSURANCE

- A. Moisture and alkalinity (pH) testing shall be performed by the Contractor or by an independent testing agency employed and paid by Contractor.
- B. Contractor may perform adhesive and bond test with Contractor's own personnel or hire a testing agency.
- C. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
 - 1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.
- D. Contractor's Responsibility Relating to Independent Agency Testing:
 - 1. Provide access for and cooperate with testing agency.
 - 2. Confirm date of start of testing at least 10 days prior to actual start.
 - 3. Allow at least 4 business days on site for testing agency activities.
 - 4. Achieve and maintain specified ambient conditions.
 - 5. Notify Architect and Construction Manager when specified ambient conditions have been achieved and when testing will start.
- E. Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and able to provide at least 3 project references showing at least 3 years' experience installing moisture emission coatings.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.
- B. Deliver materials in manufacturer's packaging; include installation instructions.
- C. Keep materials from freezing.

1.07 FIELD CONDITIONS

- A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.
- B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:

1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
 2. Latex or polyvinyl acetate additions are permitted; gypsum content is prohibited.
 3. Compressive Strength: 3500 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
 4. Products:
 - a. ARDEX Engineered Cements; ARDEX Feather Finish: www.ardexamericas.com.
 - b. CMP Specialty Products; Prepstar: www.cmpsp.com.
- B. Remedial Floor Coating: Single- or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
1. Thickness: 1/8 inch, maximum.
 2. Products:
 - a. ARDEX Engineered Cements; Ardex MC Rapid with ARDEX V 1200 Self-Leveling Underlayment: www.ardexamericas.com.
 - b. CMP Specialty Products; Lockdown with Level-1 underlayment: www.cmpsp.com.
- C. Remedial Floor Treatment: Penetrating, spray-applied, silicate-based product intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
1. Products:
 - a. AVECS, LLC; RE-ACT: www.avecs.build.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

- A. Perform following operations in the order indicated:
1. Preliminary cleaning.
 2. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
 3. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
 4. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
 5. Specified remediation, if required.
 6. Patching, smoothing, and leveling, as required and as specified.
 7. Other preparation specified.
 8. Adhesive bond and compatibility test.
 9. Protection.
- B. Remediations:
1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
 2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.
 3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound

over entire suspect floor area.

3.02 PRELIMINARY CLEANING

- A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.
- B. Do not use solvents or other chemicals for cleaning.

3.03 MOISTURE VAPOR EMISSION TESTING

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
- C. Test in accordance with ASTM F1869 and as follows.
- D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.
- E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 7 pounds per 1,000 square feet per 24 hours.
- F. Report: Report the information required by the test method.

3.04 INTERNAL RELATIVE HUMIDITY TESTING

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
- C. Test in accordance with ASTM F2170 Procedure A and as follows.
- D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.
- E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.
- F. Report: Report the information required by the test method.

3.05 ALKALINITY TESTING

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.
 - 1. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
 - 2. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
 - 3. Use of a digital pH meter with probe is acceptable; follow meter manufacturer's instructions.
- C. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.06 PREPARATION

- A. See individual floor covering section(s) for additional requirements.
- B. Contractor shall prepare new and existing floor surfaces as necessary and as required to provide 100 percent guarantee of new flooring.
- C. Comply with requirements and recommendations of floor covering manufacturer.
- D. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.
 - 1. Provide skim coat of patching compound over 100 percent of all existing concrete floors scheduled to receive new floor finish.
- E. Do not fill expansion joints, isolation joints, or other moving joints.

3.07 ADHESIVE BOND AND COMPATIBILITY TESTING

- A. Comply with requirements and recommendations of floor covering manufacturer.

3.08 APPLICATION OF REMEDIAL FLOOR COATING

- A. Comply with requirements and recommendations of coating manufacturer.

3.09 APPLICATION OF REMEDIAL FLOOR TREATMENT

- A. Comply with requirements and recommendations of treatment manufacturer.

3.10 PROTECTION

- A. Cover prepared floors with building paper or other durable covering.

END OF SECTION

SECTION 09 29 00
GYPSUM DRYWALL

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the gypsum drywall as shown on the drawings and/or specified herein, including, but not limited to, the following:
 - 1. Gypsum board work for partitions, ceilings, column enclosures, furring, and elsewhere where gypsum drywall work is shown on drawings.
 - 2. Metal supports for gypsum drywall construction, where indicated.
 - 3. Acoustical insulation for gypsum drywall work.
 - 4. Sealant for gypsum drywall work.
 - 5. Concealed metal reinforcing for attachment of railings, toilet partitions and other items supported on drywall partitions and walls.
 - 6. Taping and finishing of drywall joints.
 - 7. Installing rings and frames in drywall surfaces for grilles, registers and lighting fixtures.
 - 8. Gypsum wallboard cants at beams and other projections over 2" deep in elevator shafts where adjoining wall is of gypsum wallboard construction.
 - 9. Gypsum shaft wall construction.
 - 10. Bracing and connections.

1.3 RELATED SECTIONS

- A. Thermal Insulation - Section 072100.
- B. Hollow metal door frames - Section 081113.
- C. Access Doors - Section 083113.
- D. Painting and Finishing - Section 099000.
- E. Elevators - Division 14.
- F. Rings for grilles, registers, and light fixtures - Division 23 and 26.

1.4 QUALITY ASSURANCE

- A. The following standards, as well as other standards which may be referred to in this Section, shall apply to the work of this Section:
 - 1. The Gypsum Construction Handbook, latest edition, USG.
 - 2. Construction Guide, latest edition, National Gypsum.
 - 3. ASTM A 568 "Standard Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements For"
 - 4. ASTM C 475 "Standard Specification for Joint Treatment Materials for Gypsum Wallboard Construction"
 - 5. ASTM C 645 "Standard Specification for Non-Structural Steel Framing Members"
 - 6. ASTM C 754 "Standard Specification for Installation of Steel Framing Members to Receive Screw Attached Gypsum Panel Products"
 - 7. ASTM C 840 "Standard Specification for Application and Finishing of Gypsum Board"
 - 8. ASTM C 919 "Standard Specification for Use of Sealants in Acoustical Applications"
 - 9. ASTM C 954 "Standard Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases to Steel Studs From 0.033 in. to 0.112 in. in Thickness"
 - 10. ASTM C 1002 "Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Board"
 - 11. ASTM C 1177 "Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing"
 - 12. ASTM C 1178 "Standard Specification for Glass Mat Water Resistant Gypsum Backing Board"
 - 13. ASTM C 1278 "Standard Specification for Fiber-Reinforced Gypsum Panel"

14. ASTM C 1396 "Standard Specification for Gypsum Board"
15. ASTM D 3273 "Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber"
- B. Allowable Tolerances: 1/32" offsets between planes of board faces, and 1/16" in 8'-0" for plumb, level, warp and bow.
- C. System Design Load
 1. Provide drywall shaft systems for elevators designed and tested by manufacturer to withstand a lateral loading (air pressure) of 10 lbs. per sq. ft. for the maximum wall height required, and with deflection limited to L/240 of partition height.
 2. Provide standard drywall wall assemblies designed and tested by manufacturer to withstand a lateral load of 5 lbs. per sq. ft. for the maximum wall height required, and with deflection limited to L/240 of partition height.
 - a. Drywall assemblies with tile finish shall have a deflection limit of L/360.
 3. Provide drywall ceiling assemblies designed, fabricated and installed to have a deflection not to exceed L/360.
- D. Fire-Resistance Rating: Where gypsum drywall with fire resistance ratings are indicated, provide materials and installations which are identical with those of applicable assemblies tested per ASTM E 119 by fire testing laboratories, or to design designations in UL "Fire Resistance Directory" or in listing of other testing agencies acceptable to authorities having jurisdiction, and compliant with UL Test #2079; criteria for cycle movement for all field height wall sections requiring allowance for vertical deflection within framing details.
- E. Installer: Firm with not less than 5 years of successful experience in the installation of specified materials.
- F. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Steel Framing Industry Association (SFIA) or be a part of a similar organization that provides verifiable code compliance program.

1.5 SUBMITTALS

- A. Submit shop drawing for each drywall partition, furring and ceiling system showing size and gauges of framing members, hanger and anchorage devices, wallboard types, insulation, sealant, methods of assembly and fastening, control joints indicating column lines, corner details, joint finishing and relationship of drywall work to adjacent work.
- B. Samples: Each material specified herein, 12" x 12", or 12" long, or in manufacturer's container, as applicable for type of material submitted.
- C. Manufacturer's Literature: Submit technical and installation instructions for each drywall partition, furring and ceiling system specified herein, and for each fire-rated and sound-rated gypsum board assembly. Submit other data as required to show compliance with these specifications, including data for mold resistant joint compound.
- D. Test Reports: This Contractor shall submit test report, obtained by drywall manufacturer, indicating conformance of drywall assemblies to required fire ratings and sound ratings.
- E. Evaluation Reports: Submit evaluation reports certified under an independent third-party inspection program administered by an agency accredited by IAS to ICC-ES AC98, IAS Accreditation Criteria for Inspection Agencies.

1.6 PRODUCT HANDLING AND PROTECTION

- A. Deliver, store and handle drywall work materials to prevent damage. Deliver materials in their original, unopened containers or bundles, and store where protected from moisture, damage and from exposure to the elements. Store wallboard in flat stacks.
- B. Protect wallboard from becoming wet.
- C. Protect metal framing from corrosion, deformation, and other damage during delivery, storage, and handling as required by AISI's "Code of Standard Practice."

1.7 ENVIRONMENTAL CONDITIONS

- A. Provide and maintain minimum temperature of fifty-five (55) degrees F. and adequate ventilation to eliminate excessive moisture within the building in the area of the drywall work for at least twenty-four (24) hours, prior to, during and after installation of drywall work.

Installation shall not start until windows are glazed and doors are installed, unless openings are temporarily closed. Space above suspended ceilings shall be vented sufficiently to prevent temperature and pressure build up.

1.8 JOB MOCK-UP

- A. At a suitable location, where directed by the Architect, lay up a portion of a finished wall and ceiling demonstrating the quality of work, including finishing, to be obtained under this Section. Omit drywall boards in locations as directed by the Architect to show stud spacing and attachments; after acceptance, complete assembly.
- B. Adjust the finishing techniques as required to achieve the finish required by the Architect as described in this Section of these specifications.
- C. Upon approval of the mock-up, the mock-up may be left in place as a portion of the finished work of this Section.
- D. All drywall work shall be equal in quality to approved mock-up.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers for Gypsum Drywall Panels and Accessories: U.S. Gypsum Co., Georgia Pacific, CertainTeed Corporation, Continental Building Products, or National Gypsum Co. meeting specification requirements are acceptable.
 - 1. All drywall products must be manufactured in North America.
- B. Acceptable Manufacturers for Metal Supports of Drywall Assemblies: Unless otherwise noted, provide products manufactured by ClarkDietrich, Super Stud Building Products, Marino/Ware, or approved equal.

2.2 METAL SUPPORTS

- A. Metal Floor and Ceiling Runners
 - 1. Drywall Track: Formed from 0.0312 inch (20 U.S. Std. gauge) (minimum unless otherwise noted or required by performance requirements) cold formed steel, width to suit shaped metal studs. Use 20 ga. top runners with 1-1/4" minimum flanges.
 - 2. Deflection track or head of wall connections at rated partitions shall conform to UL #2079 for cycle movement. Provide positive mechanical connection of framing to structure, allowing for vertical movement within connections. Minimum of 0.0312 (20 ga.) cold formed steel for clips, 25 ga. cold formed steel for deflection track.
 - a. Product: "BlazeFrame DSL" or "MaxTrak Slotted Deflection Track" as manufactured by ClarkDietrich, "VertiClip" or "VertiTrack" as manufactured by the Steel Network or equal made by Metal-Lite Inc.
 - b. FireTrak (including stud clips) by FireTrak Corp. or equal made by Metal-Lite Inc.
 - 3. Shaft Wall "J" Type Runner: Formed from 0.0329" (20 U.S. Std. gauge) galvanized steel, 1" x 2-1/2" or 4" wide (to suit detail) x 2-1/4" (for shaft wall).
- B. Metal Studs, Framing and Furring
 - 1. C-Shaped Studs: Channel type with holes for passage of conduit formed from minimum 0.0312" (20 U.S. Std. gauge) (unless heavier gauge is required to meet deflection limits) cold formed steel, width as shown on drawings.
 - 2. Furring Channels: Hat shaped, formed from galvanized steel, 25 U.S. Std. gauge.
 - a. Product: ClarkDietrich; Furring Channel, or a comparable product.
 - 3. "C-H," "CT," or "I" Type Stud: 1-1/2" x 2-1/2", 4" or 6" wide (to suit detail) galvanized steel. Use for shaft wall construction; gauge and size as required to meet deflection limits given herein.
 - a. Product: ClarkDietrich; CT Stud, or a comparable product.
 - 4. Double "E" Type Stud or "J" Track with Holding Tabs: 1" x 2-1/2", 4" or 6" wide (to suit detail) galvanized steel. Use for shaft wall construction; gauge and size as required to meet deflection limits given herein.
 - a. Product: ClarkDietrich; J-Ribbed Track, or a comparable product.
 - 5. Continuous 16-gauge x 8" wide steel wall plate screwed to studs as required for support of railings, toilet partitions and other items supported on drywall partitions and walls.

6. Resilient Furring Channels: ½" deep, asymmetrical steel sheet members designed to reduce sound transmission.
- C. Suspended Ceiling and Fascia Supports
 - ~~1. Main Runners: 1 1/2" steel channels, cold-rolled at 0.475 lbs. per ft., rust-inhibitive paint finish.~~
 2. Furring Members: Screw-type hat-shaped furring channels of 25 ga. zinc-coated steel; comply with ASTM C 645.
 - ~~3. Hangers: Galvanized, 1" x 3/16" flat steel slats capable of supporting 5x-calculated load supported.~~
 4. Hanger Anchorages: Provide inserts, clips, bolts, screws and other devices applicable to the required method of structural anchorage for ceiling hangers. Size devices for 5x calculated load supported.
 5. Furring Anchorages: 16 ga. galvanized wire ties, manufacturer's standard clips, bolts or screws as recommended by furring manufacturer.
- D. Protective Coating: All cold-formed steel members shall have coating conforming to AISI S220; ASTM A 653, G60 or coating with equivalent corrosion resistance of ASTM A653/A653M, G60. Galvannealed products are not acceptable.

2.3 GYPSUM WALLBOARD TYPES

- A. Gypsum Wallboard: 5/8" thick "Ecosmart Firecode 30" by USG, or approved equal 48" wide, in maximum lengths available to minimize end-to-end butt joints.
- B. Gypsum Ceiling Board: 5/8" thick, sag-resistant, long edges tapered.
- C. Fire-Rated Gypsum Wallboard: 5/8" thick "Ecosmart Firecode 30" by USG, "or approved equal, 48" wide, in maximum lengths available to minimize end-to-end butt joints.
- D. Water-Resistant Backing Board for Tile Finish: 1/2" thick, "DUROCK Glass Mat Tile Backerboard" by USG, "Dens-Shield Tile Backer Board" by Georgia Pacific or "DiamondBack Tile Backer" by CertainTeed Corp. Cover joints with a pressure sensitive woven glass fiber tape equal to Imperial Type P Tape.
- E. Cement Board Backing for Tile Finish at Showers: 1/2" thick "Durock Tile Backer Board" by USG, "Wonder Board Lite" by Custom Building Products or approved equal.
- F. Moisture/Mold-Resistant Gypsum Wallboard (at all exterior walls and wet areas): 5/8" thick "Ecosmart Mold Tough" by U.S. Gypsum, 48" wide, in maximum lengths available to minimize end-to-end butt joints.
 1. Board must have a rating of 10 per ASTM D 3273 with a core that meets ASTM C 1396, Section 6, or ASTM C 1658.
- G. Mold-Resistant Shaft Wall Liner: Solid gypsum board liner for shaft wall construction, 1" thick, 24" wide, as required to suit condition, by standard lengths as required, beveled edges. Provide "Mold Tough Liner Panel" by USG, "DensGlass Shaftliner" by Georgia Pacific, "Mold Defense Shaftliner Type X" and/or "Weather Defense Shaftliner Type X" by Lafarge/Continental, "Gold Bond Brand Fireshield Shaft Liner XP" or "Gold Bond Brand EXP Extended Exposure Shaft Liner" by National Gypsum, or "M2Tech Shaftliner" by CertainTeed Corp.
 1. Liner board must have a rating of 10 per ASTM D 3273 with a core that meets ASTM C 1396 Section 6.
- H. Exterior Gypsum Wallboard for Soffits: 5/8" thick "Exterior Gypsum Ceiling Board" by USG, "Soffitboard" by Lafarge/Continental, "Gold Bond Brand Exterior Soffit Board" by National Gypsum, "Exterior Soffit Board" by CertainTeed Corp., or equal conforming to ASTM C 1396, Section 8.
- I. Abuse-Resistant Wallboard: 5/8" thick "Sheetrock Brand Mold Tough AR" by USG, "Dens Armor Plus Abuse Resistant Panels" by Georgia-Pacific, "EXP Interior Extreme AR" or "Gold Bond Brand Hi-Abuse XP" by National Gypsum, "Protecta AR100" or "Protecta HIR 300" by Lafarge/Continental, or "AirRenew Extreme Abuse" by CertainTeed Corp., 48" wide, in maximum lengths available to minimize end-to-end butt joints.
 1. Board must achieve a Level 1 rating per ASTM C 1629.
- J. Impact-Resistant Wallboard: 5/8" thick "Sheetrock Brand Mold Tough VHI" by USG, "DensArmor Plus Impact-Resistant Panels" by Georgia-Pacific, "EXP Interior Extreme IR" or

"Gold Bond Brand Hi-Impact XP" by National Gypsum, "Protecta HIR 300" by Lafarge/Continental, or "AirRenew Extreme Impact" by CertainTeed Corp., 48" wide, in maximum lengths available to minimize end-to-end butt joints.

- K. Impact-Resistant Gypsum Drywall: ASTM C 1396, ASTM C 1278, core types as required by fire-resistance-rated assembly indicated, and with tapered edges.
 - 1. Products: Subject to compliance with requirements, provide USG "Sheetrock Brand Mold Tough VHI" 5/8" thickness, by United States Gypsum Company, or "AirRenew Extreme Impact" by CertainTeed Corp.
 - a. Locations: Including, but not limited to, stairwells, to satisfy NYC requirements.

2.4 ACCESSORIES

- A. Acoustical Insulation: Paper-less, non-combustible, semi-rigid mineral fiber mat, 2" thick, in walls (unless otherwise indicated), 3 lb./cu. ft. maximum density; Thermafiber "Thermafiber SAFB FF," Rockwool "Rockwool AFBeco" or approved equal.
- B. Fasteners for Wallboard
 - 1. Wood Stud Framing: Steel drill screws conforming to ASTM C 1002.
 - 2. Metal Stud Framing: USG Brand Screws; Type S Bugle Head for fastening wallboard to lighter gauge interior metal framing (up to 20 ga.). Type S-12 Bugle Head for fastening wallboard to heavier gauge interior metal framing (20 ga. to 12 ga.); Type S and Type S-12 Pan Head for attaching metal studs to door frames and runners; and Type G Bugle Head for fastening wallboard to wallboard. Lengths specified below under "Part 3 - Execution" Articles and as recommended by drywall manufacturer.
- C. Laminating Adhesive: "Sheetrock Brand Joint Compound."
- D. Metal Trim
 - 1. Corner Beads: For 90-degree external corners, provide ClarkDietrich "103 Deluxe Corner Bead (CBU)" or "103 Dur-A-Bead" by USG, 26 U.S. Std. ga. galvanized steel, 1-1/4" x 1-1/4".
 - 2. Edge Beads: "Sheetrock Brand Paper Faced Metal Bead and Trim."
- E. Partition/Concrete Ceiling Trim: Trim-Tex Super Seal Tear Away or approved equal.
- F. Metal Trim Treatment Materials and Joint Treatment Materials for Gypsum Drywall Boards: Paper tape for joint reinforcing; Setting Type (Durabond 90) or Lightweight Setting Type Joint Compound for taping and topping; and Ready Mix Compound for finishing.
 - 1. For mold-resistant drywall, water-resistant drywall, and tile backer board, use glass mesh tape with setting joint compound that is rated 10 when tested in accordance with ASTM D 3273 and evaluated in accordance with ASTM D 3274. Acceptable joint compound is "Rapid Set One Pass" made by CTS Cement Manufacturing Corp. or "Rapid Joint" manufactured by Lafarge North America or approved equal meeting standards noted herein.
- G. Control Joints: ClarkDietrich; #093 Control Joint or No. 0.093 by USG.
- H. Acoustical Sealant: USG "Acoustical Sealant," Tremco Mfg. Co. "Tremco Acoustical Caulking," BASF "MasterSeal NP520," or approved equal.
- I. Neoprene Gaskets: Conform to ASTM D 1056.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where gypsum drywall is to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 GENERAL INSTALLATION REQUIREMENTS

- A. General: Install drywall work in accordance with drywall manufacturer's printed instructions and as indicated on drawings and specified herein.
 - 1. All metal framing for drywall partitions shall extend from floor to underside of structural deck above. Provide for vertical deflection with positive mechanical connections of framing members to structure.
 - 2. Provide concealed reinforcement, 16 ga. thick by eight (8) inches wide or as detailed or as recommended by manufacturer, for support of railings, toilet partitions, and other items

to be supported on the partitions that cannot be attached to the metal framing members. Concealed reinforcement shall span between metal studs and be attached thereto using two (2) self-tapping pan head screws at each stud.

- a. Back of drywall shall be scored or notched to prevent bulging out where reinforcement plate occurs.
- B. Fire-Rated Assemblies: Install fire-rated assemblies in accordance with requirements of authorities having jurisdiction, Underwriters' Laboratories and test results obtained and published by the drywall manufacturer, for the fire-rated drywall assembly types indicated on the drawings.
- C. Acoustical Assemblies: Install acoustically-rated assemblies to achieve a minimum STC as noted on drawings, in accordance with test results obtained and published by the drywall manufacturer, for the drywall assembly type indicated on the drawings.
- D. Sealant
 1. Install continuous acoustical sealant bead at top and bottom edges of wallboard where indicated or required for sound rating as wallboard is installed, and between metal trim edge beads and abutting construction.
 2. Install acoustical sealant in 1/8" wide vertical control joints within the length of the wall or partitions, and in all other joints, specified below under "Control Joints." Install bead of acoustical sealant around electric switch and outlet boxes, piping, ducts, and around any other penetration in the wallboard; place sealant bead between penetrations and edge of wallboard.
 3. Where sealant is exposed to view, protect adjacent surfaces from damage and from sealant material, and tool sealant flush with and in same plane as wallboard surface. Sealant beads shall be 1/4" to 3/8" diameter.
- E. Wallboard Application
 1. Do not install wallboard panels until steel door frames are in place; coordinate work with Section 081113, "Steel Doors and Frames."
 2. See drawings for all board types. Use fire-rated wallboard for fire-rated assemblies. Use sag-resistant board for ceilings. Use water-resistant wallboard where indicated on drawings and where wallboard would be subject to moisture. Install water-resistant wallboard in full, large sheets (no scraps) to limit number of butt joints.
 3. Apply wallboard with long dimension parallel to stud framing members, and with abutting edges occurring over stud flanges.
 4. Install wallboard for partitions from floor to underside of structure above and secure rigidly in place by screw attachment, unless otherwise indicated.
 5. Provide "Thermafiber" safing insulation meeting standards of Section 078413 at flutes of metal deck where partitions carry up to bottom of metal deck.
 6. Neatly cut wallboard to fit around outlets, switch boxes, framed openings, piping, ducts, and other items which penetrate wallboard; fill gaps with acoustic sealant.
 7. Where wallboard is to be applied to curved surfaces, dampen wallboard on back side as required to obtain required curve. Finish surface shall present smooth, even curve without fluting or other imperfections.
 8. Screw fasten wallboard with power-driven electric screwdriver, screw heads to slightly depress surface of wallboard without cutting paper, screws not closer than 3/8" from ends and edges of wallboard.
 9. Where studs are doubled-up, screw fasten wallboard to both studs in a staggered pattern.
- F. Cementitious Backer Board
 1. General: Furnish cementitious backer board in maximum available lengths. Install horizontally, with end joints over framing members.
 2. Fastening: Secure cementitious backer board to each framing member with screws spaced not more than 12 inches on center and not closer than 1/2" from the edge. Install screws with a conventional screw gun so that the screw heads are flush with the surface of the board.

3. Joint Treatment: Fill space between edge of backer and receptor with dry-set Portland cement or latex-Portland cement mortar. Fill all horizontal and vertical joints and corners with dry-set Portland cement or latex-Portland cement mortar. Apply fiberglass tape over joints and corners and embed with same mortar.
- G. Metal Trim: Install and mechanically secure in accordance with manufacturer's instructions; and finish with three (3) coats of joint compound, feathered and finish sanded smooth with adjacent wallboard surface, in accordance with manufacturer's instructions.
 1. Corner Beads: Install specified corner beads in single lengths at all external corners, unless corner lengths exceed standard stock lengths.
 2. Edge Beads: Install specified edge beads in single lengths at all terminating edges of wallboard exposed to view, where edges abut dissimilar materials, where edges would be exposed to view, and elsewhere where shown on drawings. Where indicated on drawings, seal joint between metal edge bead and adjoining surface with specified gasket, 1/8" wide minimum and set back 1/8" from face of wallboard, unless other size and profile indicated on drawings.
 3. Casing beads shall be set in long lengths, neatly butted at joints. Provide casing beads at juncture of board and vertical surfaces and at exposed perimeters.
- H. Control Joint Locations: Gypsum board surfaces shall be isolated with control joints where:
 1. Ceiling abuts a structural element, dissimilar wall or other vertical penetration.
 2. Construction changes within the plane of the partition or ceiling.
 3. Shown on approved shop drawings.
 4. Ceiling dimensions exceed thirty (30) feet in either direction.
 5. Wings of "L," "U," and "T" shaped ceiling areas are joined.
 6. Expansion or control joints occur in the structural elements of the building.
 7. Shaft wall runs exceed 30' without interruption.
 8. Partition or furring abuts a structural element or dissimilar wall or ceiling.
 9. Partition or furring runs exceed 30' without interruption.
 10. Where control joints are required, ceiling height door frames may be used as control joints. Less than ceiling height frames shall have control joints extending to the ceiling from both corners.
- I. Joint Treatment and Spackling
 1. Joints between face wallboards in the same plane, joints at internal corners of intersecting partitions and joints at internal corners of intersections between ceilings and walls or partitions shall be filled with joint compound.
 2. Screw heads and other depressions shall be filled with joint compound. Joint compound shall be applied in three (3) coats, feathered and finish surface sanded smooth with adjacent wallboard surface, in accordance with manufacturer's instructions. Treatment of joints and screw heads with joint compound is also required where wallboard will be covered by finish materials which require a smooth surface, such as vinyl wall coverings.

3.3 FURRED WALLS AND PARTITIONS

- A. Use specified metal furring channels. Run metal furring channel framing members vertically, space sixteen (16) inches o.c. maximum. Fasten furring channels to concrete or masonry surfaces with power-driven fasteners or concrete stub nails spaced sixteen (16) inches o.c. maximum through alternate wing flanges (staggered) of furring channel. Furring channels shall be shimmed as necessary to provide a plumb and level backing for wallboard. At inside of exterior walls, an asphalt felt protection strip shall be installed between each furring channel and the wall. Furring channel and splices shall be provided by nesting channels at least eight (8) inches and securely anchoring to concrete or masonry with two (2) fasteners in each wing.
- B. Wallboard Installation: Same as specified under Article 3.4 - "Metal Stud Partitions."

3.4 METAL STUD PARTITIONS

- A. Unless otherwise noted, steel framing members shall be installed in accordance with ASTM C 754.
- B. Runner Installation: Use channel type. Align accurately at floor according to partition layout. Anchor runners securely sixteen (16) inches o.c. maximum with power-driven anchors to floor

slab, with power-driven anchors to structural slab above. See "Stud Installation" below for runners over heads of metal door frames. Where required, carefully remove sprayed-on fireproofing to allow partition to be properly installed.

C. Stud Installation

1. Use channel type, positioned vertically in runners, spaced as noted on drawings, but not more than sixteen (16) inches o.c.
2. Anchor studs to floor runners with screw fasteners. Provide snap-in or slotted hole slip joint bolt connections of studs to ceiling runners leaving space for movement. Anchor studs at partition intersections, partition corners and where partition abuts other construction to floor and ceiling runners with sheet metal screws through each stud flange and runner flange.
3. Connection at ceiling runner for non-rated partitions shall be snap-in or slotted hole slip joint bolt connection that shall allow for movement. Seal studs abutting other construction with 1/8" thick neoprene gasket continuously between stud and abutting construction.
4. Connections for fire rated partitions at ceiling runners shall conform to UL Design #2079.
5. Install metal stud horizontal bracing wherever vertical studs are cut or wallboard is cut for passage of pipes, ducts or other penetrations, and anchor horizontal bracing to vertical studs with sheet metal screws.
6. At jambs of door frames and borrowed light frames, install doubled-up studs (not back-to-back) from floor to underside of structural deck, and securely anchor studs to jamb anchors of frames and to runners with screws. Provide cross braces from hollow metal frames to underside of slab.
7. Over heads of door frames, install cut-to-length section of runner with flanges slit and web bent to allow flanges to overlap adjacent vertical studs, and securely anchor runner to adjacent vertical studs with sheet metal screws. Install cut-to-length vertical studs from runner (over heads of door frame) to ceiling runner sixteen (16) inches maximum o.c. and at vertical joints of wallboard, and securely anchor studs to runners with sheet metal screws.
8. At control joints, in field of partition, install double-up studs (back-to-back) from floor to ceiling runner, with 1/4" thick continuous compressible gasket between studs. When necessary, splice studs with eight (8) inches minimum nested laps and attach flanges together with two (2) sheet metal screws in each flange. All screws shall be self-tapping sheet metal screws.

- D. Runners and Studs at Chase Wall: As specified above for "Runners" and "Studs" and as specified herein. Chase walls shall have either a single or double row of floor and ceiling runners with metal studs sixteen (16) inches o.c. maximum and positioned vertically in the runners so that the studs are opposite each other in pairs with the flanges pointing in the same direction. Anchor all studs to runner flanges with sheet metal screws through each stud flange and runner flange following requirements of paragraph 3.4, B. Provide cross bracing between the rows of studs by attaching runner channels or studs set full width of chase attached to vertical studs with one self-tapping screw at each end. Space cross bracing not over thirty-six (36) inches o.c. vertically.

3.5 WALLBOARD INSTALLATION

A. Single Layer Application (Screw Attached)

1. Install wallboard with long dimension parallel to framing member and with abutting edge joints over web of framing member. Install wallboard with long dimension perpendicular to framing members above and below openings in drywall extending to second stud at each side of opening. Joints on opposite sides of wall shall be arranged so as to occur on different studs.
2. Boards shall be fastened securely to studs with screws as specified. Where a free end occurs between studs, back blocking shall be required. Center abutting ends over studs. Correct work as necessary so that faces of boards are flush, smooth, true.

3. Wallboard screws shall be applied with an electric screw gun. Screws shall be driven not less than 3/8" from ends or edges of board to provide uniform dimple not over 1/32" deep. Screws shall be spaced twelve (12) inches o.c. in the field of the board and 8" o.c. staggered along the abutting edges.
 4. All ends and edges of wallboard shall occur over screwing members (studs or furring channels). Boards shall be brought into contact but shall not be forced into place. Where ends or edges abut, they shall be staggered. Joints on opposite sides of a partition shall be so arranged as to occur on different studs.
 5. At locations where piping receptacles, conduit, switches, etc., penetrate drywall partitions, provide non-drying sealant and an approved sealant stop at cut board locations inside partition.
- B. Double-Layer Application
1. General: See drawings for wallboard partition types required.
 2. First Layer (Screw Attached): Install as described above for single layer application.
 3. Second Layer (Screw Attached): Screw attach second layer, unless laminating method of attachment indicated on drawings or necessary to obtain required sound rating or fire rating. Install wallboard vertically with vertical joints offset thirty-two (32) inches from first layer joints and staggered on opposite sides of wall. Attach wallboard with 1-5/8" screws sixteen (16) inches o.c. along vertical joints and sixteen (16) inches o.c. in the field of the wallboard. Screw through first layer into framing members.
 4. Second Layer (Laminated): Install wallboard vertically. Stagger joints of second layer from first layer joints. Laminate second layer with specified laminating adhesive in beads or strips running continuously from floor to ceiling in accordance with manufacturer's instructions. After laminating, screw wallboard to framing members with 1-5/8" screws, spaced twelve (12) inches o.c. around perimeter of wallboard.
- C. Wallboard Installation - Laminated Application: Where laminated wallboard is indicated, use specified laminating adhesive, install wallboard vertically and maintain tolerances as specified for screw attached wallboard.
- D. Insulation Installation: Install where indicated on drawings. Place blanket tightly between studs.
- E. Deflection of Structure Above: To allow for possible deflection of structure above partitions, provide top runners for non-rated partitions with 1-1/4" minimum flanges and do not screw studs or drywall to top runner. Where positive anchorage of studs to top runner is required, anchorage device shall be by means of slotted hole (in clip connection with screw attachment to web of steel through bushings located in slots of clips), or other anchorage device approved by Architect.
- F. Control Joints
1. Leave a 1/2" continuous opening between gypsum boards for insertion of surface mounted joint.
 2. Back by double framing members.
 3. Attach control joint to face layer with 9/16" galvanized staples six (6) inches o.c. at both flanges along entire length of joint.
 4. Provide two (2) inch wide gypsum panel strip or other adequate seal behind control joint in fire rated partitions and partitions with safing insulation.

3.6 DRYWALL FASCIAS AND CEILINGS

- A. Furnish and install inserts, hanger clips and similar devices in coordination with other work.
- B. Secure hangers to inserts and clips. Clamp or bolt hangers to main runners.
- C. Space main runners 4'-0" o.c. and space hangers 4'-0" o.c. along runners, except as otherwise shown.
- D. Level main runners to a tolerance of 1/4" in 12'-0", measured both lengthwise on each runner and transversely between parallel runners.
- E. Metal Furring Channels: Space sixteen (16) inches o.c. maximum. Attach to 1-1/2" main runner channels with furring channel clips (on alternate sides of main runner channels). Furring channels shall not be let into or come in contact with abutting masonry walls. End splices shall

be provided by nesting furring channels no less than eight (8) inches and securely wire tying. At any openings that interrupt the furring channels, install additional cross reinforcing to restore lateral stability.

- F. Mechanical accessories, hangers, splices, runner channels and other members used in suspension system shall be of metal, zinc coated, or coated with rust inhibitive paint, of suitable design and of adequate strength to support units securely without sagging, and such as to bring unit faces to finished indicated lines and levels.
 - 1. Provide special furring where ducts are over two (2) feet wide.
- G. Apply board with its long dimension at right angles to channels. Locate board butt joints over center of furring channels. Attach board with one (1) inch self-drilling drywall screws twelve (12) inches o.c. in field of board at each furring channel; eight (8) inches o.c. at butt joints located not less than 3/8" from edges.

3.7 SHAFT WALLS

- A. Runner Installation: Use "J" metal runners at floor and ceiling, with the short leg toward finish side of wall. Securely attach runners to structural supports with power-driven fasteners at both ends and twenty-four (24) inches o.c.
- B. Shaft Wall Liner: Cut shaft wall liner panels one (1) inch less from floor to ceiling height and erect vertically between J-runners.
- C. C-H Studs: Cut metal studs 3/8" to not more than 1/2" less than floor to ceiling height and install between shaft wall liner panels so that panels are fitted snugly into the one (1) inch wide "H," "T," or "I" portion of the stud. Space studs twenty-four (24) inches o.c., unless otherwise indicated on drawings. Install full-length steel E-Studs or J-runners vertically at T-intersections, corners, door jambs, and columns. Install full length E-Studs or J-runners over shaft wall liner both sides of closure panels. Frame openings cut within a liner panel with J-Runner around perimeter. For openings, frame with vertical E-Stud or J-runner at edges, horizontal runner at head and sill, and reinforcing as shown on the drawings. Suitably frame all openings to maintain structural support for wall. Install floor-to-ceiling steel E-Studs or J-runners each side of elevator door frames to act as strut-studs. Attach strut-stud to floor and ceiling runners with two (2) 3/8" Type S screws, space twelve (12) inches o.c. Over metal doors, install a cut-to-length section of runner and attach to strut-studs with clip angles and 3/8" Type S Screws space twelve (12) inches o.c.
- D. Wallboard Installation - Double Layer Installation: Erect gypsum wallboard base layer vertically or horizontally to meet fire rating on one side of studs with end joints staggered. Fasten base layer panels to studs with one (1) inch Type S screws twenty-four (24) inches o.c. Caulk perimeter of base layer panels. Apply gypsum wallboard face layer vertically over base layer with joints staggered and attached with 1-5/8" Type S screws staggered from those in base, spaced eight (8) inches o.c. and driven into studs.
- E. Wallboard Installation (Where Both Sides of Shaft Wall are Finished): Apply gypsum wallboard face layers vertically both sides of studs. Stagger joints on opposite partition sides. Fasten panels with one (1) inch or two (2) inches Type S screws spaced eight (8) inches o.c. in field and along edges into studs.
- F. Cants: Provide one (1) inch thick shaft wall liner, cut to suit condition, at beams and other projections wider than two (2) inches in elevator shafts. Cants shall slope seventy-five (75) degrees from the horizontal. Screw attach shaft wall liner to the vertical metal studs.
- G. Support elevator hoistway door frames independently of drywall shaft framing system or reinforce system in accordance with system manufacturer's instructions.
- H. Where handrails are indicated for direct attachment to drywall shaft system, provide not less than a sixteen (16) ga. x eight (8) inches wide galvanized steel reinforcement strip, accurately positioned and secured to studs and concealed behind not less than one 1/2" thick course of gypsum board in the system.
- I. Integrate stair hanger rods with drywall shaft system by locating cavity of system as required to enclose rods.

3.8 ERECTION AT COLUMN ENCLOSURES

- A. Metal furring supports shall be provided under work of this Section, and shall be cut to lengths as necessary for tight fit such that spacing is not more than sixteen (16) inches o.c.
- B. Board shall be fastened securely to supports with screws as specified. Place boards in position with minimum number of joints. Where free ends occur between supports, back-blocking or furring shall be required. Center abutting ends over supports. Correct work as necessary so that faces of boards are flush, smooth and true. Provide clips or cross furring for attachment as required.
- C. All layers shall be screw attached to furring.
- D. When column finish called for on drawings to be in the same plane as drywall finish layer, maintain even, level plane.

3.9 FINISHING

- A. Taping: A thin, uniform layer of compound shall be applied to all joints and angles to be reinforced. Reinforcing tape shall be applied immediately, centered over the joint, seated into the compound. A skim coat shall follow immediately but shall not function as a fill or second coat. Tape shall be properly folded and embedded in all angles to provide a true angle.
- B. Filling: After initial coat of compound has hardened, additional compound shall be applied, filling the board taper flush with the surface. The fill coat shall cover the tape and feather out slightly beyond the tape. On joints with no taper, the fill coat shall cover the tape and feather out at least four (4) inches on either side of the tape. No fill coat is necessary on interior angles.
- C. After compound has hardened, a finishing coat of compound shall be spread evenly over and extending slightly beyond the fill coat on all joints and feathered to a smooth, uniform finish. Over tapered edges, the finished joint shall not protrude beyond the plane of the surface. All taped angles shall receive a finish coat to cover the tape and taping compound and provide a true angle. Where necessary, sanding shall be done between coats and following the final application of compound to provide a smooth surface, ready for painting.
- D. Fastener Depressions: Compound shall be applied to all fastener depressions followed, when hardened by at least two (2) coats of compound, leaving all depressions level with the plane of the surface.
- E. Finishing Beads and Trim: Compound shall be applied to all bead and trim and shall be feathered out from the ground to the plane of the surface. When hardened, this shall be followed by two (2) coats of compound each extending slightly beyond the previous coat. The finish coat shall be feathered from the ground to the plane of the surface and sanded as necessary to provide a flat, smooth surface ready for decoration.
- F. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840 and GA-214 of the Gypsum Association.
 - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 - 2. Level 2: Panels that are a substrate for tile and where indicated.
 - 3. Level 4: Level of finish for surfaces exposed to view shall conform to Level 4.
- G. Drywall construction with defects of such character which will mar appearance of finished work, or which is otherwise defective, will be rejected and shall be removed and replaced at no expense to the Owner.

3.10 CLEANING AND ADJUSTMENT

- A. At the completion of installation of the work, all rubbish shall be removed from the building, leaving floors broom clean. Excess material, scaffolding, tools and other equipment shall be removed from the building.
- B. Work shall be left in clean condition ready for painting or wall covering. All work shall be as approved by Architect.
- C. Cutting and Repairing: Include all cutting, fitting and repairing of the work included herein in connection with all mechanical trades and all other trades which come in conjunction with any part of the work and leave all work complete and perfect after all trades have completed their work.

3.11 PROTECTION OF WORK

- A. Installer shall advise Contractor of required procedures for protecting drywall work from damage and deterioration during remainder of construction period.

END OF SECTION

SECTION 09 30 13
CERAMIC TILING

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the ceramic tiling work as shown on the drawings and/or specified herein, including, but not limited to, the following:
 - 1. Ceramic floor tile.
 - 2. Ceramic tile wall base.
 - 3. Glazed wall tile.
 - 4. Stone saddles.
 - 5. Setting beds, grout, and sealant.
 - 6. Waterproofing membrane.

1.3 RELATED SECTIONS

- A. Cast-in-Place Concrete - Section 03 30 00.
- B. Gypsum Drywall - Section 09 29 00.

1.4 REFERENCES

- A. ANSI A108 Series/A118 Series - American National Standards for Installation of Ceramic Tile.
- B. ANSI A136.1 - American National Standards for Organic Adhesives for Installation of Ceramic Tile.
- C. ASTM C 144 - Standard Specification for Aggregate for Masonry Mortar.
- D. ASTM C 150 - Standard Specification for Portland Cement.
- E. TCNA - Handbook for Ceramic, Glass and Stone Tile Installation; Tile Council of North America.
- F. ISO 13007 - International Standards Organization; Classification for Grout and Adhesives.

1.5 QUALITY ASSURANCE

- A. Qualifications of Installers: For cutting, installing and grouting of ceramic tile, use only thoroughly trained and experienced journeyman tile setters who are completely familiar with the requirements of this work, and the recommendations contained in the referenced standards, and the installers are Certified Ceramic Tile Installer (CTI) through the Ceramic Tile Education Foundation (CTEF) or Tile Installer Thin Set Standards (ITS) verification through the University of Ceramic Tile and Stone.
- B. Codes and Standards: In addition to complying with all pertinent codes and regulations, comply with the following:
 - 1. Manufacture all ceramic tile in accordance with Standard Grade Requirements of ANSI A-137.1.
 - 2. Install all ceramic tile in accordance with the recommendations contained in "Tile Council of North America Handbook for Ceramic, Glass, and Stone Tile Installation (TCNA)," latest edition.
- C. Flooring surfaces shall have a minimum wet DCOF AcuTest value of 0.42 and tested per ANSI A326.3 Dynamic Coefficient of Friction of Hard Surface Flooring Materials.

1.6 SUBMITTALS

- A. Samples

1. Before any ceramic tile is delivered to the job site, submit to the Architect sample panels, approx. 12" x 12", mounted on hardboard back-up with selected grout color for each color and pattern of ceramic tile and grout specified.
 2. Submit 6" length of stone saddles.
 3. Submit 12" x 12" samples of waterproofing membrane.
- B. Master Grade Certificates: Prior to opening ceramic tile containers, submit to the Architect a Master Grade Certificate, signed by an officer of the firm manufacturing the ceramic tile used, and issued when the shipment is made, stating the grade, kind of tile, identification marks for tile containers, and the name and location of the project.
- C. Mock-Ups
1. At an area on the site where approved by the Architect, provide a mock-up ceramic tile installation.
 - a. Make the mock-up approximately 36" x 36" in dimension.
 - b. Provide one mock-up for each type, class, and color of installation required under this Section.
 - c. The mock-ups may be used as part of the Work and may be included in the finished Work when so approved by the Architect.
 - d. Revise as necessary to secure the Architect's approval.
 2. The mock-ups, when approved by the Architect, will be used as datum for comparison with the remainder of the work of this Section for the purposes of acceptance or rejection.
 3. If the mock-up panels are not permitted to be part of the finished Work, completely demolish and remove them from the job site upon completion and acceptance of the work of this Section.

1.7 PRODUCT HANDLING

- A. Delivery and Storage
1. Deliver all materials of this Section to the job site in their original unopened containers with all labels intact and legible at time of use.
 2. Store all materials under cover in a manner to prevent damage and contamination; store only the specified materials at the job site.
- B. Protection: Use all means necessary to protect the materials of this Section before, during, and after installation, and to protect the installed work and materials of all other trades.
- C. Replacements: In the event of damage, immediately make all repairs and replacements necessary.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
- B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.
- C. Maintain temperatures at not less than 50 deg. F. in tiled areas during installation and for 7 days after completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Tile: Obtain tile of each type and color or finish from single source or producer.
1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.
 - 1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
 - 2. Obtain waterproof/crack isolation membrane, except for sheet products, from manufacturer of setting and grouting materials.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:
 - 1. Stone saddles.
 - 2. Waterproof membrane.
 - 3. Metal edge strips.

2.2 MANUFACTURERS OF TILE

- A. Provide tile as scheduled on the drawings or approved equal meeting these specifications. The Architect reserves the right to pick tile from any price group.

2.3 FLOOR TILE

- A. Ceramic Mosaic Tile Flooring: See finish schedule. Unglazed porcelain (ANSI A137.1), thin set with latex-Portland cement mortar (ANSI A108.5).
- B. Provide porcelain type ceramic floor tile with all-purpose edge in size, color and pattern as selected by the Architect. Tile to have water absorption not to exceed 0.5%.
- C. Provide non-slip tile where scheduled, of same characteristics as ceramic tile specified herein with the addition of 7-1/2% abrasive grain by weight.
- D. Provide sanitary cove base to match floor tile.

2.4 WALL TILE AND BASE

- A. Glazed Wall Tile: See finish schedule, bright-glazed wall tile (ANSI A137.1), thin set with Portland cement mortar (ANSI A108.5).
- B. Provide vitreous, cushion edge units, matte glazed, in colors as selected by the Architect.

2.5 TRIM AND SPECIAL SHAPES

- A. Provide external and internal corners, trim shapes at openings, and all other trim and special shapes to match the tile specified herein, as required by field conditions and drawing details.

2.6 STONE SADDLES

- A. Provide sound stone of variety selected by the Architect, minimum 3/4" thick, with an abrasive hardness of not less than 10.0, when tested in accordance with ASTM C 241. Cut saddle to fit jamb profile, honed finish.

2.7 SETTING BEDS AND GROUT

- A. Portland Cement: ASTM C 150, Type 1.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Sand: ASTM C 144, clean and graded natural sand.
- D. Latex Modified Mortar Bed
 - 1. Laticrete 3701 Fortified Mortar Bed.
 - 2. MAPEI, Modified Mortar Bed.
 - 3. Pro Spec, Floor Mud with B-710 SBR Acrylic Additive.
- E. Latex-Portland Cement Bond Coat, complying with ANSI A118.4 and ISO 13007, C2ES2P1 with minimum compressive strength of 400 psi.
 - 1. Laticrete, 254 Platinum.
 - 2. MAPEI, Keraflex Super.

3. Pro Spec; Permalastic System consisting of Permalastic Dryset Mortar and Permalastic Admixture.
- F. Wall and Base Tile
1. Over cement board, use a Latex Portland cement mortar bond coat: Laticrete "TriLite," MAPEI, "Keraflex Super," or equal by Pro Spec, conforming to ANSI A118.4, ISO 13007-C2ES2P1, and TCA Detail W-244; coat back of board with waterproof membrane as specified below.
 2. Over glass-mat, water-resistant gypsum backer board, use a latex Portland cement mortar bond coat: Laticrete "TriLite," MAPEI "Keraflex Super," or equal by Pro Spec, conforming to ANSI A118.4, ISO 13007- C2ES1P1, and TCA Detail W-245.
- G. Floor Tile and Stone Saddle - Thin Set over Waterproof Setting Bed: Set floor tile and stone saddle using thin set latex Portland cement bond coat. Basis of Design: Laticrete "254 Platinum" or MAPEI "Keraflex Super" conforming to ANSI A118.4, ISO 13007-C2ES2P1, and waterproofing membrane conforming to TCA Detail F-122/122A.
- H. Waterproofing Membrane: Complying with ANSI A118.10 and ANSI A118.12; and having IAPMO certification as a shower pan liner; provide "Hydro Ban" made by Laticrete International, "Mapelastic AquaDefense" by MAPEI with factory blended "Bio-Block Antimicrobial," ProSpec "B6000," or approved equal.
1. Reinforce membrane with polyester fabric where recommended by manufacturer.
 2. Showers: B-415; run waterproofing up full height of walls.
- I. Water: Clean, fresh and suitable for drinking.
- J. Grout: Complying with A118.7; and ISO 13007, CG2WAF; for grouting ceramic tile, provide a commercial Portland cement grout, Laticrete "PermaColor" or "PermaColor Select," "Ultracolor Plus FA" (additive not required) made by MAPEI, or comparable product by Custom Building Products or approved equal; color as selected by the Architect.
- K. Physical Properties: The setting beds and grouts must meet the following physical requirements:
1. Compressive Strength: 3000 psi min.
 2. Shear Bond Strength: 500 psi min.
 3. Water Absorption: 4.0% max.
 4. Service Rating (ASTM C 627): Extra Heavy Duty.
- L. Sealer: Seal all grout joints and all unglazed tile using "StoneTech Heavy Duty Sealer" by Laticrete, "Sealer's Choice 15 Gold" by Aqua Mix Inc. or "Ultracare Penetrating Plus Stone, Tile, and Grout Sealer" by MAPEI.
- M. Temporary Protective Coating: Either product indicated below that is applied in the tile manufacturer's factory and formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.
1. Petroleum paraffin wax, applied hot, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg. F. per ASTM D 87.
 2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.
- N. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, equal to "StoneTech Stone & Tile Cleaner" by Laticrete, "Concentrated Stone & Tile Cleaner" Aqua-Mix, "Ultracare Concentrated Tile & Grout Cleaner" by MAPEI, or approved

equal, specifically approved for materials and installations indicated by tile and grout manufacturers.

2.8 SEALANT

- A. Joint Backing: Preformed, compressible, resilient, non-extruding, non-staining strips of foam neoprene, foam polyethylene, or other material recommended by sealant manufacturer.
- B. Bond Breaker: Polyethylene tape, 3 mils thick, or other material recommended by sealant manufacturer.
- C. Sealant Primer: Colorless, non-staining, or type to suit substrate surface, as recommended by sealant manufacturer.
- D. Sealant: One-part silicone based sanitary sealant, conforming to ASTM C 920, Type S, Grade NS, Class 25. Sealant hardness upon full cure shall be between 20-30 Shore "A" Durometer. Color of sealant to blend with or match adjacent materials, and as selected by the Architect. Sealant shall be equivalent to 1700 Sanitary Sealant made by General Electric or approved equal.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where ceramic tile is to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 CONDITION OF SURFACES

- A. Allowable Variations in Substrate Levels in Floors: + 1/8" in 10'-0" distance and 1/4" total max. variation from levels shown.
- B. Grind or fill concrete and masonry substrates as required to comply with allowable variations.
- C. Concrete substrates must meet ANSI A108.01 tolerances and surface textures in preparation for tile work. Coordinate with concrete trades.

3.3 PREPARATION

- A. Coordinate the following with Section 033000:
 - 1. Steel trowel and fine broom finish concrete slabs that are to receive ceramic tile. Cure concrete slabs that are to receive tile before tile application. Do not use liquid curing compounds or other coatings that may prevent bonding of tile setting materials to slabs. Slab shall be dry at time of tile installation.
 - 2. Tile floors with floor drains must have a slope to direction of 1/4" per foot; coordinate this with concrete trades.
- B. Etch concrete substrate as may be required to remove curing compounds or other substances that would interfere with proper bond of setting bed. Rinse with water to remove all traces of treatment.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved samples. If not, factory blended, either return to manufacturer or blend tiles at project site before installing.
- D. Field Applied Temporary Protective Coating: Pre-coat tile with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.4 JOINTS IN TILE WORK

- A. Joint Widths: 1/16" wide in ceramic tile.
- B. Alignment: Wall, base and floor joints shall align through the field and trim. Direction and location of all joints as directed by Architect.
- C. Movement Joints: Conform to TCA Detail EJ171. Locate where movement joints are in back-up material. Provide movement joint at joints between mop receptors and ceramic tile. Provide

movement joint at all vertical internal joints of wall tile. Movement joints 1/8" wide in ceramic tile. Fill all movement joints with specified backing and sealant. Use bond breaker where sufficient space for joint backing does not exist.

1. Provide sealant between ceramic tile and plumbing fixtures, mirrors, pipes, countertops and other dissimilar materials penetrating or adjacent to ceramic tile.

3.5 INSTALLATION

- A. Comply with the following installation standards:
 1. Wall tile over cement board or glass mat backer board using dry set mortar with latex additive - ANSI A118.4 and ISO 13007, C2ES1P1.
 2. Floor tile using dry set mortar with latex additive - ANSI A118.4, A118.15, and ISO 13007, C2ES1P1.
 3. Floor tile over waterproofing membrane - A118.15, and ISO 13007, C2ES1P1.
- B. Backs of tile must be cleaned before installation.
- C. All setting beds and/or adhesives shall provide for an average contact area of not less than 95% coverage.
- D. Allowable Variations in Finished Work: Do not exceed the following deviations from level and plumb, and from elevations, locations, slopes and alignment shown.
 1. Floors: 1/8" in 10'-0" run, any direction; +/- 1/8" at any location; 1/32" offset at any location.
 2. Walls: 1/8" in 8'-0" run, any direction; 1/8" at any location; offset at any location, 1/32".
 3. Joints: +/- 1/32" joint width variation of any location; 1/16" in 3'-0" run deviation from plumb and true.
- E. Waterproofing Membrane
 1. Install the membrane in strict accordance with manufacturer's written recommendations.
 2. Upon completion of work, test horizontal membrane for leaks by flood testing per ASTM D 5957. Inspect for leakage. Make necessary adjustments to stop all leakage and retest until watertight. If membrane is not immediately covered by another surface, provide protection until membrane is covered.
- F. Handle, store, mix and apply setting and grouting materials in compliance with the manufacturer's instructions.
- G. Extend tile work into recesses and under equipment and fixtures, to form a complete covering without interruptions. Terminate work neatly at obstructions, edges and corners without disruption of pattern or joint alignment.
- H. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight, aligned joints. Fit tile closely to electrical outlets, piping and fixtures so that plates, collars, or covers overlap tile.
- I. Lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls and trim are the same size. Lay out tile work and center tile fields both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths.

3.6 INSTALLATION OF STONE SADDLES

- A. Install stone saddles cut to profiles and sizes shown, accurately fitted to jambs, coped at stops, set in full bed of mortar herein specified, and with grouted edge joints as specified for floor tile.

3.7 CLEANING AND PROTECTION OF CERAMIC TILE

- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 1. Remove grout residue from tile as soon as possible.

2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use cleaners only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning to insure removal of all cleaning material.
 3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.
- B. Protect installed tile work with Kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. Apply coat of sealer to all grout joints and all unglazed tile.
- C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- D. Before final inspection, remove protective coverings from tile surfaces.
- E. Leave finished installation clean and free of cracked, chipped, broken, unbonded or otherwise defective tile work.

END OF SECTION

SECTION 09 51 13
ACOUSTICAL PANEL CEILINGS

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the acoustical panel ceilings as shown on the drawings and/or specified herein, including, but not limited to, the following:
 - 1. Acoustical panel units.
 - 2. Exposed "T" suspension system, including hangers and inserts.
 - 3. Provisions for the installation of lighting fixtures, diffusers, grilles and similar items provided under other Sections.
 - 4. Cutting, drilling, scribing and fitting as required for electro-mechanical penetrations.
 - 5. Perimeter and column moldings, trim and accessories for acoustical ceilings.

1.3 RELATED SECTIONS

- A. Steel Deck - Section 05 31 00.
- B. Drywall ceilings - Section 09 29 00.
- C. HVAC - Division 23, for diffusers, grilles and related frames.
- D. Electrical - Division 26, for lighting fixtures.

1.4 QUALITY ASSURANCE

- A. Codes and Standards: In addition to complying with all pertinent codes and regulations, comply with all pertinent recommendations published by the Ceilings and Interior Systems Contractor's Association.
- B. Qualifications of Installers
 - 1. The suspended ceiling subcontractor shall have a record of successful installation of similar ceilings acceptable to Architect and shall be currently approved by the manufacturer of the ceiling suspension system.
 - 2. For the actual fabrication and installation of all components of the system, use only personnel who are thoroughly trained and experienced in the skills required and completely familiar with the requirements established for this work.
- C. The work is subject to the following standards:
 - 1. ASTM C 635 "Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings," American Society for Testing and Materials.
 - 2. ASTM C 636 "Standard Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels," American Society for Testing and Materials.
- D. In addition to suspension system specified, provide seismic struts and seismic clips to meet seismic standards as required by prevailing Codes and Ordinances.

1.5 SUBMITTALS

- A. Shop Drawings: Submit completely dimensioned ceiling layouts for all areas where acoustical ceilings are required, showing:
 - 1. Any deviations from Architect's reflected ceiling plan layouts, especially lighting fixture and dimensions. Also indicate if any light fixtures will not fit into Architect's ceiling layout due to dimensional restrictions or field conditions.
 - 2. Direction and spacing of suspension members and location of hangers for carrying suspension members.
 - 3. Direction, sizes and types of acoustical units, showing suspension grid members, and starting point for each individual ceiling area.
 - 4. Moldings at perimeter of ceiling, at columns and elsewhere as required due to penetrations or exposure at edge of ceiling tiles.
 - 5. Location and direction of lights, air diffusers, air slots, and similar items in the ceiling plane.
 - 6. Details of construction and installation at all conditions.

7. Materials, gauges, thickness and finishes.
- B. Samples and Product Literature: Submit the following samples and related manufacturer's descriptive literature.
 1. Twelve (12) inch long components of suspension systems, including moldings.
 2. Acoustical units — full size.
- 1.6 DELIVERY, STORAGE AND HANDLING**
 - A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination or other causes.
 - B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.
 - C. Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way.
- 1.7 PROJECT CONDITIONS**
 - A. Do not install acoustical ceilings until wet-work in space is completed and nominally dry, work above ceilings has been completed, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.
- 1.8 COORDINATION**
 - A. Coordinate layout and installation of acoustical ceiling units and suspension system components with other work supported by or penetrating through ceilings, including light fixtures, HVAC equipment, fire suppression system components, and partition system.
- 1.9 EXTRA STOCK**
 - A. Extra Stock: Deliver stock of maintenance material to Owner. Furnish maintenance material matching products installed, packaged with protective covering for storage and identified with appropriate labels.
 1. Acoustical Ceiling Units: Furnish quantity of full size units equal to 2.0% of amount installed.
- PART 2 PRODUCTS**
- 2.1 ACOUSTICAL UNITS**
 - A. Provide mineral fiber panels with factory-applied white finish "Ultima High NRC" square edge, as manufactured by Armstrong World Industries, or comparable product of USG Interiors, Inc., Rockwool Rockfon, or approved equal by Certainteed (Symphony F and M) or USG Mars. Panels shall meet ASTM E 1264, Class A, with maximum UL flame spread of 25 and smoke developed of 50 per ASTM E 84. In standard and cut sizes indicated on drawings.
 - B. Acoustical Accent Ceiling Tile at Meeting Spaces: Armstrong Lyra, or approved equal.
 - C. Direct Mount Panels: Armstrong InvisAcoustics ¾" or approved equal. Unfinished for field painting.
- 2.2 SUSPENSION SYSTEM**
 - A. Provide exposed-tee steel suspension system with low sheen white baked enamel finish, Prelude XL HRC 15/16" 2-way grid system as manufactured by Armstrong World Industries, or equal made by USG Interiors, Inc. or Chicago Metallic Corp.
 - B. The suspension system shall support the ceiling assembly shown on the drawings and specified herein, with a maximum deflection of 1/360 of the span, in accordance with ASTM C 635.
 - ~~C. Hanger for suspension system shall be 1" x 3/16", galvanized steel flats or 1/4" diameter galvanized pencil rods spaced 4'-0" o.c. conforming to New York City Code requirements.~~
 - ~~D. Main carrying channels, to which suspension systems shall be fastened, shall be 1-1/2" cold rolled galvanized steel channel; spaced 4'-0" o.c., conforming to New York City Code requirements.~~
 - E. Provide ceiling clips and inserts to receive hangers, type as recommended by suspension system manufacturer, sizes for pull-out resistance of not less than five (5) times the hanger design load, as indicated in ASTM C 635.
 - F. Suspension systems shall conform to ASTM C 635, intermediate duty.

2.3 PERIMETER TRIM AND MOLDINGS

- A. General: Provide manufacturer's standard wall moldings with off-white baked enamel finish to match suspension systems. For circular penetrations of ceilings, provide edge moldings fabricated to diameter required to fit penetration exactly.
- 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 and the following:
 - 1. Molding: Axiom Classic trims, as manufactured by Armstrong World Industries, or equal.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine the areas where acoustical panel ceilings are to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected to permit proper installation of the layout.

3.2 PREPARATION

- A. Coordination: Furnish layouts for inserts, clips, or other supports required to be installed by other trades for support of acoustical ceilings.
- B. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half width units at borders and comply with reflected ceiling plans.

3.3 INSTALLATION

- A. Codes and Standards: Install materials in accordance with manufacturer's printed instructions, and to comply with governing regulations and industry standards.
- B. Install suspension systems to comply with ASTM C 636, with hangers supported only from building structural members. Locate hangers not more than 6" from each end, leveling to tolerance of 1/8" in 12'-0".
- C. Space rod or flat iron hangers not more than 4'-0" o.c. along main carrying channels; attach by clips or wire ties to building structure. Locate hangers not more than 6" from each end. Space main carrying channels 4'-0" o.c. Attach suspension system to carrying channels using clips or ties, leveling to a tolerance of 1/8" in 12'-0".
- D. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum which are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal force by bracing, reinforcing, countersplaying or other equally effective means.
- E. Install edge moldings at edges of each acoustical ceiling area, and at locations where edge of acoustical units would otherwise be exposed after completion of the work.
 - 1. Secure moldings to building construction by fastening through vertical leg. Space holes not more than 3" from each end and not more than sixteen (16) inches o.c. between end holes. Fasten tight against vertical surfaces.
 - 2. Level moldings with ceiling suspension system, to a level tolerance of 1/8" in 12'-0".
- F. Install acoustical units in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.
- G. Install hold-down clips in toilet areas, and in areas where required by governing regulations; space 2'-0" o.c. on all cross tees.
- H. Light fixtures or other ceiling apparatus shall not be supported from main beams or cross tees if their weight causes the total load to exceed the deflection capability of the ceiling suspension system. In such cases the load shall be supported by supplemental hangers furnished and installed by this Section of work.
- I. Where fixture or ceiling apparatus installation causes eccentric loading on runners, provide stabilizer bars to prevent rotation.

3.4 ADJUST AND CLEAN

- A. Clean exposed surfaces of acoustical ceilings, including trim, edge molding, and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09 54 26
LINEAR WOOD CEILING PANELS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Concealed suspension system for Linear Wood Ceiling Panels.
 - 2. Wood Baffle ceiling panels for concealed suspension system.
 - 3. Trim and accessories.
 - 4. Seismic restraints for suspended ceiling system

1.2 RELATED WORK IN OTHER SECTIONS:

- A. Division 1 – General Requirements for substitution requests, submittals, etc.
- B. Division 9 – Acoustical Ceilings
- C. Division 23 – HVAC for work to be coordinated with ceiling
- D. Division 26 – Electrical for light fixture coordination.

1.3 REFERENCES

- A. ASTM A641/A641M-19 – Standard Specification for Zinc Coated (Galvanized) Carbon Steel Wire.
- B. ASTM C423-22 – Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- C. ASTM C635/C635M-22 – Standard Specifications for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
- D. ASTM C 636/C636M-19 – Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
- E. ASTM E84-21a – Standard Test Method for Surface Burning Characteristics of Building Materials.
- F. ASTM E 580/E580M-22 – Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.
- G. **ASTM E 1264-22 – Standard Classification of Acoustic Ceiling Products.**
- H. **AWI – Architectural Woodwork Quality Standards Illustrated, current edition.**
- I. **Ceiling and Interiors Systems Construction Association (CISCA): Ceiling Systems Handbook, current edition.**

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturers other than those listed in Paragraph 2.1 are required to submit for approval prior to bidding per Section One.
- B. Installer Qualifications: Engage an experienced Installer, approved by wood ceiling manufacturer, who has completed panel ceilings similar in species, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- C. Provide seismic design of suspended ceiling under direct supervision of Professional Engineer experienced in design of this work and licensed at Project location.
- D. Inspection: All work must pass inspection and approval of architect, as well as the local codes and regulations or authorities having jurisdiction.
- E. Single-Source Responsibility for Wood Ceiling System: Obtain each type of Wood Baffle from a single fabricator, with in-house Shop Drawing capabilities, in-house assembly and finishing capabilities, and with resources to provide products of consistent quality in appearance and physical properties without delaying the project.
- F. Single-Source Responsibility for Suspension System: Obtain each type of suspension system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying project.
- G. Pre-Installation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings."

1.5 SUBMITTALS

- A. General: Submit each item in this Section according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data: For each type of product specified.
- C. Samples: For verification of each type of exposed finish required, prepared on samples of size indicated below. Where finishes involve normal color and texture variations, include sample sets

showing the range of variations expected.

1. 12" Long samples of each panel type, pattern, and color.
- D. Shop Drawings: Provide Shop Drawings/Coordination Drawings for all ceilings, which should include RCP and product details. Coordinate Wood Baffle layout, installation and suspension system components with other construction elements that penetrate ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system components, partition assemblies and all perimeter conditions.

1.6 PROJECT CONDITIONS

- A. Space Enclosure and Environmental Limitations: Do not install Wood Baffles until spaces are enclosed and weatherproof, wet-work in spaces is completed and dry, work above ceilings is complete, and ambient temperature and humidity conditions are being maintained at the levels indicated for Project when occupied for its intended use.
- B. Plenums have proper ventilation, especially in high moisture areas with no excessive buildup of heat in the ceiling areas.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery & Unloading: Coordinate crate sizes, weights, unloading options, and delivery schedule with manufacturer prior to fabrication. Deliver Wood Baffles and suspension system components to Project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other mistreatment.
- B. Acclimatization: Before installing Wood Baffles, permit them to reach room temperature and a stabilized moisture content (at least 72 hours) per AWI standards.
- C. Handling: Handle Wood Baffles carefully to avoid chipping edges or damaging units in any way.
- D. Protection:
1. Personnel: Follow good safety and industrial hygiene practices during handling and installing of all products and systems, with personnel to take necessary precautions and wear appropriate protective equipment as needed. Read related literature for important information on products before installation. Contractor to be solely responsible for all personal safety issues during and subsequent to installation; architect, specifier, owner, and manufacturer will rely on contractor's performance in such regard.
 2. Existing completed work: Protect completed work above suspension system from damage during installation of suspension system components.

1.8 EXTRA MATERIAL/WARRANTIES

- A. Extra Materials: Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels clearly describing contents.
1. Wood Baffles: Furnish quantity of full-size units equal to 2.0 percent of amount installed.
 2. Suspension System Components: Furnish quantity of each component equal to 2.0 percent of amount installed.
- B. Warranties: Provide owner with a (1) year warranty for material and workmanship on all installed products.
1. Manufacturers: All materials, Wood Baffles, and suspension systems shall be warranted for (1) one year for material and workmanship.
 2. Installer: All work shall be warranted for (1) year from final acceptance of completed work

PART 2 – PRODUCTS

2.1 WOOD BAFFLES AND SUSPENSION SYSTEM

- A. General: The following manufacturer is basis of design:
1. LINEA Ceiling & Wall Systems
2320 Peardonville Road, Abbotsford, BC, Canada, V2T 6J8
Ph. 1-604-776-2265 / Website: www.LineaCeilings.com / Email: Sales@LineaCeilings.com

- B. Or equal, as approved by Architect.

2.2 WOOD BAFFLES

- A. Product: LINEA WOOD BAFFLES - VENEER
LINEA Ceiling & Wall Systems. (www.LineaCeilings.com):
1. Veneer: Plain sliced Ash
 3. Core: Class A Fire Rated MDF
 4. Edge: Square w/ matching veneer (3 sides)
 4. Baffle Width: 1-1/2"
 5. Baffle Depth: 11-3/4"
 6. Baffle Length: See RCPs
 8. Face Texture: Smooth
 9. Color: Natural
 10. Finish: Clear, Satin,
 11. Fire Rating: Class A
 12. Assembly: Loose
 12. Joining: Not applicable
 13. Suspension: Strut channel

2.3 SUSPENSION SYSTEMS, GENERAL

- A. Attachment System for Wood Baffles shall be suspended according to manufacturer's suggested method of suspension as per the design details provided in the plans.
- B. Fabricate Wood Baffles to attach to the ceiling/floor deck above. Baffles may be suspended using 15/16" T-Bar, Threaded eyelets and hanger wire, C-Hangers, mounting brackets, D-Rings, Twist Clips or strut channel with slots, appropriate uniform load rating for baffle configuration and spacing. Wood Baffles are intended for decorative purposes only, electrical fixtures, HVAC equipment and fire suppression components should be independently supported and shall not rest on or wrap around the baffles in any way.
- C. Metal T-Grid Suspension System: Provide standard interior Metal Heavy Duty 15/16" suspension T-Grid system using Main Runners, Cross-tees, Wall Angle or Shadow Moldings of types, structural classifications, and <black> finishes indicated and that comply with applicable ASTM C 635 requirements. Comply with all applicable <seismic> codes and ordinances.
- D. Seismic Installation: Where applicable, install suspension system in accordance with ASCE 7-10, including design load of anchors, consideration of seismic interaction effects, and range of motion.
- E. Attachment Devices: Size for 3 times the design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

2.4 ACCESSORIES

- A. Biscuits or Lomello Tenso connectors
- B. Threaded eyelets: Suspension hangers that are direct screwed to the panel and hang from hanger wire or aircraft cables from suspension system, floor deck or ceiling. Can be used with 15/16" Twist Clips
- C. 15/16" Twist Clips with 90° 1/4" diameter hole: Suspension hangers that attach to 15/16" heavy-duty grid and allow for suspension using S-hooks, chain or aircraft cable. Can be used with threaded eyelets.
- D. C-Hangers: Suspension hangers that are direct-screwed to the panel and hang over the heavy-duty grid. Hangers are made of spring-steel with phosphate pre-treatment and corrosion-resistant coating.

2.5 FINISH

- A. Factory Finishing: Panel shall be factory-finished with manufacturer's standard lacquer products per color selection by architect.
- B. Due to the nature of real wood (variation in grain, texture and color) the finished product may range from light to dark affecting the look of the panels.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. General: Examine substrates and structural framing to which ceilings attach or abut, with installer present, for compliance with requirements specified in this and other sections that affect ceiling installation and anchorage. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION AND ADJUSTMENTS

- A. Comply with manufacturer's instruction and recommendations for installation of wood baffles and industry standards.
- B. Coordinate the exact size, location, and sequencing of baffles.
- C. Layout baffle pattern per manufacturer's approved shop drawings if required. Where not otherwise indicated, lay out baffles so margins on opposite sides of rooms are equal.
- D. Adjust baffles after installation so that surfaces are aligned, flush, and level with gaps between units consistent in width and straight.

3.3 CLEANING

- A. General: Clean exposed wood surfaces of wood ceiling panels. Comply with manufacturer's instructions for cleaning and touchup of minor finish damage. Remove and replace wood ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09 54 34
SUSPENDED ACOUSTIC BAFFLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Suspended acoustic non-woven layered and formed polyester felt fiber ceiling baffles.
 - 2. Hangers and fasteners
- B. Related Sections:
 - 1. Division 23 Sections – HVAC
 - 2. Division 26 Sections - Electrical

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
 - 2. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 3. ASTM E580 Application of Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels in Areas Requiring Seismic Restraint.
 - 4. ASTM C423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
 - 5. ASTM E795 Standard Practices for Mounting Test Specimens During Sound Absorption Tests
- B. International Building Code
- C. ASHRAE Standard 62.1-2004 Ventilation for Acceptable Indoor Air Quality
- D. NFPA 70 National Electrical Code

1.4 SUBMITTALS

- A. Shop Drawings: Provide layout including panel type and components used in the assembly of the ceiling. Show locations of items that are to be coordinated with the ceiling.
- B. Installation Instructions: Submit manufacturer's installation instructions as referenced in Part three, Installation.
- C. Samples: Minimum 6-inch x 6-inch sample of the colors selected in the ceiling design, include manufacturer sample of suspension components.
- D. Product Data: Submit manufacturer's technical data for each type of ceiling unit and suspension system required.
- E. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards.
- F. Non-Conformance: All products not conforming to the requirements of this specification and or the manufacturer's published values are to be disposed. The Contractor performing the work will replace with approved product at their expense.

1.5 QUALITY ASSURANCE

- A. Single-Source Responsibility: Provide panels and method of attachment by a single manufacturer.
- B. Coordination of Work: Coordinate ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.
- C. Fire Performance Characteristics: Identify ceiling components with appropriate markings of applicable testing and inspecting organization.
 - 1. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with Class A products.

- i. Flame Spread: 25 or less.
- ii. Smoke Developed: 450 or less

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store the acoustic baffles in an interior location and keep in cartons prior to installation to avoid damage.
- B. Exercise care in moving and opening cartons to prevent damage to the panel face.
 - 1. Handle acoustic baffles carefully to avoid damaging units in any way.

1.7 PROJECT CONDITIONS

- A. Space Enclosure: Building areas to receive acoustic baffles shall be free of construction dust and debris. Products can be installed up to 100°F (38°C) with humidity not exceeding 90% RH. Cannot be used in exterior applications where standing water is present or where moisture will come in direct contact with the canopy. Following installation, conditions must be maintained below 70% RH. All wet work must be complete and dry prior to installation. Avoid direct exposure to sunlight or warranty will be void. Installation shall be carried out where the temperature is between 40 degrees F and 90 degrees F. These temperature conditions must be maintained throughout the life of the product or warranty will be void.

1.8 WARRANTY

- A. Acoustic Baffles: Submit a written warranty executed by the manufacturer, agreeing to repair or replace baffles that fail within the warranty period. Failures include, but are not limited to:
 - 1. Baffles: Manufacturing defects.
 - 2. Attachment devices: Rusting and manufacturing defects.
- B. Warranty Period:
 - 3. Baffles: One (1) year from date of substantial completion.
 - 4. Attachment devices: One (1) year from date of substantial completion.
- C. Warranty Language: Manufacturer's products are expressly warranted for a period of one (1) year from purchase to be free from defects in material and workmanship, when installed according to manufacturer's published installation procedures. During the warranty period manufacturer will repair or at its option replace the products that are proven to be defective. Manufacturer is NOT responsible for any intentional or accidental abuse, misuse, or neglect incurred on the original warranted product, and shall as determined by manufacturer, void the warranty.

1.10 MAINTENANCE

- A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.
 - 1. Ceiling Units: Furnish quantity of full-size units equal to 2.0 percent of amount installed.
 - 2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 1.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 SYSTEM:

- A. Manufacturer: Armstrong World Industries Feltwork Blades non-woven layered and formed Polyester felt (PET) fiber. For colors, sizes and details see drawings.
- B. Acoustical Performance is tested per ASTM C423 and mounted in accordance with ASTM E795. NRC of 0.85 based on E-400 mounting*
- C. Flame Spread: Class A
- D. Dimensional Stability: HumiGuard Plus.

2.2 SUSPENSION SYSTEM

- A. Armstrong Aluminum Suspension System:
 - i. Item 8230 – 96" Suspension Bar for 3/8" FeltWorks Blades connector holes on both ends
 - ii. Item 6651AB - 96" Suspension Bar End-to-End Connectors
 - iii. Item 6655 – Blades Hanging Kit – Each kit includes 4 hanging assemblies, use on kit for each suspension

PART 3 - EXECUTION

3.1 PREPARATION

- A. Field verify each ceiling area and establish layout of ceiling panel models and attachment locations. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation. Acoustic baffle substructure shall be level and plumb. Acoustic baffle substructure shall be structurally sound as determined by that subcontractor's engineer. Acoustic baffle substructure shall be free of defects detrimental to work and erected in accordance with established building tolerances.
- B. Coordinate acoustic baffle layout with mechanical, electrical and sprinkler fixtures as required.
- C. Coordinate delivery of such items to project site.

3.2 INSTALLATION

- A. Install acoustic baffles in accordance with the manufacturer's instructions and in compliance with the authorities having jurisdiction.
- B. Erect acoustic baffles level and plumb, in proper alignment in relation to substructure framing and established lines.
- C. Panel anchorage shall be structurally sound and per engineering recommendations.
- D. Locate and place acoustic baffles level, plumb, and at indicated alignment with adjacent work.

3.3 ADJUSTING AND CLEANING

- A. Replace damaged and broken acoustic baffles.
- B. Clean exposed surfaces of acoustic baffles that are not protected by temporary covering to remove fingerprints and soil during construction period.
- C. Protect acoustic baffle assemblies from damage during construction. Use temporary protective coverings where needed as approved by the acoustic baffle system manufacturer.

END OF SECTION

SECTION 09 54 36
SUSPENDED CURVED WOOD CLOUD CEILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Suspended acoustic non-woven layered and formed polyester felt fiber ceiling baffles.
 - 2. Hangers and fasteners
- B. Related Sections:
 - 1. Division 23 Sections – HVAC
 - 2. Division 26 Sections – Electrical

1.3 QUALITY ASSURANCE

- A. Manufacturer & Installer: Firm manufacturing the specified product shall have adequate capacity required for projects listed and have successfully completed similar projects for a period of not less than five years. The Installer should be approved by the Manufacturer as qualified to perform work required.
- B. Reference Standards: Conform to all governing laws, building codes, and the following performance criteria:
 - 1. Fire Performance Characteristics: Provide ceiling panels with surface-burning characteristics as determined by testing in accordance with ASTM E-84 by a testing organization acceptable to authorities having jurisdiction.
 - 2. Acoustical Performance Characteristics: Provide ceiling panels with acoustical absorption characteristics as indicated in Part 2, which have been determined by testing fully assembled production material in accordance with ASTM C-423 (Type E400 mounting method as defined by ASTM E-795) by a testing organization acceptable to authorities having jurisdiction. Approved testing organization must be independent of the manufacturer.
 - 3. Seismic Performance: Wood panels shall be seismically tested as per procedures prescribed in Chapter 13 of the ASCE 2010-07 and the relevant ICC-ES standards. Shake table testing of ceiling systems using ICC-ES AC156 (ICC-ES 2015) protocol must be conducted, witnessed and documented by third party practicing structural engineers expert at an accredited laboratory and pass the most severe level of shaking prescribed in the building codes without any damage.

1.4 SUBMITTALS

- A. Submit three (3) complete sets of CAD generated shop drawings prepared by the manufacturer showing all necessary details and dimension requirements which will subsequently be field verified and revised as required by the Architect.
- B. Samples: Submit (3 sets) manufacturers standard 8" X 11" (203mm x 280mm) sample panels of each type of product as specified in Part 2 to the Owner for approval. Product shall be original production material in veneer finish specified for final use.
- C. Certification: Submit to the owner a certificate of compliance to specified acoustical and fire performance criteria as stated section 1.03 and Part 2 of this specification, signed by an officer of the panel manufacturer and attach independent laboratory test results for each product used, showing that the products supplied as components meet or exceed the specified requirements. Submit additional test results to owner as requested detailing compliance to updated code requirements.
- D. Prior Approval: Manufacturers not listed in section 2.01 of this specification and wishing to be submitted as an equal on the project must submit information in accordance with section 1.04 of this specification fifteen days prior to the bid date as outlined in the contract documents. The information submitted must give evidence to show that the alternative product equals or exceeds the attributes and performance of the specified product.

- E. Manufacturers Approval: The manufacturer shall have the right to approve the selection of the installing contractor and to verify that said contractor has sufficient experience and expertise to complete the project in a satisfactory manner.
- F. Single Source: All custom acoustical wall and ceiling panels shall be purchased from a single supplier.

1.5 **PRODUCT DELIVERY, STORAGE AND HANDLING**

- A. Deliver fabricated units and related components to the site for installation in accordance with a reasonable schedule furnished by the contractor. On-site storage shall be such as to assure that all panels and associated materials are protected from damage.
- B. Prior to panel installation the site must be free of all wet and dusty trades and the climatic conditions stabilized to normal operational levels. Panels shall be allowed to stabilize on site 72 hours prior to installation.
- C. PANELS MUST BE STORED, INSTALLED AND MAINTAINED ONLY IN A SECURE AMBIENT ENVIRONMENT (HUMIDITY MIN. 35% - MAX. 55%, TEMPERATURE NOT TO EXCEED 80° F (27° C)).

1.6 **WARRANTY**

- A. Furnish to the Architect in the Owner's name, the manufacturers written warranty covering the products supplied against defects in materials and workmanship under normal operating conditions for a period of one year from the date of shipment. Submit certificates of compliance showing warranty period by dates for each project completed to the Owner.
- B. All system components shall be manufactured and supplied by the named manufacturer. Individual components, provided by different suppliers will not be considered or accepted.
- C. Manufacturer must demonstrate the ability to fully bond the project for its full material value.

PART 2 - PRODUCTS

2.1 **CURVED WOOD ACOUSTICAL ABSORPTIVE "CLOUD" CEILING**

- A. Description: **Quadrillo panels**, as manufactured by:
Decoustics
61, Royal Group Crescent, TEL: (800) 387-3809
Woodbridge, Ontario FAX: (905) 652-2505
Canada, L4H 1X9 Email: sales@decoustics.com
Or approved equal.
 1. The panels shall be type QPP19 comprised of a sandwich construction of the following: A face sheet of selected real wood veneer laminated to 1/4" (6mm) medium density fiber board perforated by means of transverse "V" routing on 5mm centers. The membrane is fully bonded to a 6 to 7 lb./cu.ft. (96 to 112 kg/cu.m.) density acoustically absorptive core material of, 3/4" (19mm) thickness. The panel shall be backed with 1/8" (3mm) perforated hardboard fully bonded to the core material. The perimeter shall be constructed of particle core of adequate thickness to match the core material. The boards shall be fabricated to sizes, and pre-curved and shaped as required by field dimensions supplied by the installing contractor and will not vary from determined sizes by more than +/- 1/16" (2mm) vertically and horizontally. Intermediate framing support shall be incorporated on 24" (610mm) centers or as required. The panels shall be installed utilizing Decoustics Direct Suspended Ceiling System.
 2. Veneer: See Finish Schedule in Drawings.
Quarter cut, slip matched. Veneer will not be sequenced. Clear lacquer finish to 30% sheen.
 3. Installation shall be by use of aluminum slide and engage clips ("Z" clips), either into a continuous aluminum ceiling track, or onto adjacent panels (determined by panel size, and layout). Panels are mounted progressively. Panel clips shall be aluminum and mechanically mounted, on site prior to installation, to the back of the panels on maximum horizontal centres of 24" (610mm). Adhesively mounted clips are not acceptable. All fasteners are to be supplied by the installing contractor.
 4. Installation shall be in accordance with the manufacturers' instructions and as shown on Decoustics shop drawings. Installer shall provide the pre-curved suspended frame/grid, and shim and adjust as required to maintain consistent alignment of joints and of finished

- panel faces, and to ensure unstressed clip locations.
5. Panels shall have noise reduction coefficient values of the following when tested in accordance with section 1.03 of this specification.

Panel Type	Frequency (Hz)						NRC	SAA
	125	250	500	1000	2000	4000		
QPP-19	0.78	0.77	0.61	0.86	1.04	0.70	0.80	0.82

6. Suspended ceiling system with fully assembled panels as indicated shall be tested to the maximum level of the building code (SDS of 2.00g). There is to be no damage to the ceiling grid members or to the panels, with no panels dislodging after the maximum test level has been reached; per the requirements of the International (or California) Building Code and ASTM standards to be certified for all regions with high seismicity activity.

PART 3 – EXECUTION

3.1 PREPARATION

- A. Field verify each ceiling area and establish layout of cloud ceiling panels and attachment locations. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation. Acoustic cloud ceiling substructure shall be level and plumb. Acoustic cloud ceiling substructure shall be structurally sound as determined by that subcontractor's engineer. Acoustic cloud ceiling substructure shall be free of defects detrimental to work and erected in accordance with established building tolerances.
- B. Coordinate acoustic cloud ceiling layout with mechanical, electrical and sprinkler fixtures as required.
- C. Coordinate delivery of such items to project site.

3.2 INSTALLATION

- A. Install acoustic cloud ceiling panels in accordance with the manufacturer's instructions and in compliance with the authorities having jurisdiction.
- B. Erect acoustic cloud ceiling panels level and plumb, in proper alignment in relation to substructure framing and established lines.
- C. Panel anchorage shall be structurally sound and per engineering recommendations.

3.3 ADJUSTING AND CLEANING

- A. Replace damaged and broken acoustic cloud ceiling panels.
- B. Clean exposed surfaces of acoustic baffles that are not protected by temporary covering to remove fingerprints and soil during construction period.
- C. Protect acoustic cloud ceiling panel assemblies from damage during construction. Use temporary protective coverings where needed as approved by the acoustic cloud ceiling system manufacturer.

END OF SECTION

SECTION 09 65 00
METAL WALL PANELS

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the metal wall panels as shown on the drawings and/or specified herein, including, but not limited to, the following:
 - 1. Metal wall panels.
 - 2. Attachment system, fasteners and hardware for a complete installation.
 - 3. Cutting, drilling, scribing and fitting as required.
 - 4. Perimeter moldings, trim and accessories.

1.3 RELATED SECTIONS

- A. Unit Masonry - Section 04 20 00.
- B. Drywall - Section 09 29 00.
- C. HVAC - Division 23, for diffusers, grilles and related frames.
- D. Electrical - Division 26, for receptacles and lighting fixtures.

1.4 QUALITY ASSURANCE

- A. Codes and Standards: In addition to complying with all pertinent codes and regulations, comply with all pertinent recommendations published by the Ceilings and Interior Systems Contractor's Association.
- B. Qualifications of Installers
 - 1. The metal wall panel subcontractor shall have a record of successful installation of similar systems acceptable to Architect and shall be currently approved by the manufacturer of the system.
 - 2. For the actual fabrication and installation of all components of the system, use only personnel who are thoroughly trained and experienced in the skills required and completely familiar with the requirements established for this work.

1.5 SUBMITTALS

- A. Shop Drawings: Submit completely dimensioned wall panel layout, showing:
 - 1. Any deviations from Architect's layouts.
 - 2. Direction and spacing of attachment members.
 - 3. Direction, sizes and types of panels.
 - 4. Moldings at perimeter of panels and elsewhere as required due to penetrations or exposure at edges.
 - 5. Location and direction of receptacles, air diffusers, and similar items within the field of planks.
 - 6. Details of construction and installation at all conditions.
 - 7. Materials, gauges, thickness and finishes.
- B. Samples and Product Literature: Submit the following samples and related manufacturer's descriptive literature.
 - 1. Two (2) 12-inch long samples of components of attachment systems, including moldings.
 - 2. Two (2) 12-inch x 12-inch samples of metal wall panel units.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver metal panel units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination or other causes.
- B. Handle units carefully to avoid damage to edges or damaging units in any way.

1.7 PROJECT CONDITIONS

- A. Do not install linear metal planks until wet-work in space is completed and nominally dry, work behind wall planks has been completed, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

1.8 COORDINATION

- A. Coordinate layout and installation of units and attachment system components with other work supported by or penetrating through walls, including receptacles, HVAC equipment, etc.

1.9 EXTRA STOCK

- A. Extra Stock: Deliver stock of maintenance material to Owner. Furnish maintenance material matching products installed, packaged with protective covering for storage and identified with appropriate labels.
 - 1. Metal wall panel units: Furnish one full-size unit as extra stock.

PART 2 PRODUCTS

2.1 METAL WALL PANELS

- A. Provide Metalworks WH1000 wall system by Armstrong World Industries. Microperforated (18.4% open area), Class A fire performance, 83% light reflectance. See drawings for colors, sizes and dimensions.
 - 1. Substrate: Manufacturer's standard .063 aluminum substrate.
 - 2. Surface Finish: Scrubbable, architectural quality, electrostatically applied polyester powder coat paint applied to entire panel after forming (post coat).
 - 3. Edge Detail: All edges returned; spacer buttons installed to create 5mm reveals. Two adjacent sides notched for installation on W-H 1000 wall rail.
 - 4. Accessories: WH-1000 and WH-1100 wall rails, 5mm spacer buttons.
- B. Attachment shall Manufacturer's 1100 System, with C-Wall Profile sections; commercial-quality galvanized steel coating, exposed surfaces chemically cleansed.

2.2 PERIMETER TRIM AND MOLDINGS

- A. General: Provide manufacturer's standard trim and moldings.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine the areas where metal wall panels are to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected to permit proper installation of the layout.

3.2 PREPARATION

- A. Coordination: Furnish layouts for inserts, clips, or other supports required to be installed by other trades for support of wall panels.
- B. Measure each area and establish layout of units to balance border widths at opposite edges.

3.3 INSTALLATION

- A. Codes and Standards: Install materials in accordance with manufacturer's printed instructions, and to comply with governing regulations and industry standards.
- B. Install moldings at edges and at locations where edge of units would otherwise be exposed after completion of the work.
 - 1. Adhesively mounted clips are not acceptable.
 - 2. Install wall panels in locations indicated with vertical surfaces and edges plumb, top edges level, and in alignment with other panels, scribed to fit adjoining work accurately at borders and at penetrations.

3.4 ADJUST AND CLEAN

- A. Clean exposed surfaces of metal wall panels, including trim and molding to comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09 65 13
RESILIENT BASE AND ACCESSORIES

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the resilient accessories, as shown on the drawings and/or specified herein, including, but not limited to, the following:
 - 1. Rubber base.
 - 2. Accessories.

1.3 RELATED SECTIONS

- A. Concrete Masonry – Section 04 20 00.
- B. Gypsum Drywall - Section 09 29 00.

1.4 QUALITY ASSURANCE

- A. Qualifications of Installers: Use only personnel who are thoroughly trained and experienced in the skills required and completely familiar with the requirements established for this work.

1.5 SUBMITTALS

- A. Manufacturer's Data: For information only, submit manufacturer's technical information and installation instructions for type of resilient base.
- B. Samples: Submit six (6) inch long samples of base.

1.6 DELIVERY AND STORAGE

- A. Deliver materials to the project site in the manufacturer's original unopened containers, clearly marked to indicate pattern, gauge, lot number and sequence of materials.
- B. Carefully handle all materials and store in original containers at not less than seventy (70) degrees F. for at least forty-eight (48) hours before start of installation.

1.7 JOB CONDITIONS

- A. Continuously heat spaces to receive base to a temperature of seventy (70) degrees F. for at least forty-eight (48) hours prior to installation, whenever project conditions are such that heating is required. Maintain seventy (70) degrees F. temperature continuously during and after installation as recommended by the manufacturer, but for not less than forty-eight (48) hours. Maintain a temperature of not less than fifty-five (55) degrees F. in areas where work is completed.

PART 2 PRODUCTS

2.1 RUBBER BASE

- A. Provide rubber base as manufactured by Roppe or approved equal. Provide 4" high by 0.085" thick rubber, Type TS (vulcanized thermoset), Group 1 (solid), top set cove base with pre-formed internal and external corner pieces. Base shall conform to performance requirements of ASTM F 1861. Color – see finish schedule on drawings.

2.2 ACCESSORIES

- A. Adhesives: Waterproof, stabilized type, as recommended by the manufacturer for the type of service indicated.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where resilient base is to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 INSTALLATION OF RESILIENT BASE

- A. In all spaces where base is indicated, install bases tight to walls, partitions, columns, built-in cabinets, etc., without gaps at top or bulges at bottom, with tight joints and flush edges, with molded corner pieces at inside and outside corners. Provide end stops adjacent to flush type

door frames and where base does not terminate against an adjacent surface. Keep base in full contact with walls until adhesive sets.

3.3 CLEANING AND PROTECTION

- A. Remove any excess adhesive or other surface blemishes from base using neutral type cleaners as recommended by the manufacturer.

END OF SECTION

**SECTION 09 65 19
RESILIENT FLOORING**

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

- A. The Contract Forms, and Conditions of the Contract as provided by the Construction Manager, and applicable parts of Division 1 - GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this Section.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the resilient flooring, as shown on the drawings and/or specified herein, including, but not limited to, the following:
 - 1. Woven vinyl flooring.
 - 2. Rubber flooring.
 - 3. Transition strips.
 - 4. Accessories.

1.3 RELATED SECTIONS

- A. Concrete slab - Section 03 30 00.
- B. Cement underlayment – Section 03 54 13.
- C. Gypsum board partitions - Section 09 29 00.
- D. Resilient base - Section 09 65 13.

1.4 QUALITY ASSURANCE

- A. Qualifications of Installers: Use only personnel who are thoroughly trained and experienced in the skills required and completely familiar with the requirements established for this work.

1.5 SUBMITTALS

- A. Manufacturer's Data: For information only, submit manufacturer's technical information and installation instructions for type of resilient flooring.
- B. Samples
 - 1. Submit full-size samples/tiles for each type and color required, representative of the expected range of color and pattern variation. Sample submittals will be reviewed for color, texture and pattern only. Compliance with all other requirements is the exclusive responsibility of the Contractor.
 - 2. Submit six (6) inch long samples of accessories and transition strips.

1.6 DELIVERY AND STORAGE

- A. Deliver materials to the project site in the manufacturer's original unopened containers, clearly marked to indicate pattern, gauge, lot number and sequence of materials.
- B. Carefully handle all materials and store in original containers at not less than seventy (70) degrees F. for at least forty-eight (48) hours before start of installation.

1.7 JOB CONDITIONS

- A. Continuously heat spaces to receive tile to a temperature of seventy (70) degrees F. for at least forty-eight (48) hours prior to installation, whenever project conditions are such that heating is required. Maintain seventy (70) degrees F. temperature continuously during and after installation as recommended by the tile manufacturer, but for not less than forty-eight (48) hours. Maintain a temperature of not less than fifty-five (55) degrees F. in areas where work is completed.

1.8 EXTRA STOCK

- A. Extra Stock: Deliver stock of maintenance material to Owner. Furnish maintenance material matching products installed, packaged with protective covering for storage and identified with appropriate labels.
 - 1. Furnish quantity of 2 full boxes.

PART 2 - PRODUCTS

2.1 WOVEN VINYL FLOORING

- A. Provide 500mm x 500mm x 3mm thick heavy commercial woven vinyl flooring, "Elements" by Bolon Flooring, laid in adhesive. 72% recycled content. Class 1 Critical radiant flux per ASTM E 648. Smoke density less than 450 per ASTM E662.
 - 1. Colors: See Materials finish colors list on Architectural Drawings.

2.3 RUBBER FLOORING

- A. Provide 24" x 24" x .118" thick Premium Rubber flooring, "Natura" by Mondo Contract Flooring, laid in adhesive. Class 1 Critical radiant flux per ASTM E 648. Smoke density less than 450 per ASTM E662.
 - 1. Colors: See Materials finish colors list on Architectural Drawings.

2.5 ACCESSORIES

- A. Adhesives: Waterproof, stabilized type, as recommended by the tile manufacturer for the type of service indicated.
- B. Leveling Compound: See Section 035416.
- C. Edging Strips: 1/8" thick, homogeneous vinyl or rubber composition, tapered or bullnose edge, color as selected by the Architect from manufacturer's standards.
- D. Finish
 - 1. Cleaner shall be equal to "Super Shine All" made by Hillyard Chemical Co., or approved equal.
 - 2. Wax shall be equal to "Super Hil-Brite" made by Hillyard Chemical Co., or approved equal.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where resilient flooring is to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 CONDITION OF SURFACES

- A. Allowable Variations in Substrate Levels (Floors): $\pm 1/8"$ in 10'-0" distance and 1/4" total maximum variation from levels shown.
- B. Grind or fill concrete and masonry substrates as required to comply with allowable variation.

3.3 PREPARATION

- A. Etch concrete substrate as may be required to remove curing compounds or other substances that would interfere with proper bond of adhesive for resilient flooring. Rinse with water to remove all traces of treatment.
- B. Perform moisture tests on concrete slabs to determine that concrete surfaces are sufficiently cured and are ready to receive tile installation.
- C. Concrete Primer: Apply concrete slab primer if recommended by tile manufacturer, prior to application of the adhesive. Apply in compliance with manufacturer's directions.

3.4 ALLOWABLE TOLERANCES

- A. Allowable Tolerances in Finished Work: Do not exceed the following deviations from level and plumb, and from elevations, locations, slopes and alignment shown.
 - 1. Floors: 1/8" in 10'-0" run, any direction; 1/32" offset at any location.

3.5 INSTALLATION

- A. Install resilient flooring only after all finishing operations, including painting, have been completed and permanent heating system is operating. Moisture content of concrete slabs, building air temperature and relative humidity must be within limits recommended by tile manufacturer.
- B. Place resilient flooring with adhesive cement in strict compliance with the manufacturer's recommendations. Butt flooring tightly to vertical surfaces, thresholds, nosings and edgings. Scribe around obstructions and to produce neat joints, laid tight, even and in straight, parallel lines. Extend flooring into toe spaces, door reveals, and into closet and similar openings.
- C. Maintain reference markers, holes, or openings that are in place or plainly marked for

future cutting by repeating on the finish flooring as marked in the subfloor. Use chalk or other non-permanent marking devices.

- D. Lay flooring from center marks established with principal walls, discounting minor off-sets, so that flooring at opposite edges of the room are of equal width. Adjust as necessary to avoid use of small cut widths at room perimeters. Lay flooring square to room axis, unless otherwise shown.
- E. Match flooring for color and pattern by using material from cartons in the same sequence as manufactured and packaged. Cut flooring neatly to and around all fixtures. Damaged or deformed flooring is not acceptable.
- F. Tightly cement flooring to sub-base without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks through flooring, or other surface imperfections.
- G. Lay flooring with grain running in the same direction.
- H. Roll flooring with a 3 section 110 lb. roller three times after installation.
- I. Place resilient edge strips tightly butted to tile and secure with adhesive. Provide edging strips at all unprotected edges of tile, unless otherwise shown.

3.6 CLEANING AND PROTECTION

- A. Remove any excess adhesive or other surface blemishes from flooring, using neutral type cleaners as recommended by the tile manufacturer. Protect installed flooring from damage by use of heavy Kraft paper or other covering.
- B. Finishing: After completion of the project and just prior to the final inspection of the work, thoroughly clean flooring and accessories. Apply two (2) coats of wax to tile floors, and buff using materials as specified herein, or as recommended by manufacturer.

END OF SECTION

**SECTION 09 69 00
ACCESS FLOORING**

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Work of this section includes, but is not limited to: access floor panels, floor coverings, understructure, and electrical, data and communication accessories.

1.2 RELATED SECTIONS

- A. Concrete sealer shall be compatible with pedestal adhesive, see Division 3.
- B. See Division 26 Section "Grounding and Bonding for Electrical Systems" for connection to ground of access flooring understructure. Note: The electrical engineer or contractor shall determine requirements for grounding and the electrical contractor shall provide the necessary labor and materials to electrically connect the access flooring to the building ground if it is required.

1.3 ENVIRONMENTAL CONDITIONS

- A. Area to receive and store access floor materials shall be enclosed and maintained at ambient temperatures between 35° to 95° F and a minimum relative humidity of 20%. All floor panels shall be stored at ambient temperatures between 50° to 90° F for at least 24 hours before installation begins. All areas of installation shall be enclosed and maintained at ambient temperature between 50° to 90° F and at relative humidity levels between 20% to 80% and shall remain within these environmental limits throughout occupancy.

1.4 REFERENCES

- A. CISCA (Ceilings & Interior Systems Construction Association) - "Recommended Test Procedures for Access Floors" shall be used as a guideline when presenting load performance product information.

1.5 PERFORMANCE CERTIFICATION

- A. Product tests shall be witnessed and certified by independent engineering and testing laboratory based in the U.S. with a minimum of five years experience testing access floor components in accordance CISCA "Recommended Test Procedures for Access Floors".

1.6 PERFORMANCE REQUIREMENTS

- A. Design Load: Panel supported on actual understructure system capable of supporting a point load of 1250 lbs. applied on a one square inch area at any location on the panel without experiencing permanent set (as defined by CISCA) exceeding 0.010 inch. The loading method used to determine design (allowable) load shall be in conformance with CISCA Concentrated Load test method but with panel tested on actual understructure instead of steel blocks.
- B. Safety Factor: Panel supported on actual understructure system capable of withstanding a point load of no less than (2) two times the design load rating on a one square inch area anywhere on the panel without failure when tested in accordance with CISCA A/F, Section 2 "Ultimate Loading". Failure is defined as the point at which the system will no longer accept the load.
- C. Ultimate Load: Panel supported on actual understructure system capable of supporting a point load of at least 2000 lbs. applied on a one square inch area at any location on the panel without failure (i.e. minimum safety factor of 2) when tested in accordance with CISCA A/F, Section 2, "Ultimate Loading".
- D. Rolling Load: Panel supported on actual understructure system capable of withstanding the following rolling loads at any location on the panel without developing a local and overall surface deformation greater than 0.040 inch when tested in accordance with CISCA A/F, Section 3, "Rolling Loads". Note: Wheel 1 and 2 tests are performed on separate panels.
CISCA Wheel 1: (3" dia x 1-13/16" wide): 800 lbs. Passes: 10
CISCA Wheel 2: (6" dia x 2" wide): 600 lbs. Passes: 10,000
- E. Impact Load: Panel supported on actual understructure system capable of supporting an impact load of 150 lbs. dropped from a height of 36 inches onto a one square inch area at any location on the panel when tested in accordance with CISCA A/F Section 8, "Drop Impact Load Test".
- F. Panel Cutout: Panel with an 8.625" diameter interior cutout shall be capable of withstanding an ultimate load of 2000 lbs. without failure without the use of additional supports.

- G. Flammability: Panel shall meet *Class A* Flame spread requirements for flame spread and smoke development. Tests shall be performed in accordance with ASTM-E84-1998, Standard Test Method for Surface Burning Characteristics for Building Materials.
- H. Combustibility: Panel shall qualify as noncombustible by demonstrating compliance with requirements of ASTM E 136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
- I. Recycled Content: Panel and understructure system shall have a minimum post-consumer recycled content of 18% and a minimum total recycled content of 49%.
- J. Pedestal Axial Load: Pedestal support assembly to provide a minimum 6000 lb. axial load without permanent deformation when tested in accordance with CISC A/F, Section 5, "Pedestal Axial Load Test".
- K. Pedestal Overturning Moment: Pedestal support assembly to provide an average overturning moment of 1000 in-lbs. when glued to a clean, sound, uncoated concrete surface when tested in accordance with CISC A/F, Section 6, "Pedestal Overturning Moment Test".

1.7 DESIGN REQUIREMENTS

- A. Access floor system, where indicated on the design documents, shall consist of modular and removable fully encased cementitious filled welded steel panels fastened onto, and supported by adjustable height pedestal assemblies. Pedestal head and panel corner design must provide a positive location and lateral engagement of the panel to the understructure support system without the use of fasteners.
- B. Panels shall be easily removed by one person with a suction cup lifting device and shall be interchangeable except where cut for special conditions.
- C. Quantities, finished floor heights (FFH) and location of accessories shall be as specified on the contract drawings.

1.8 SUBMITTALS

- A. Detail sheets, for each proposed product type, which provide the necessary information to describe the product and its performance.
- B. Test reports, certified by an independent testing laboratory with a minimum of five years experience testing access floor components in accordance CISC A Recommended Test Procedures, certifying that component parts perform as specified.
- C. Manufacturer's installation instructions and guidelines.
Manufacturer's Owner Manual outlining recommended care and maintenance procedures.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Access floor system manufactured by Tate Access Floors, Inc. shall consist of the ConCore® 1250 access floor panel supported by the PosiLock understructure system.
- B. Alternative products shall meet or exceed the feature requirements as indicated herein and the performance requirements outlined in Section 1.8 and must receive prior written approval by the architect or designer.
- C. Access floor manufacturer shall be ISO9001:2015 certified demonstrating it has a robust and well documented quality management system with continual improvement goals and strategies.
- D. Access floor manufacturer's facilities shall be ISO14001:2015 certified demonstrating that they maintain an environmental management system.
- E. Access floor manufacturer's facilities shall be OHSAS 18001:2018 certified demonstrating that they maintain an Occupational Health and Safety Management system.

2.2 PEDESTALS

- A. Pedestal assemblies shall be corrosive resistant, all steel welded construction, and provide an adjustment range of +/- 1" for finished floor heights 6" or greater.
- B. Pedestal assemblies shall provide a means of leveling and locking the assembly at a selected height, which requires deliberate action to change height setting and prevents vibration displacement.
- C. Pedestal head shall be designed with locating tabs and integral shape to interface with the panel for positive lateral retention and positioning without fasteners. Note: This allows the floor to be installed during the construction process without screws so that access by other related trades can be accomplished quickly and easily. It also enables the user to have a mixed installation of fastened and unfastened panels within the same installation.
- D. Hot dip galvanized steel pedestal head shall be welded to a threaded rod which includes a specially designed adjusting nut. The nut shall provide location lugs to engage the pedestal base assembly, such that deliberate action is required to change the height setting.

- E. Threaded rod shall provide a specially designed anti-rotation device, such that when the head assembly is engaged in the base assembly, the head cannot freely rotate (for FFH of 6" or greater). Note: This prevents the assembly from inadvertently losing its leveling adjustment when panels are removed from the installation during use.
- F. Hot dip galvanized pedestal base assembly shall consist of a formed steel plate with no less than 16 inches of bearing area, welded to a 7/8" square steel tube and shall be designed to engage the head assembly.

2.3 FLOOR PANELS

- A. Panels shall consist of a top steel sheet welded to a formed steel bottom pan filled internally with a lightweight cementitious material. Mechanical or adhesive methods for attachment of the steel top and bottom sheets are unacceptable.
- B. Cementitious fill material shall be totally encased within the steel welded shell except where cut for special conditions. Note: This greatly reduces the potential for dust in the environment from exposed cement materials.
- C. Panels shall have an electrically conductive epoxy paint finish.
- D. Corner of panels shall have a locating tab and integral shape design to interface with the pedestal head for positive lateral retention and positioning with or without fasteners.
- E. Fastening of panels to pedestal heads shall be accomplished by a machine screw which is specially designed to be self capturing within the body of the panel. Note: This prevents the inadvertent loss of panel fastening screws when accessing the underfloor space and potential damage to objects by screws which extend beyond the depth of the panel.

~~F. Top surface of the panel shall have an option for four positioning location holes to engage positioning buttons on the PosiTile® carpet tile for precise matching of the carpet tile to the panel.~~

2.4 ACCESSORIES

- A. Provide manufacturer's standard steps, ramps, fascia plate, perimeter support, and grommets where indicated on the contract drawings.
- B. Provide 3 spare floor panels and 12 square feet of understructure systems for each type used in the project for maintenance stock. Deliver to project in manufacturer's standard packaging clearly marked with the contents.
- C. Provide one panel lifting device.
- D. When applicable, provide manufacturer's standard underfloor air systems components (including grilles and diffusers) where indicated on the contract drawings.

2.5 FINISHES

- A. Finish the surface of floor panels with floor covering material as indicated on the contract drawings.

2.6 FABRICATION TOLERANCES

- A. Floor panel flatness measured on a diagonal: +/- 0.035"
- B. Floor panel flatness measured along edges: +/- 0.025"
- C. Floor panel width or length of required size: +/- 0.010"
- D. Floor panel squareness tolerance: +/- 0.015"

PART 3 – EXECUTION

3.1 PREPARATION

- A. Examine structural subfloor for unevenness, irregularities and dampness that would affect the quality and execution of the work. Do not proceed with installation until structural floor surfaces are level, clean, and dry as completed by others.
- B. Concrete sealers, if used, shall be identified and proven to be compatible with pedestal adhesive. Verify that adhesive achieves bond to slab before commencing work.
- C. Verify dimensions on contract drawings, including level of interfaces including abutting floor, ledges and doorsills.
- D. The General Contractor shall provide clear access, dry subfloor area free of construction debris and other trades throughout installation of access floor system.
- E. Area to receive and store access floor materials shall be enclosed and maintained at ambient temperatures between 35° to 95° F and a minimum relative humidity of 20%. At least 24 hrs. before installation begins, all floor panels shall be stored at ambient temperatures between 50° to 90° F and relative humidity levels between 20% to 80% and shall remain within these environmental limits throughout occupancy.

3.2 INSTALLATION

- A. Pedestal locations shall be established from approved shop drawings so that mechanical and electrical work can be installed without interfering with pedestal installation.
- B. Installation of access floor shall be coordinated with other trades to maintain the integrity of the installed system. All traffic on access floor shall be controlled by access floor installer. No traffic but that of access floor installers shall be permitted on any floor area for 24 hours to allow the pedestal adhesive to set. Access floor panels shall not be removed by other trades for 72 hours after their installation.
- C. Floor system and accessories shall be installed under the supervision of the manufacturer's authorized representative and according to manufacturer's recommendations.
- D. No dust or debris producing operations by other trades shall be allowed in areas where access floor is being installed to ensure proper bonding of pedestals to subfloor.
- E. Access floor installer shall keep the subfloor broom clean as installation progresses.
- F. Partially complete floors shall be braced against shifting to maintain the integrity of the installed system where required.
- G. Additional pedestals as needed shall support panels where floor is disrupted by columns, walls, and perimeter cutouts.
- H. Understructure shall be aligned such that all uncut panels are interchangeable and fit snugly but do not bind when placed in alternate positions.
- I. Finished floor shall be level, not varying more than 0.062" in 10 feet or 0.125" overall.
- J. Inspect system prior to application of floor covering and replace any floor panels that are cracked, broken and structurally damaged and do not comply with specified requirements.
- K. Installed panels shall be straight and square and spaced so that the distance from one end to the other of any line of 12 panels is not less than 24 feet and does not exceed 24' 1/8".
- L. Acceptance: General contractor shall accept floor in whole or in part prior to allowing use by other trades.
- M. All cable and wire openings shall be sealed with manufacturer's removable cable cutout seal or grommets.

END OF SECTION

SECTION 09 83 16
ACOUSTICAL SPRAY-ON SYSTEM

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the acoustical spray-on system as shown on the drawings and/or specified herein, including, but not limited to, the following:
 - 1. Acoustical sprayed cellulose insulation.

1.3 RELATED SECTIONS

- A. Steel Deck - Section 05 31 00.
- B. HVAC - Division 23, for clips, hangers, supports, sleeves, ducts, piping and other attachments.
- C. Electrical - Division 26, for conduits and other suspended items.

1.4 QUALITY ASSURANCE

- A. Manufacturer must have a current Underwriters Laboratories (UL) Code Evaluation Report.
- B. Manufacturer must be in compliance with the 2009-2021 International Building Code.
- C. Manufacturer must be ISO 9001:2015 Certified.
- D. Manufacturer must be Forest Stewardship Council (FSC) Chain-of-Custody Certified.
- E. Applicator: Licensed by manufacturer.
- F. Manufacturer must subscribe to independent laboratory follow-up inspection services of Underwriters Laboratories and Factory Mutual. Each bag shall be labeled accordingly.
- G. Mock-up: Apply a 100 square foot representative sample to be reviewed by the Architect and/or Owner prior to proceeding.
- H. Manufacturer shall have a minimum 10-year successful performance history of producing and installing spray-applied cellulose on similar projects
- I. Material must be tested in accordance with ASTM E 1042 by a NVLAP accredited testing laboratory.

1.5 SUBMITTALS

- A. Submit product data that the product meets or exceeds the following specified requirements.
 - 1. Bond strength shall be greater than 150 psf per ASTM E 736.
 - 2. Product shall be Class 1 Class A per ASTM E 84/ UL 723.
 - 3. Non-corrosive per ASTM C 1149
 - 4. Bond Deflection per ASTM E 759: 6" Deflection in 10' Span – No Spalling or Delamination.
 - 5. R-Value to be 3.70 per inch per ASTM C 518.
 - 6. Comply with 2015 IBC Section 803.12 stability requirements for interior finishes.
 - 7. Meet ASTM C 1149
 - 8. Product shall be Cradle to Cradle® Certified v.3.1 or higher to a minimum certification level of Bronze
 - 9. Product shall be UL GREENGUARD Gold Certified
 - 10. Product must have a publicly available Health Product Declaration (HPD) to 100 PPM
 - 11. Product must have a third-party verified, publicly available, product-specific Environmental Product Declaration per ISO 14025
 - 12. Manufacturer's written certification that product contains no asbestos, fiberglass or other man-made mineral fibers.
 - 13. Copy of manufacturer's ISO 9001:2015 Certification.
 - 14. Minimum Fiber Recycled Content to be 80%.
 - 15. Cannot contain any added Urea-Formaldehyde Resins

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver in original, unopened containers bearing name of manufacturer, product identification and reference to U.L. testing.
- B. Store materials dry, off ground, and under cover.

- C. Protect liquid adhesive from freezing.
- D. Water to be potable.

1.7 PROJECT CONDITIONS

- A. Do not install acoustical spray-on system until wet-work in space is completed and nominally dry, clips, anchors and hangers have been installed, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. International Cellulose Corporation 12315 Robin Boulevard, Houston, Texas 77045, Phone: (713) 433-6701 or (800) 444-1252, Fax: (713) 433-2029 Website: www.spray-on.com Email: icc@spray-on.com
- B. For approved applicators contact ICC at (800) 444-1252.

2.2 MATERIALS

- A. K-13 Spray-On-Systems.
 - 1. Color shall be from Manufacturer's standard color chart or custom color as noted
 - 2. Each bag must be labeled with appropriate UL classification and FM markings
 - 3. Each drum of adhesive must be labeled "SK-2000 adhesive to be used with K-13"

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine surfaces and report unsatisfactory conditions in writing. Do not proceed until unsatisfactory conditions are corrected.
- B. Verify surfaces to receive spray insulation to determine if priming/sealing is required to ensure bonding and/or to prevent discoloration caused by migratory stains.

3.2 PREPARATION

- A. Provide masking, drop cloths or other satisfactory coverings for materials/surfaces that are not to receive insulation to protect from over-spray.
- B. Coordinate installation of the sprayed cellulose fiber with work of other trades.
- C. Prime surfaces as required by manufacturer's instructions or as determined by examination.
- D. Prime all gypsum board surfaces with high quality, commercial, gypsum board primer

3.3 INSTALLATION

- A. Install spray applied insulation according to manufacturer's recommendations.
- B. Comply with local Building Code requirements.
- C. Install spray applied insulation to achieve an average thickness of 1-1/2".

3.1 ADJUST AND CLEAN

- A. Comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09 90 00
PAINTING AND FINISHING

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the painting and finishing as shown on the drawings and/or specified herein, including, but not limited to, the following:
1. Prime painting unprimed surfaces to be painted under this Section.
 2. Painting all items furnished with a prime coat of paint, including touching up of or repairing of abraded, damaged or rusted prime coats applied by others.
 3. Painting all ferrous metal (except stainless steel) exposed to view.
 4. Painting all galvanized ferrous metals exposed to view.
 5. Painting interior concrete block exposed to view.
 6. Painting gypsum drywall exposed to view.
 7. Sealing concrete floors.
 8. Painting of wood exposed to view, except items which are specified to be painted or finished under other Sections of these specifications. Back painting of all wood in contact with concrete, masonry or other moisture areas.
 9. Painting pipes, pipe coverings, conduit, ducts, insulation, hangers, supports and other mechanical and electrical items and equipment exposed to view.
 10. Painting surfaces above, behind or below grilles, gratings, diffusers, louvers, lighting fixtures, and the like, which are exposed to view through these items.
 11. Incidental painting and touching up as required to produce proper finish for painted surfaces, including touching up of factory finished items.
 12. Painting of any surface not specifically mentioned to be painted herein or on drawings, but for which painting is obviously necessary to complete the job, or work which comes within the intent of these specifications, shall be included as though specified.

1.3 RELATED SECTIONS

- A. Cross Laminated Timber - Section 06 17 19.
- B. Structural Glued Laminated Timber – Section 06 18 13.
- C. Carpentry - Section 06 20 00.
- D. Shop priming is required on some, but not all of the items scheduled to be field painted. Refer to other Sections of work for complete description.
- E. Shop Coat on Machinery and Equipment: Refer to the Sections under which various items of manufactured equipment with factory applied shop prime coats are furnished, including, but not necessarily limited to, the following Sections. All items of equipment furnished with prime coat finish shall be finish painted under this Section.
1. Plumbing - Division 22.
 2. Heating, Ventilation and Air Conditioning - Division 23.
- F. Color Coding of Mechanical Piping and Electrical Conduits – Divisions 22 and 26.
1. This Color Coding consists of an adhesive tape system and is in addition to painting of piping and conduits under this Section, as specified above.

1.4 MATERIALS AND EQUIPMENT NOT TO BE PAINTED

- A. Items of equipment furnished with complete factory finish, except for items specified to be given a finish coat under this Section.
- B. Factory-finished toilet partitions.
- C. Factory-finished acoustical tile.
- D. Non-ferrous metals, except for items specified and/or indicated to be painted.
- E. Finished hardware, except for hardware that is factory primed.
- F. Surfaces not to be painted shall be left completely free of droppings and accidentally applied materials resulting from the work of this Section.

1.5 QUALITY ASSURANCE

- A. Pre-Installation Conference: To be attended by General Contractor, Painting Sub-Contractor, Architect, Oneida County and MVCC representatives to review the job site mock-ups. Final painting shall not proceed until job site mock-ups are approved.
- B. Job Site Mock-Ups
 - 1. In addition to the samples specified herein to be submitted for approval, apply in the field, at their final location, each type and color of approved paint materials, applied 10 feet wide, floor to ceiling of wall surfaces, 10 feet x 10 feet of ceiling surface, before proceeding with the remainder of the work, for approval by the Architect. Paint mock-ups to include door and frame assembly, and exposed ceiling dry fall (dry fog).
 - 2. These applications when approved will establish the quality and workmanship for the work of this Section.
 - 3. Repaint individual areas which are not approved, as determined by the Architect, until approval is received. Assume at least two paint mock-ups of each color and gloss for approval.
- C. Qualification of Painters: Use only qualified journeyman painters for the mixing and application of paint on exposed surfaces.
- D. Paint Coordination: Provide finish coats that are compatible with the prime coat paints used. Review other Sections of these specifications in which prime paints are to be provided to ensure compatibility of the total coatings system for the various substrates. Upon request from other subcontractors, furnish information on the characteristics of the finish materials proposed to be used, to ensure that compatible prime coats are used. Provide barrier coats over incompatible primers or remove and re-prime as required. Notify the Architect in writing of any anticipated problems using the coating systems as specified with substrates primed by others.
- E. All paints must conform to the Volatile Organic Compounds (VOC) standards of prevailing codes and ordinances.

1.6 SUBMITTALS

- A. Materials List: Before any paint materials are delivered to the job site, submit to the Architect a complete list of all materials proposed to be furnished and installed under this portion of the work. This shall in no way be construed as permitting substitution of materials for those specified or accepted for this work by the Architect.
- B. Samples
 - 1. Accompanying the materials list, submit to the Architect copies of the full range of colors available in each of the proposed products.
 - 2. Upon direction of the Architect, prepare and deliver to the Architect two (2) identical sets of samples of each of the selected colors and glosses painted onto 8-1/2" x 11" x 1/4" thick material; whenever possible, the material for samples shall be the same material as that on which the coating will be applied in the work.
- C. Manufacturer's Recommendations: In each case where material proposed is not the material specified or specifically described as an acceptable alternate in this Section of these specifications, submit for the Architect's review the current recommended method of application published by the manufacturer of the proposed material.
- D. Closeout Submittal
 - 1. Coating Maintenance Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual such as Sherwin Williams "Custodian Project Color and Product Information" report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, MSDS, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.7 PRODUCT HANDLING

- A. Deliver all paint materials to the job site in their original unopened containers with all labels intact and legible at time of use.

- B. Protection
 - 1. Store only the approved materials at the job site, and store only in a suitable and designated area restricted to the storage of paint materials and related equipment.
 - 2. Use all means necessary to ensure the safe storage and use of paint materials and the prompt and safe disposal of waste.
 - 3. Use all means necessary to protect paint materials before, during and after application and to protect the installed work and materials of all other trades.
- C. Replacements: In the event of damage, immediately make all repairs and replacements necessary.

1.8 EXTRA STOCK

- A. Upon completion of this portion of the Work, deliver to the Owner an extra stock of paint equaling approximately ten (10) percent of each color and gloss used and each coating material used, with all such extra stock tightly sealed in clearly labeled containers.

1.9 JOB CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 50 degrees F. and 90 degrees F., unless otherwise permitted by the paint manufacturer's printed instructions.
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 45 degrees F. and 95 degrees F. unless otherwise permitted by the paint manufacturer's printed instructions.
- C. Do not apply paint in snow, rain, fog or mist; or when the relative humidity exceeds eighty-five (85) percent; or to damp or wet surfaces; unless otherwise permitted by the paint manufacturer's printed instructions.
- D. Painting may be continued during inclement weather only if the areas and surfaces to be painted are enclosed and heated within the temperature limits specified by the paint manufacturer during application and drying periods.

PART 2 PRODUCTS

2.1 PAINT MANUFACTURERS

- A. Except as otherwise noted, provide the painting products listed for all required painting made by one of the manufacturers listed in the paint schedule (Article 2.5). These companies are Benjamin Moore, PPG Paint (Glidden Professional), and Sherwin Williams (S-W). Comply with number of coats and required minimum mil thicknesses as specified herein.

2.2 MATERIALS

- A. Provide undercoat paint produced by the same manufacturer as the finish coats. Use only thinners approved by the paint manufacturer and use only to recommended limits.
- B. Colors and Glosses: All colors and glosses shall be as selected by the Architect. Certain colors will require paint manufacturer to prepare special factory mixes to match colors selected by the Architect. Color schedule (with gloss) shall be furnished by the Architect.
- C. Coloring Pigment: Products of or furnished by the manufacturer of the paint or enamel approved for the work.
- D. Sansin KP-12UVW Coating System.
- E. Driers, Putty, Spackling Compound, Patching Plaster, etc.: Best quality, of approved manufacture.
- F. Heat-Resistant Paint: Where required, use heat resistant paint when applying paint to heating lines and equipment.

2.3 GENERAL STANDARDS

- A. The various surfaces shall be painted or finished as specified below in Article 2.4. However, the Architect reserves the right to change the finishes within the range of flat, semi-gloss or gloss, without additional cost to the Owner.
- B. All paints, varnishes, enamels, lacquers, stains and similar materials must be delivered in the original containers with the seals unbroken and label intact and with the manufacturer's instructions printed thereon.
- C. All painting materials shall bear identifying labels on the containers with the manufacturer's instructions printed thereon.

- D. Paint shall not be badly settled, caked or thickened in the container, shall be readily dispersed with a paddle to a smooth consistency and shall have excellent application properties.
- E. Paint shall arrive on the job color-mixed except for tinting of under-coats and possible thinning.
- F. All thinning and tinting materials shall be as recommended by the manufacturer for the particular material thinned or tinted.
- G. It shall be the responsibility of the Contractor to see that all mixed colors match the color selection made by the Architect prior to application of the coating.

2.4 SCHEDULE OF FINISHES

- A. High Performance Coating on Exterior Galvanized Ferrous Metals
 - First Coat: "PittGuard Rapid Coat Epoxy 95-245 Series by PPG, "Series 27WB Typoxy" by Tnemec; "Epoxy Mastic Coating V 160" by Benjamin Moore Corotech or "Recoatable Epoxy Primer 867-45" by Sherwin Williams.
 - Second Coat: "Pittthane Ultra 95-812 (Gloss)" or "High Build 95-8800 (Semi-Gloss)" by PPG; "Series 1080 (gloss) Endura-Shield WB" or "Series 1081 (semi-gloss) Endura-Shield WB" by Tnemec; "Acrylic Aliphatic Urethane V 500 (Gloss)" or "V 510 (Semi-Gloss)" by Benjamin Moore Corotech or "Hi-Solids Urethane B65-300/350" by Sherwin Williams.
- B. High Performance Coating on Exterior Non-Galvanized Ferrous Metals
 - Primer: "Amercoat 68HS Epoxy Zinc-Rich Primer" by PPG; "Series 94-H₂O Hydro-Zinc" by Tnemec; "Organic Zinc Rich Primer V 170" by Benjamin Moore Corotech or "Zinc Clad II Plus Inorganic Zinc Rich Coating B69V212" by Sherwin Williams.
 - Second Coat: "Pitt Guard Rapid Coat Epoxy 95-245" by PPG; "Series 27WB Typoxy" by Tnemec; "Epoxy Mastic Coating V 160" by Benjamin Moore Corotech or "Macropoxy 646 Fast Cure Epoxy B58-600" by Sherwin Williams.
 - Third Coat: "Pitthane Ultra 95-812 (Gloss)" or "High Build 95-8800 (Semi-Gloss)" by PPG; "Series 1070V (gloss) Fluoronar" or "Series 1071V (semi-gloss) Fluoronar" by Tnemec; "Acrylic Aliphatic Urethane V 500 (Gloss)" or "V 510 (Semi-Gloss)" by Benjamin Moore Corotech or "Hi-Solids Polyurethane B65-300/350" by Sherwin Williams.
- C. Interior Ferrous Metal
 - Satin Finish/Latex
 - Primer: Benj. Moore Ultra Spec HP Acrylic Metal Primer (HP04)
PPG Pitt Tech Plus DTM Acrylic Primer 4020
Sherwin-Williams Pro-Industrial Pro-Cryl Universal Primer B66-3100 Series
 - First Coat: Benj. Moore Ultra Spec-HP DTM Acrylic Low Luster (HP25)
PPG Pitt Glaze WB1 Pre-Catalyzed Eggshell Epoxy 16-310
S-W Pro Industrial Acrylic Eg-Shel, B66-660 Series
 - Second Coat: Benj. Moore Ultra Spec-HP DTM Acrylic Low Luster (HP25)
PPG Pitt Glaze WB1 Pre-Catalyzed Eggshell Epoxy 16-310
S-W Pro Industrial Acrylic Eg-Shel, B66-660 Series
 - a. Total DFT not less than: 6 mils
 - Semi-Gloss Finish/Latex (hollow metal doors and frames)
 - Primer: Benj. Moore Ultra Spec-HP Acrylic Metal Primer (HP04)
PPG Devflex 4020 PF DTM Primer/Flat Finish
Sherwin-Williams Pro-Industrial Pro-Cryl Universal Primer B66-3100 Series
 - First Coat: Benj. Moore Ultra Spec HP DTM Acrylic Semi-Gloss (HP29)
PPG Pitt Glaze WB1 Pre-Catalyzed Semi-Gloss Epoxy 16-510
S-W Pro Industrial Acrylic Semi-Gloss, B66-650 Series
 - Second Coat: Benj. Moore Ultra Spec HP DTM Acrylic Semi-Gloss (HP29)
PPG Pitt Glaze WB1 Pre-Catalyzed Semi-Gloss Epoxy 16-510
S-W Pro Industrial Acrylic Semi-Gloss, B66-650 Series
 - a. Total DFT not less than: 6 mils
- D. Interior exposed ceilings: Ferrous and galvanized metal deck, ductwork, piping, conduits, etc.
 - Flat Finish/Latex Dry Fall
 - Primer: Benj. Moore Acrylic Metal Primer HP1100

- PPG Pitt-Tech Plus EP Acrylic Primer
S-W Pro Industrial Pro-Cryl Primer
- First Coat: Benj. Moore Latex Dry Fall Flat 395
PPG Speedhide Super Tech Interior Latex Dry-Fog Flat 6-725XI
S-W Pro Industrial Waterborne Acrylic Dryfall B42W02191-20 Dry Fall Flat
- Second Coat: Benj. Moore Latex Dry Fall Flat 395
PPG Speedhide Super Tech Interior Latex Dry-Fog Flat 6-725XI
S-W Pro Industrial Waterborne Acrylic Dryfall B42W02191-20 Dry Fall Flat
- a. Total DFT not less than: 10 mils
- E. Interior Concrete Block
Flat Finish/Vinyl Acrylic Latex over Filler
- Block Filler: Benj. Moore Ultra Spec Masonry Int./Ext. High Build Block Filler (571)
PPG Speedhide HI Fill Latex Block Filler 6-15XI
S-W Pro Industrial Heavy-Duty Block Filler, B42-150
- First Coat: Benj. Moore Ultra Spec 500 Interior Flat Latex (N536)
PPG Speedhide Zero Interior Latex Flat 6-4110XI
S-W ProMar 200 Zero VOC Interior Latex Flat, B30-12600 Series
- Second Coat: Benj. Moore Ultra Spec 500 Interior Flat Latex (N536)
PPG Speedhide Zero Interior Latex Flat 6-4110XI
S-W ProMar 200 Zero VOC Interior Latex Flat, B30-12600 Series
- a. Total DFT not less than: 10.7 mils
- Eggshell Finish/Vinyl Acrylic Latex Over Filler (public areas)
- Block Filler: Benj. Moore Ultra Spec Masonry Int./Ext. High Build Block Filler (571)
PPG Speedhide HI Fill Latex Block Filler 6-15XI
S-W Pro Industrial Heavy-Duty Block Filler, B42-150
- First Coat: Benj. Moore Ultra Spec 500 Interior Latex Eggshell (N538)
PPG Speedhide Zero Interior Latex Eggshell 6-4310XI
S-W ProMar 200 Zero VOC Interior Latex Eggshell, B20-1900 Series
- Second Coat: Benj. Moore Ultra Spec 500 Interior Latex Eggshell (N538)
PPG Speedhide Zero Interior Latex Eggshell 6-4310XI
S-W ProMar 200 Zero VOC Interior Latex Eggshell, B20-1900 Series
- a. Total DFT not less than: 10.9 mils
- Semi-Gloss Finish/Vinyl Acrylic Latex over Filler (labs, mechanical spaces)
- Block Filler: Benj. Moore Ultra Spec Masonry Int./Ext. High Build Block Filler (571)
PPG Speedhide HI Fill Latex Block Filler 6-15XI
S-W Pro Industrial Heavy-Duty Block Filler, B42-150
- First Coat: Benj. Moore Ultra Spec 500 Interior Latex Gloss (N540)
PPG Speedhide Zero Interior Semi-Gloss Latex, 6-4510XI Series
S-W ProMar 200 Zero VOC Interior Latex S. Gloss, B31-2600 Series
- Second Coat: Benj. Moore Ultra Spec 500 Interior Latex Gloss (N540)
PPG Speedhide Zero Interior Semi-Gloss Latex, 6-4510XI Series
S-W ProMar 200 Zero VOC Interior Latex S. Gloss, B31-2600 Series
- a. Total DFT not less than: 10.7 mils
- F. Interior Drywall
Flat Finish/Vinyl Acrylic Latex (ceilings)
- Primer: Benj. Moore Ultra Spec 500 Interior Latex Primer (N534)
PPG Speedhide Zero Interior Latex Primer 6-4900XI
S-W ProMar 200 Zero VOC Interior Latex Primer, B28-2600
- First Coat: Benj. Moore Ultra Spec 500 Latex Flat (N536)
PPG Speedhide Zero Interior Latex Flat 6-4110XI
S-W ProMar 200 Zero VOC Interior Latex Flat, B30-2600 Series
- Second Coat: Benj. Moore Ultra Spec 500 Latex Flat (N536)
PPG Speedhide Zero Interior Latex Flat 6-4110XI
S-W ProMar 200 Zero VOC Interior Latex Flat, B30-2600 Series
- a. Total DFT not less than: 8 mils

Eggshell Finish/Vinyl Acrylic Latex (walls)

Primer: Benj. Moore Ultra Spec 500 Interior Latex Primer (N534)

PPG Speedhide Zero Interior Latex Primer 6-4900XI

S-W ProMar 200 Zero VOC Interior Latex Primer, B28-2600

First Coat: Benj. Moore Ultra Spec 500 Interior Latex Eggshell (N538)

PPG Speedhide Zero Interior Latex Eggshell 6-4310XI

S-W ProMar 200 Zero VOC Interior Latex Eg-Shell, B20-1900 Series

Second Coat: Benj. Moore Ultra Spec 500 Interior Latex Eggshell (N538)

PPG Speedhide Zero Interior Latex Eggshell 6-4310XI

S-W ProMar 200 Zero VOC Interior Latex Eg-Shell B20-1900 Series

a. Total DFT not less than: 8 mils

2.5 PIPING AND MECHANICAL EQUIPMENT EXPOSED TO VIEW

- A. Paint all exposed piping, conduits, ductwork and mechanical and electrical equipment. Use heat resisting paint when applied to heating lines and equipment. The Contractor is cautioned not to paint or otherwise disturb moving parts in the mechanical systems. Mask or otherwise protect all parts as required to prevent damage.
- B. Exposed Uncovered Ductwork, Piping, Hangers and Equipment: Latex Enamel Undercoater and one (1) coat Acrylic Latex Flat.
- C. Exposed Covered Piping, Duct Work and Equipment: Primer/Sealer and one (1) coat Acrylic Latex Flat.
- D. Panel Boards, Grilles and Exposed Surfaces of Electrical Equipment: Latex Enamel Undercoater and two (2) coats Latex Semi-Gloss.
- E. Equipment or Apparatus with Factory-Applied Paint: Refinish any damaged surfaces to match original finish. Do not paint over name plates and labels.
- F. All surfaces of insulation and all other work to be painted shall be wiped or washed clean before any painting is started.
- G. All conduit, boxes, distribution boxes, light and power panels, hangers, clamps, etc., are included where painting is required.
- H. All items of Mechanical and Electrical trades which are furnished painted under their respective Contracts shall be carefully coordinated with the work of this Section so as to leave no doubt as to what items are scheduled to be painted under this Section.
- I. Wood Treatment:
 - 1. All exterior and interior wood material specified herein as Fire Retardant Treated (FRTW) shall be treated to comply with AWP Standard U1 to achieve a flame spread rating of not more than 25 (UL Class "FR-S") when tested in accordance with UL Test 723 or ASTM E 84. The fire-retardant chemicals used to treat the lumber must comply with FR-1 of AWP Standard P49 and be free of halogens, sulfates and ammonium phosphate.
- a. After treatment, kiln dry to a moisture content of fifteen (15) percent; if wood is to be painted or finished, kiln dry to a moisture content of twelve (12) percent. Treatment shall be equal to "Dricon" made by Arch Wood Protection Inc. or approved equal. Provide UL approved identification on treated materials.
 - 2. Preservative-Treated (PT) Lumber: For exterior blocking, roofing and sheet metal, and mass timber (Glulam/CLT), pressure treat wood with PTI (carbon-based preservative), Micronized Copper Azole (MCA), or similar preservative product that contains no arsenic or chromium. Preservative treated lumber shall comply with AWP Standard U1, (.25 lbs./cubic foot of chemical in wood). Commodity Specification A (sawn products), to the requirements of AWP Use Category XX (UCXX) for treatment with waterborne preservatives only. For example:
 - a. Exposed CLT at Overhangs: Use Category = UC3A
 - b. Glulam Beams: Use Category = UC4AContractor to submit PT lumber schedule identifying application, use category, and proposed preservative treatment. Confirm compatibility with hardware and fasteners in direct or indirect contact with PT wood.
- a. After treatment, kiln dry to a maximum moisture content of fifteen (15) percent. Treatment shall be equal to "Wolmanized ERAWood" made by Arch Wood Protection Inc. or approved equal.
 - 3. Treated wood which is cut or otherwise damaged shall be further treated in accordance with the AWP Standard M-4.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where painting and finishing are to be applied and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 GENERAL WORKMANSHIP REQUIREMENTS

- A. Only skilled mechanics shall be employed. Application may be by brush or roller. Spray application only upon acceptance from the Architect in writing and acceptance of mockup.
- B. The Contractor shall furnish the Architect a schedule showing when he expects to have completed the respective coats of paint for the various areas and surfaces. This schedule shall be kept current as the job progresses.
- C. The Contractor shall protect his work at all times and shall protect all adjacent work and materials by suitable covering or other method during progress of his work. Upon completion of the work, he shall remove all paint and varnish spots from floors, glass and other surfaces. He shall remove from the premises all rubbish and accumulated materials of whatever nature not caused by others and shall leave his part of the work in clean, orderly and acceptable condition.
- D. Remove and protect hardware, accessories, device plates, lighting fixtures, and factory finished work, and similar items, or provide ample in place protection. Upon completion of each space, carefully replace all removed items by workmen skilled in the trades involved.
- E. Remove electrical panel box covers and doors before painting walls. Paint separately and re-install after all paint is dry.
- F. All materials shall be applied under adequate illumination, evenly spread and flowed on smoothly to avoid runs, sags, holidays, brush marks, air bubbles and excessive roller stipple.
- G. Coverage and hide shall be complete. When color, stain, dirt or undercoats show through final coat of paint, the surface shall be covered by additional coats until the paint film is of uniform finish, color, appearance and coverage, at no additional cost to the Owner.
- H. All coats shall be dry to manufacturer's recommendations before applying succeeding coats.
- I. Do not apply paint behind frameless mirrors that use mastic for adhering to wall surface.

3.3 PREPARATION OF SURFACES

- A. General
 - 1. The Contractor shall be held entirely responsible for the finished appearance and satisfactory completion of painting work. Properly prepare all surfaces to receive paint, which includes cleaning, sanding, and touching-up of all prime coats applied under other Sections of the work. Broom clean all spaces before painting is started. All surfaces to be painted or finished shall be completely dry, clean and smooth.
 - 2. Perform all preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified, for each particular substrate condition.
 - 3. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease with clean cloths and cleaning solvents prior to mechanical cleaning. Program the cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- B. Metal Surfaces
 - 1. Weld Fluxes: Remove weld fluxes, splatters, and alkali contaminants from metal surfaces in an approved manner and leave surface ready to receive painting.
 - 2. Bare Metal: Thoroughly clean off all foreign matter such as grease, rust, scale and dirt before priming coat is applied. Clean surfaces, where solder flux has been used, with benzene. Clean surfaces by flushing with mineral spirits. For aluminum surfaces, wipe down with an oil free solvent prior to application of any pre-treatment.
- a. Bare metal to receive high performance coating specified herein must be blast cleaned SSPC SP-6 prior to application if field applied primer; coordinate with steel trades furnishing ferrous metals to receive this coating to insure that this cleaning method is followed.

3. Shop Primed Metal: Clean off foreign matter as specified for "Bare Metal." Prime bare, rusted, abraded and marred surfaces with approved primer after proper cleaning of surfaces. Sandpaper all rough surfaces smooth.
4. Galvanized Metal: Prepare surface as per the requirements of ASTM D 6386.
5. Metal Filler: Fill dents, cracks, hollow places, open joints and other irregularities in metal work to be painted with an approved metal filler suitable for the purpose and meeting the requirements of the related Section of work; after setting, sand to a smooth, hard finish, flush with adjoining surface.
- C. Gypsum Drywall Surfaces: Scrape off all projections and splatters, spackles all holes or depressions, including taped and spackled joints, sand smooth. Conform to standards established in Section 092900, "Gypsum Drywall."
- D. Wood Surfaces: Sand to remove all roughness, loose edges, splinters, or splinters and then brush to remove dust. Wash off grease or dirt with an approved cleaner. Fill all cracks, splits, nail holes, screw holes, and surface defects with putty after the priming coat has been applied. Putty shall be brought up flush with the surface and sanded smooth and touched-up with primer when dry.
- E. Block Masonry Surfaces: Thoroughly clean off all grit, grease, dirt, mortar drippings or splatters, and other foreign matter. Remove nibs or projections from masonry surfaces. Fill cracks, holes or voids not filled under the "Masonry" Section, with Portland cement grout, and bag surface so that it has approximately the same texture as the adjacent masonry surface.
- F. Testing for Moisture Content: Contractor shall test all masonry and drywall surfaces for moisture content using a reliable electronic moisture meter. Contractor shall also test latex type fillers for moisture content before application of top coats of paint. Do not apply any paint or sealer to any surface or to latex type filler where the moisture content exceeds seven (7) percent as measured by the electronic moisture meter.
- G. Touch-Up: Prime paint all patched portions in addition to all other specified coats.

3.4 MATERIALS PREPARATION

- A. Mix and prepare painting materials in strict accordance with the manufacturer's directions.
- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing, and application of paint in a clean condition, free of foreign materials and residue.
- C. Stir all materials before application to produce a mixture of uniform density, and as required during the application of the materials. Do not stir any film which may form on the surface into the material. Remove the film and, if necessary, strain the material before using.
- D. Tint each undercoat a lighter shade to facilitate identification of each coat where multiple coats of the same material are to be applied. Tint undercoats to match the color of the finish coat; provide sufficient difference in shade of undercoats to distinguish each separate coat.

3.5 APPLICATION

- A. General
 1. Apply paint by brush, roller or airless sprayer in accordance with the manufacturer's directions. Use brushes best suited for the type of material being applied. Use rollers of carpet, velvet back, or high pile sheep's wool as recommended by the paint manufacturer for material and texture required.
 2. The number of coats and paint film thickness required is the same regardless of the application method. Do not apply succeeding coats until the previous coat has completely dried. Sand between each enamel or varnish coat application with fine sandpaper or rub surfaces with pumice stone where required to produce an even, smooth surface in accordance with the coating manufacturer's directions.
 3. Apply additional coats when undercoats, stains, or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance. Give special attention to insure that all surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a film thickness equivalent to that of flat surfaces.
 4. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only.

- a. "Exposed surfaces" is defined as those areas visible when permanent or built-in fixtures, convactor covers, covers for finned tube radiation, grilles, etc., are in place in areas scheduled to be painted.
- 5. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint, before final installation of equipment.
- 6. Paint the back sides of access panels, removable or hinged covers to match the exposed surfaces.
- 7. Finish doors on tops, bottoms, and side edges the same as the faces, unless otherwise indicated.
- 8. Enamel finish applied to wood or metal shall be sanded with fine sandpaper and then cleaned between coats to produce an even surface.
- 9. Paste wood filler applied on open grained wood after beginning to flatten, shall be wiped across the grain of the wood, then with a circular motion, to secure a smooth, filled, clean surface with filler remaining in open grain only. After overnight dry, sand surface with the grain until smooth before applying specified coat.
- B. Scheduling Painting
 - 1. Apply the first coat material to surfaces that have been cleaned, pre-treated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
 - 2. Allow sufficient time between successive coatings to permit proper drying. Do not re-coat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.
- C. Prime Coats: Re-coat primed and sealed walls and ceilings where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.
- D. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage.
- E. Touching-Up of Factory Finishes: Unless otherwise specified or shown, materials with a factory finish shall not be painted at the project site. To touch up, the Contractor shall use the factory finished material manufacturer's recommended paint materials to repair abraded, chipped, or otherwise defective surfaces.

3.6 PROTECTION

- A. Protect work of other trades, whether to be painted or not, against damage by the painting and finishing work. Leave all such work undamaged. Correct any damages by cleaning, repairing or replacing, and repainting, as acceptable to the Architect.
- B. Provide "Wet Paint" signs as required to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work after completion of painting operations.

3.7 CLEAN UP

- A. During the progress of the work, remove from the site all discarded paint materials, rubbish, cans and rags at the end of each work day.
- B. Upon completion of painting work, clean window glass and other paint spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.
- C. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

END OF SECTION

SECTION 10 11 00
VISUAL DISPLAY SURFACES

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the visual display surfaces as shown on the drawings and/or specified herein, including, but not necessarily limited to, the following:
 - 1. Porcelain-on-metal whiteboards.
 - 2. Fabric covered bulletin boards.
 - 3. Frames and trim.

1.3 RELATED SECTIONS

- A. Gypsum Drywall - Section 09 29 00.

1.4 QUALITY ASSURANCE

- A. Qualifications of Installers: For installation of visual display surfaces, use only personnel who are thoroughly trained and experienced in the skills involved and who are completely familiar with the manufacturer's recommended methods of installation.
- B. Installation Methods: The recommended installation methods of the manufacturer shall become the basis for acceptance or rejection of actual installation methods used in the work.
- C. Manufacturer: Furnish all visual display surfaces by one manufacturer for entire project.

1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data and installation instructions for each material and component part, including data substantiating that materials comply with requirements.
- B. Shop Drawings: Submit for each type of visual display board. Include sections of typical trim members and dimensioned elevations. Show anchors, grounds, reinforcement, accessories, and installation details.
- C. Samples: Submit full range of color samples for each type of visual display surface, trim and accessory required. Provide 12" square samples of sheet materials and 12" lengths of trim members for color verification after selections have been made.

1.6 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect the materials of this Section before, during, and after installation, and to protect the installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary.

PART 2 PRODUCTS

2.1 MARKER BOARDS

- A. Construction
 - 1. Perimeter trim size of 5/16". Satin aluminum.
 - 2. L:CS porcelain surfaces accept magnetic accessories
 - 3. Projection friendly writing surface that won't ghost or stain.
 - 4. designed for marker board application, in color as selected by the Architect.
 - 5. Overall panel thickness is 1/2".
 - 6. Designed for concealed fastenings, clear anodized finish with marker tray.
 - 7. Sizes as shown on drawings; use maximum size available to eliminate seams. Where seams must be used, provide seaming diagram for Architect's acceptance.
- B. Manufacturers: Provide Series 8 marker boards manufactured Claridge, or approved equal.

2.2 TACKBOARDS

- A. Similar specification as for Marker Boards: Provide Series 8 tackboards manufactured Claridge, or approved equal, with Guilford of Maine fabric surfacing in color selected by Architect.

2.3 ACCESSORIES

- A. Provide clips, anchors and fasteners required for complete installation.

B. Provide aluminum tray

2.4 FABRICATION

- A. Assembly: Provide factory-assembled visual display surfaces unless field-assembled units indicated.
- B. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, balanced around center of board, as acceptable to Architect.
 - 1. Provide manufacturer's standard vertical joint system between abutting sections of marker board.
 - 2. Provide mullion trim at joints between marker board and tackboards.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where visual display surfaces are to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 INSTALLATION

- A. Deliver factory-built visual display surfaces completely assembled in one piece without joints, whenever possible. Where dimensions exceed panel size, provide 2 or more pieces of equal length as acceptable to the Architect. When overall dimensions require delivery in separate units, prefit at factory, disassembled for delivery, and make final joints at site. Use splines at joints to maintain surface alignment.
- B. Install units in locations and mounting heights as shown on drawings and in accordance with manufacturer's instructions, keeping perimeter lines straight, plumb and level. Provide all grounds, clips, backing materials, adhesives, brackets, anchors, trim and accessories for complete installation.
- C. Coordinate job-assembled units with grounds, trim and accessories. Join all parts with neat, precision fit.

3.3 ADJUST AND CLEAN

- A. Verify accessories required for each unit properly installed and operating units properly functioning.
- B. Clean units in accordance with manufacturer's instructions, breaking in only as recommended.

END OF SECTION

SECTION 10 14 40 INTERIOR SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Interior integrated modular signage system for directional, control, and informational signage.
- B. Room and door signs.
- C. Emergency evacuation maps.

1.02 REFERENCE STANDARDS

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.03 REFERENCES

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.04 SYSTEM DESCRIPTION

- A. Signage under this section is intended to include items for identification, direction, control, and information of the building where installed as a complete integrated system from a single manufacturer.
- B. ADA design requirements:
 - 1. Provide signage that conforms to the requirements of all regulatory agencies holding jurisdiction.
 - 2. Comply with all applicable provisions of the 2010 Standards for Accessible Design (the updated ADA Accessibility Guidelines, ADAAG -
 - a. <http://www.ada.gov/regs2010/2010ADASTandards/2010ADASTandards.htm>), effective in March 2011. Requirements include, but are not limited to the following:
 - 1) Tactile copy must be all upper case and raised at least 1/32 inch. Tactile characters must be sans serif, not italic, not oblique, script or highly decorative.
 - 2) The stroke width of the upper case "I" has to be 15 percent of the letter height or less. The character width of the uppercase "O" must be between 55 percent and 100 percent of the height of the corresponding uppercase "I".
 - 3) The copy height for tactile information must be between 5/8 inch and 2 inch. If separate visual characters are provided, raised characters can be 1/2 inch and need not contrast with the background.
 - 4) The distance between characters on tactile copy must be a minimum of 1/8 inch and a maximum of 4 times the character stroke width. These distances are measured between the closest points of adjacent characters.
 - 5) Spacing between lines of tactile copy needs to be a minimum of 135 percent and a maximum of 170 percent of the corresponding upper case "I" height (measured from baseline to baseline).
 - 6) Braille must be Grade II - UEB Coded and positioned directly below the corresponding raised characters. If text is multi-lined, Braille is placed below the entire body of text and separated 3/8 inch from any other tactile characters and 3/8 inch minimum from raised borders and decorative elements.
 - 7) Visual characters and symbols, and their background, are to have a non-glare finish. The color of raised characters must contrast as much as possible with

their background to make sure signs are more legible for persons with low vision.

- 8) Pictograms, selected from International Standards, are to be located within a 6 inch vertical void and accompanying text descriptions are to be located directly below the pictogram.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 1. Manufacturer's product literature indicating units and designs selected.
 2. Evidence of manufacturer's computerized data retrieval program for tracking of project for sign typography, message strip requirements and other pertinent data from schedule input to final computerized typography on finished product.
 3. Preparation instructions and recommendations.
 4. Storage and handling requirements and recommendations.
 5. Installation methods.
- C. Samples: One full size sign sample illustrating the design, construction, colors, types styles, mounting method and other details as specified. Provide sample in small size sign.
 1. Samples will be returned for use in Project.
- D. Shop Drawings:
 1. Indicate materials, sizes, configurations, and applicable substrate mountings.
 2. Provide visual representation of each individual sign, including braille transcription
 3. Typography sample for message strips and headers copy.
 4. Artwork for special graphics.
 5. Artwork for special headers.
- E. Signage Schedule: Complete with location of each sign and the required copy/text.
- F. Sign Program Maintenance Plan:
 1. Manufacturer shall provide details of software and system of color coated, pre-perforated paper sign inserts allowing client to update and maintain signage graphics in-house.
 2. Manufacturer shall provide details of an Online Reordering & Maintenance Application whereby the client can submit sign reorders online and store relevant project information such as sign type drawings, message schedules and product instructions.
- G. Contract close out:
 1. Furnish appropriate checklist for aiding in reordering after Date of Substantial Completion. Maintain computer schedule program for five years for ordering new signage required by Owner.
 2. Maintenance data and cleaning requirements for exterior surfaces.
 3. Furnish one complete SignWord Pro software package compatible with Windows XP or newer.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 1. Work required under this section from manufacturer regularly engaged in work of this type and scope for a minimum of 5 years.
- B. Installer Qualifications: Trained and authorized by manufacturer for installations of required scope and product.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Package signs to prevent damage during shipment, handling, storage and installation. Products are to remain in their original packaging (unless otherwise specified) until removal is necessary for installation.

- B. If installation site is not ready for signage upon delivery, store signs in a dry, air-conditioned environment.
- C. Handle signage in accordance with manufacturer's instructions.
- D. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.08 PROJECT 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.

1.09 SEQUENCING AND SCHEDULING

- A. Schedule system installation after room finishes and fixtures have been completed.

1.10 WARRANTY

- A. Product Warranty: Provide manufacturer's warranty against defects in materials and workmanship for a period of one year.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: GDS Signs; Style to match campus standards. www.gdssigns.com
- B. APCO Signs; www.apcosigns.com.
- C. ASI Sign Systems, Inc.; www.asisignage.com.
- D. 2/90 Sign Systems; www.290signs.com.
- E. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 SYSTEM REQUIREMENTS

- A. General:
 - 1. Sign system shall feature solutions for all required sign types, including but not limited to wall mounted personnel signs, work station personnel signs, primary room identification, directories, directionals, overhead signs, projection wall signs, free standing signs, restroom signs, regulatory and information signs, stair signs and changeable slide conference room signs. All signs within the system must feature the same family of components and convey a uniform look throughout.
- B. Features:
 - 1. Updatibility: Signs shall allow for updating of message inserts without the need to replace the entire sign assembly. System shall offer a solution for in-house updating of laser printed sign inserts for all sign types, including personnel signs, directories and directional signs.
 - 2. Mounting: Signs shall accommodate installation via fully concealed mechanical fasteners.
 - 3. Front-Loading: System inserts must be front-loading to avoid any problems with installation locations where space does not permit inserts to be removed from the side(s) of the sign.
- C. Graphics and Typography: As selected from manufacturer's standards. Reference sign drawings.
- D. Colors and Finishes: As selected from manufacturer's standards. Reference sign drawings.
- E. ADA Compliance: Sign system shall comply with all applicable provisions of the 2010 Standards for Accessible Design (the updated ADA Accessibility Guidelines, ADAAG), effective in March 2011. This includes requirements regarding which sign types require Braille/tactile features, character heights, raised character spacing, raised character stroke width, color contrast and installation locations and mounting heights within the facility.

F. Materials and Construction:

1. Frames/Holders: Sign frame/holder assemblies shall feature extruded aluminum edge profiles with an option of low-profile injection molded plastic edge profiles for small signs. Aluminum extrusions shall be alloy 6063-T6. Optional plastic edge profiles shall be integrally colored injection molded UV and impact resistant ASA (Acrylonitrile Styrene Acrylate) for durability and product longevity. Sign frames shall feature an overall depth of 5/8 inch or less and must accommodate front-loading, updatable message panels and inserts.
2. Braille / Tactile Components: Tactile process direct-print, 1/32 inch, UV-cured raised characters and fully domed Braille printed on an aluminum or acrylic plaque insert.
3. Fasteners: Signs shall be able to accommodate fully concealed mechanical fasteners.

2.03 SIGN SYSTEM COMPONENTS

- A. Reference drawings for location of colors, finishes, sizes and details. Reference signage schedule for sign text.
- B. Extruded Aluminum SideTrack Shape
 1. Square
 2. Extruded Aluminum SideTrack Finish
 3. Frame Sizes Selected from Manufacturer's Standards and as indicated on sign drawings.
 4. Insert/Display Components to include:
 5. Mounting/installation Types to Include:
 - a. Surface Wall Mount
 - b. Panel Clip Attachment to Office Partition
 6. Formed Aluminum Clip Snap Fit to Sign
- C. Graphics:
 1. Type sizes: Selected from manufacturer's standard sizes indicated in SCHEDULE for particular units; meet ADA requirements for letter proportions, sizes, spacing, etc.
 2. Typography: Reference signage schedule and drawings for details. Font(s) selected from manufacturer's standards unless otherwise specified. All text and graphics shall be a true representation of the typeface(s) and/or graphics specified. Letter spacing and interline spacing shall be set by the manufacturer.
 3. Type Code(s): Indicated in SCHEDULES Article.
 4. Imprint Colors: Selected by Architect from manufacturer's standard direct-print colors and indicated in SCHEDULE; color contrast background colors in accord with ADA requirements.
 5. Copy/Message List: Indicated in SCHEDULE.
 6. Reference drawings and Signage Schedule for details.
 7. All text and graphics shall be a true representation of typeface(s) and/or graphics specified.

2.04 FABRICATION

- A. Shop assembly:
 1. Fabricate units to configurations indicated on reviewed shop drawings.
 2. Provide copy on inserts, and covers required on reviewed shop drawings and in accord with ADA requirements.
 3. Provide additional blank paper as specified.
 4. Include instruction sheets for removal and replacement inserts and installation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.

- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

- a. Install products in accordance with manufacturer's instructions, in locations and with mounting methods as specified in sign and location drawings.
- B. Square, plumb and level all installed products.
- C. Install all signage in accordance with the 2010 Standard for Accessible Design
- D. Upon completion of the work, sign installer shall remove any unused products, materials, packaging and debris from the installation site.

3.04 CLEANING

- A. Clean all exposed surface not more than 48 hours prior to Date of Substantial Completion in accordance with manufacturer's written cleaning instructions.

3.05 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

3.06 SIGN SCHEDULES

- A. Refer to Signage Schedule and Drawings for sizes, locations, sign types, layouts, typography specifications, sign text/copy and sign graphics.

END OF SECTION

MVCC S&T - SIGNAGE SCHEDULE					MARCH NO. 23000
PLAN DOOR NUMBER	SIGN TYPE	SIGN ROOM NUMBER	SIGN COPY	SPECIAL SYMBOLS	NOTES
ME100.1	ID-1	101	JANITOR'S CLOSET		
ME102.1	ID-1	102	DATA		
ME103.1	ID-1	103	ELECTRIC		
ME103.2	ID-1	103	ELECTRIC		
ME104.1	ID-1	104	JAN CLST		
ME105.1	ID-1	105	ELEC		
ME106.1	ID-1	106	IT/SEC		
MR110.1	ID-1	110	BOILER ROOM		
	ID-1	200	MECHANICAL PENTHOUSE		
ME201.1	ID-1	201	DATA		
ME202.1	ID-1	202	MECHANICAL		
ME202.2	ID-1	202	MECHANICAL		
ME203.1	ID-1	203	JAN CLOSET		
RR101.1	RA		ADA RESTROOM	MAN, WOMAN, ADA	
RR102.1	ID-4	102	WELLNESS		
RR103.1	RA		RESTROOM	MAN, WOMAN	
RR104.1	RA		RESTROOM	MAN, WOMAN	
RR105.1	RA		RESTROOM	MAN	
RR106.1	RA		RESTROOM	WOMAN	
RR107.1	RA		ADA RESTROOM	MAN, WOMAN, ADA	
RR201.1	RA		ADA RESTROOM	MAN, WOMAN, ADA	
RR202.1	RA		ADA RESTROOM	MAN, WOMAN, ADA	
RR203.1	RA		RESTROOM	MAN, WOMAN	
RR204.1	RA		RESTROOM	MAN, WOMAN	
RR205.1	RA		RESTROOM	MAN, WOMAN	
RR206.1	RA		ADA RESTROOM	MAN, WOMAN, ADA	
ST100.1	ID-3	100	FABMATICS		
ST100.2	ID-1	100A	GOWNING		
ST100A.1	ID-1	100A	GOWNING		
ST100B.1	ID-2	100B	OFFICE		
ST101.1	ID-3	101	FAB LAB		
ST101A.1	ID-3	101A	FAB COLLAB		
ST101A.2	ID-3	101A	FAB COLLAB		
ST101B.1	ID-1	101B	POST PROCESS		
ST101BA.1	ID-1	101BA	METAL PRINT		

MVCC S&T - SIGNAGE SCHEDULE**MARCH NO. 23000**

PLAN DOOR NUMBER	SIGN TYPE	SIGN ROOM NUMBER	SIGN COPY	SPECIAL SYMBOLS	NOTES
ST101BA.2	ID-1	101BA	METAL PRINT		
ST102.1	ID-3	102	MECHATRONICS ROBOTICS		
ST103.1	ID-3	103	GENERAL CHEMISTRY		
ST104.1	ID-1	104	CHEM WASTE		
ST105.1	ID-1	105	PREP ROOM		
ST105A.1	ID-1	105A	CHEM STORAGE		
ST105A.2	ID-1	105A	CHEM STORAGE		
ST105A.3	ID-1	105	PREP ROOM		
ST105B.1	ID-1	105B	INSTRUMENT		
ST105B.2	ID-1	105B	INSTRUMENT		
ST106.1	ID-2	106	OFFICE		
ST107.1	ID-3	107	ORGANIC CHEMISTRY		
ST108.1	ID-2	108	OFFICE		
ST109.1	ID-3	109	PNEUMATIC & VACUUM		
ST109.2	ID-1	109	PNEUMATIC & VACUUM		
ST109.2	ID-1	ST111	HYDRAULIC & MECHANIC		
ST110.1	ID-3	110	CLASSROOM		
ST111.1	ID-3	111	HYDRAULIC & MECHANIC		
ST112.1	ID-3	112	CLASSROOM		
ST113.1	ID-3	113	CIVIL LAB		
ST113A.1	ID-1	113A	TOOL STORAGE		
ST114.1	ID-3	114	CLASSROOM		
ST115.1	ID-3	115	COLLAB LAB		
ST116.1	ID-3	116	INDUSTRIAL CONTROLS		
ST116.2	ID-3	116	INDUSTRIAL CONTROLS		
ST117.1	ID-3	117	CAD LAB		
ST117.2	ID-1	117	CAD LAB		
ST117.2	ID-1	119	MACHINE & CNC LAB		
ST118.1	ID-1	118	ELEC CODES		
ST118.2	ID-1	118	ELEC CODES		
N/A	ID-3	118A	ROOM 1		
N/A	ID-3	118B	ROOM 3		
N/A	ID-3	118C	ROOM 4		
N/A	ID-3	118D	ROOM 5		
N/A	ID-3	118E	ROOM 6		

MVCC S&T - SIGNAGE SCHEDULE					MARCH NO. 23000
PLAN DOOR NUMBER	SIGN TYPE	SIGN ROOM NUMBER	SIGN COPY	SPECIAL SYMBOLS	NOTES
N/A	ID-3	118F	ROOM 2		
ST119.1	ID-1	119	MACHINE & CNC LAB		
ST119.2	ID-1	119	MACHINE & CNC LAB		
ST119.3	ID-1	119A	MACHINE TOOL STORAGE		
ST120.1	ID-3	120	MATERIAL TESTING		
ST121.1	ID-3	121	WELDING LAB		
ST121.2	ID-3	121	WELDING LAB		
ST121A.1	ID-1	121A	WELDING TOOL STORAGE		
N/A	ID-1	121B	METAL STORAGE		
N/A	ID-1	121C	GAS STORAGE		
ST121D.1	ID-1	121D	PANEL CLOSET		
ST121D.2	ID-1	121D	PANEL CLOSET		
ST122.1	ID-3	122	MATERIAL PROCESS		
ST122.2	ID-1	122	MATERIAL PROCESS		
ST122.2	ID-1	120	MATERIAL TESTING		
ST123.1	ID-3	123	HVAC LAB		
ST123.2	ID-3	123	HVAC LAB		
ST124.1	ID-1	124	BUILDING STORAGE		
ST126.1	ID-1	126	STO/WASTE		
ST201.1	ID-3	201	MEETING ROOM		
ST201A.1	ID-1	201A	AV CLST		
ST202.1	ID-3	202	COLLABORATION SPACE		
ST202.2	ID-3	202	COLLABORATION SPACE		
ST202.3	ID-3	202	COLLABORATION SPACE		
ST202A.1	ID-1	202A	AV CLST		
ST203.1	ID-1	203	PANTRY		
ST204.1	ID-3	204	BREAKOUT		
ST205.1	ID-3	205	MEETING ROOM		
ST205.2	ID-3	205	MEETING ROOM		
ST205A.1	ID-1	205A	STORAGE/AV		
ST206.1	ID-3	206	BREAKOUT		
ST208.1	ID-1	208	DATA		
STA.1	RA		STAIR A	STAIR	
STA.2	RA		STAIR A	STAIR	
STB.1	RA		STAIR B	STAIR	
N/A	DW				Provide (8) signs

MVCC S&T - SIGNAGE SCHEDULE					MARCH NO. 23000
PLAN DOOR NUMBER	SIGN TYPE	SIGN ROOM NUMBER	SIGN COPY	SPECIAL SYMBOLS	NOTES
N/A	OH				Provide (8) signs
N/A	E		ELEVATOR		Provide (2) signs
N/A	FL	1	N/A		Provide (3) signs, indicates floor level in elevator lobby
N/A	FL	2	N/A		Provide (3) signs, indicates floor level in elevator lobby
N/A	EE		IN CASE OF FIRE, USE STAIRS. DO NOT USE ELEVATOR.	STAIR AND FLAME	Provide (2) signs
CR201.1	NE		MECHANICAL		NO EXIT
EX2.1	NE		MECHANICAL		NO EXIT
LL201.1	NE		TERRACE		NO EXIT
LL201.2	NE		TERRACE		NO EXIT
LL202	NE		ROOF ACCESS		NO EXIT

SECTION 10 21 13
SOLID PHENOLIC TOILET COMPARTMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Solid phenolic toilet compartments, floor mounted head rail braced.
- B. Solid phenolic urinal screens, wall hung.

1.02 REFERENCE STANDARDS

- A. ICC/ANSI A117.1 - Accessible and Usable Buildings and Facilities.
- B. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

1.03 SUBMITTALS

- A. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall, floor, supports, and door swings.
- B. Product Data: Provide data on panel construction, hardware, and accessories.
- C. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

1.04 REGULATORY REQUIREMENTS

- A. Conform to ANSI A117.1 code for access for the handicapped.
- B. Meets or exceeds all requirements for Class B Flame Spread Rating and Smoke Developed and shall carry a Class B Fire-Rating Certification in accordance with the requirements of NFPA and ICC.
 - 1. Flame Spread shall not exceed 75.
 - 2. Smoke Developed shall not exceed 450.

1.05 FIELD CONDITIONS

- A. Verify field measurements.
- B. Coordinate the work with placement of anchors in adjacent walls.

1.06 WARRANTY

- A. Warranty for 10 years against delamination, corrosion or breaking.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. ASI Global Partitions; Black Core Phenolic, Floor Anchored/Overhead Braced: www.globalpartitions.com.
- B. Bobrick; DuraLine Series, Model 1082.67: www.bobrick.com.
- C. General Partitions Mfg. Corp; Solid Phenolic Core, Series 40: www.generalpartitions.com.
- D. Approved equivalent.

2.02 MATERIALS

- A. Solid Phenolic Panel: NEMA LD-3 solid phenolic core with melamine laminate veneer material.

2.03 ACCESSORIES

- A. Pilaster Shoe: Formed ASTM A167 type 304 stainless steel with No. 4 finish, 3 inch high, with adjustable screw jack.
- B. Head Rails: Stain finish aluminum tube, with anti-grip profile and cast socket wall brackets.
- C. Screws and inserts: Factory-installed brass inserts for door hardware with vandal-resistant pin-in-head torx screws.

- D. Through Bolts: Stainless steel with vandal-resistant pin-in-head torx screws.
- E. Full-Height Stainless Steel Hardware; Type 304 satin finish stainless steel:
 - 1. Continuous self-closing door hinge.
 - 2. Full height angle brackets and U-channels on panel connections.
 - 3. Slide door latch with exterior emergency access feature.
 - 4. Door strike and keeper with rubber bumper.
 - 5. Coat hook with rubber bumper.
 - 6. Door pull for outswinging doors.

2.04 FABRICATION

- A. Fabricate partitions by forming solid phenolic with finished faces and edges. Finish edges convex.
- B. Bevel corners and edges of cut-outs.
- C. Doors and Stiles:
 - 1. Thickness: 3/4 inch.
 - 2. Door Width: as indicated.
- D. Panels:
 - 1. Thickness: 1/2 inch.
 - 2. Panel Size: as indicated.

2.05 FINISHING

- A. Plastic Laminate, Colors: Color as selected by Architect from manufacturers full line.
- B. Stainless Steel Surfaces: No. 4 finish.
- C. Exposed Steel Surfaces: Satin chrome plated.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify correct spacing of and between plumbing fixtures.
- B. Verify correct location of built-in framing, anchorage, and bracing.

3.02 INSTALLATION

- A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.
- B. Maintain 3/8 to 1/2 inch space between wall and panels and between wall and end pilasters.
- C. Attach panel brackets securely to walls using anchor devices.
- D. Attach panels and pilasters to brackets with through bolts. Locate head rail joints at pilaster center lines.
- E. Anchor urinal screen panels to walls with continuous panel brackets.
- F. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster. Conceal floor fastenings with pilaster shoes.
- G. Equip each door with continuous hinge, one door latch, one coat hook and bumper; provide outswinging door with pull.
- H. Install door strike and keeper with door bumper on each pilaster in alignment with door latch.
- I. Replace damaged or scratched materials with new materials.

3.03 ERECTION TOLERANCES

- A. Maximum Variation From Plumb: 1/8 inch.

3.04 ADJUSTING

- A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.
- B. Adjust hinges to position doors in partial opening position when unlatched. Return out swinging doors to closed position.
- C. Adjust adjacent components for consistency of line or plane.

END OF SECTION

SECTION 10 22 13
WIRE MESH PARTITIONS

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the wire mesh partitions as shown on the drawings and/or specified herein.

1.3 RELATED SECTIONS

- A. Cast-in-Place Concrete - Section 03 30 00.

1.4 QUALITY ASSURANCE

- A. Provide products of the standard best quality for the particular kind of material specified.

1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's latest published literature for approval. Obtain approval before materials are delivered to the job site.
- B. Submit installation shop drawings for locations as indicated on the contract drawings. Shop drawings shall indicate elevations, sections, methods of anchoring and connecting to surrounding construction.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Avoid damage to items during transit and delivery. Do not set work damaged in transit; replace with undamaged material without additional cost to the Owner.
- B. A space at the building shall be designated for the storage of material provided under this Section. The responsibility for all such material shall, however, rest entirely with the Contractor until it has been set and accepted as complete in accordance with the Contract requirements.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Wire mesh partitions of height and layout as shown on the Drawings shall be:
 - 1. WireCrafters Style 840 or manufacturer as listed below:
 - 2. Miller Wire Works, Inc.
 - 3. Acorn Wire and Iron Works, Inc.
 - 4. The G/S Co.

2.2 MATERIALS

- A. Wire Mesh Partitions
 - 1. Mesh: 1-1/2" diamond-intermediate crimped.
 - 2. Wire: No. 10 W & M gauge, 0.135 steel wire woven in a 2 by 1 inch rectangular mesh.
 - 3. Vertical Channel: 1-1/4" x 5/8" "C" Type with 1/4" bolts.
 - 4. Horizontal Channel: 1" x 1/2".
 - 5. Center Reinforcement: Double: Two 1" x 1/2" CCR channel bolted each side of mesh.
 - 6. Corner Post: 1-3/4" x 1-3/4" x 1/8" angle.
 - 7. Top Reinforcement: 2-1/4" x 1" Channel: Fastened with 1/4" "U" bolts. Approximately 24" on center.
 - 8. Floor Sockets: 1-1/4" x 1-1/4" x 2-1/2" high-ductile iron (weldable).
 - 9. Swinging Door Frame: 1-1/4" x 1/2" channel.
 - 10. Hardware: Mortise type lock operated by key outside, recess knob inside.
- B. Finish
 - 1. Fabricated units shall be dipped in a cleaning bath.
 - 2. Units shall be polyester powder coated and air dried.
 - 3. Color shall be as selected by the Architect from manufacturer's standard colors.
- C. Bracing: Free standing partitions shall have 3" channel line posts approximately 15'-0" on center with 9" x 18" x 5/16" base plates.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where wire mesh partitions are to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 INSTALLATION

- A. All work is to be executed by skilled mechanics and shall be of the finest quality, neat in appearance and free from defects.
- B. Installation shall be made in strict accordance with manufacturer's recommendations, plumb, and true to line and level. Anchor partitions firmly to floor and adjacent masonry walls.

3.3 ADJUST AND CLEAN

- A. Clean and leave free from blemishes, defects, and dirt.
- B. Replace any damaged units at no change in Contract Price.
- C. Adjust hardware for maximum efficiency.

END OF SECTION

SECTION 10 22 19
DEMOUNTABLE WALL SYSTEM

PART 1 – GENERAL

1.1 RELATED SECTIONS

- A. Section 061000 – Miscellaneous Rough Carpentry – for concealed blocking
- B. Section 082150 – Wood Doors
- C. Section 087100 – Door Hardware
- D. Section 088113 – Glazing
- E. Section 092216 – Support for Gypsum Board Systems

1.2 PRE-INSTALLATION CONFERENCE

- A. Conduct conference at project site in accordance with Division 01 Section “Project Management and Coordination.”

1.3 SUBMITTALS

- A. Product Data Sheet: For each type of product, including door schedule. Copies of MSDS - Material Safety Data Sheets to be provided upon request.
- B. Shop Drawings: For Demountable Glass Partitions.
 - 1. Include plans, sections, elevations, details and attachments to other work.
 - 2. Indicate materials, methods of construction, attachment or anchorage details, erection diagrams of pre-assembled components, connections, explanatory notes and other information necessary for completion of work. Cross reference to design drawings and specifications.
 - 3. Lead Time: Provide the lead time duration from the date of shop drawing approval to the date of product shipment.
 - 4. Do not commence manufacturing or order materials before shop drawings are reviewed and accepted by professional of record.
- C. Samples for Verification: For each type of the following:
 - 1. Linear Trim: 12” long Samples.
 - 2. Hardware and Accessories.
 - 3. Finish Samples no less than 6” square.
 - 4. Glazing Samples no less than 6” square.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Floor plans, reflected ceiling plans, and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from the installers of the items involved.
 - 1. Suspended-ceiling components and dimensioned ceiling-grid layout.
 - 2. Locations of fixed door and window mullions.
 - 3. Overhead bracing, seismic restraints, and related structural members.
 - 4. Ductwork above ceiling.
- B. Qualification Data: For Installer.
- C. Product Certificates: For each type of demountable partition.
- D. Product Test Reports: For each type of demountable-partition assembly, for tests performed by manufacturer and witnessed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

- A. As-Built Shop Drawings: Accurately reflecting any and all deviations from original shops due to change orders, site conditions, product limitations, or any other approved changes after original shop drawing approvals.
- B. Maintenance Data: For demountable partitions to include in maintenance manuals.
 - 1. Finishes for exposed trim and accessories. Include precautions for cleaning materials and methods that could be detrimental to finishes and performance. Seals, hardware, and other operating components.
- C. Product Warranty Documentation
 - 1. Submit manufacturer’s standard limited warranty document. Warranty period: 5 year(s) from date of substantial completion.

1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain aluminum framed office fronts and doors from single source from single manufacturer.
- B. Manufacturer: Engage a qualified and experienced manufacturer with a minimum of 5 years successful experience providing interior office fronts and doors on projects of comparable size and scope.
- C. Installer Qualifications: Firm with 5 years experience installing selected system, and who is approved by the manufacturer for installation of the specified system.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- E. Reference Standards: Except as modified by more stringent requirements of local codes, comply with requirements of the following:
 - 1. American Architectural Manufacturers Association (AAMA)
 - a. AAMA 611.98, Voluntary specification for anodized architectural aluminum.
 - b. AAMA 2603.02, Voluntary specifications, performance requirements and test procedures for pigmented organic coatings on aluminum extrusions.
- F. Mockups: Before installing aluminum framed office fronts and doors, build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Remove mockups when directed.
 - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 FIELD CONDITIONS

- A. Finished Spaces: Do not deliver or install demountable partitions until finishes in spaces to receive them are complete, including suspended ceilings, floors, carpeting, and painting.
- B. Field Measurements: Verify demountable partition openings and storage arrangements by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Maximum allowable height deviation due to floor or header level: 1/4" total height variance per 20 Linear ft.

PART 2 – PRODUCTS

2.1 APPROVED MANUFACTURERS/SYSTEMS

- A. General: Progressive demountable-partition assembly and components that are the standard products of manufacturer; **ZONA 3 Office Partition, distributed by ModernfoldStyles, Inc., or Acme 50+ wall system by Acme Sales Group, approved equal.**
- B. Acoustical Rating: STC 40-44.
- C. **Glass Panels: Clear glass, fully tempered or laminated glass.**
 - 1. **Glass Thickness: One layer of 3/8 and/or 1/2", as required to meet performance requirements.**
 - 2. **Glass Panel Size: Maximum 48" wide by 120" high, or as limited by access to the space by corridors, doors, receiving docks, and freight elevators. See elevations.**
- D. Doors: Wood (Maple veneer), See Section 082150.
- E. Aluminum: Alloy and temper recommended by the manufacturer for strength, corrosion resistance, and application of required finish.
 - 1. Comply with the following:
 - a. Aluminum Extrusions: ASTM B 221 (ASTM B 221M); Alloy 6063-T5/T52
 - b. Aluminum Sheet or Plate: ASTM B 209 (ASTM B 209M); Alloy 6061-T6
 - c. Aluminum Bars, Rod and Wire: ASTM B 221 (ASTM B 221M); Alloy 6063-T6

2.2 FABRICATION

- A. Provide shop assembled panels with hardware and accessories required for a complete assembly. Provide concealed fastening devices and pressure-fit components that will not damage ceiling or floor coverings. Fabricate panels with continuous light-and-sound seals at floor, ceiling, and other locations where panels abut fixed construction.
- B. Factory prepare interior aluminum frames to receive templated mortised hardware; include cutouts, reinforcements, mortising, drilling, and tapping.
- C. Locate removable stops on the inside of spaces accessed by keyed doors.
- D. Fabricate components to allow secure installation without exposed fasteners.

2.3 DOOR HARDWARE

- A. Pivot Hinges: BHMA A156.4, Grade 1. Pivot Hinges: Provide top, bottom and offset pivots at each door leaf.
- B. Butt Hinges: BHMA A156.1, Grade 1, radius corner. IVE SBB1 4.5 x 4.5 Bearing Hinge.
 - 1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while entrance door is closed.
 - 2. Quantities: For doors up to 87 inches high, provide three hinges per leaf. For doors more than 87 and up to 120 inches high, provide four hinges per leaf.
- C. Mortise Auxiliary Locks: BHMA A156.5, Grade 1. CORBIN RUSSWIN Series ML2000, function as required.
- D. Cylinders: As specified in Section 087100 "Door Hardware."
- E. Operating Trim: BHMA A156.6.
- F. Closers: BHMA A156.4, Grade 1, with accessories required for a complete installation, sized as required by door size, and anticipated frequency of use; adjustable to comply with field conditions and requirements for opening force.
- G. Recessed Floor Closer: BHMA A156.8, Grade 1. DORMAKABA BTS-80.
- H. Door Stops: BHMA A156.16, Grade 1, floor or wall mounted, as appropriate for door location indicated, with integral rubber bumper.

2.4 FINISHES

- A. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.
- B. Anodized Finishes:
 - 1. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.07 mm or thicker. Anodized finishes shall be fully sealed by the manufacturer or processor according to procedures recommended by the licensor of the process.
- C. Baked-Enamel Finish: AAMA 2603 except with a minimum dry film thickness of 0.8 mils (0.02 mm).
- D. Protect finishes on exposed surfaces by wrapping temporary protective covering before shipping.
- E. Slight variations in appearance of abutting or adjacent pieces are acceptable. Noticeable variations in the same piece are not acceptable.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examine substrates at the site for openings to be enclosed in the work of this section. Verify the structural integrity of substrates. Verify dimensions at rough openings. Verify that substrates scheduled to provide support to office fronts and doors, are level, plumb and square, with no unevenness, bowing or bumps in the floor.
- B. Do not install the work of this section until unsatisfactory conditions are corrected. Installation of units constitutes acceptance of existing conditions.
- C. Templates and diagrams: Furnish templates, diagrams, and other data to fabricators and installers of related work, as necessary, for coordination of the adjacent finishes.

3.2 INSTALLATION

- A. Install complete system in accordance with manufacturer's recommendations and written installation instructions.
- B. Provide appropriate anchorage devices to securely and rigidly fit frames into place, absolutely level, straight, plumb and square. Install frames in proper elevation, plane and location, and in proper alignment of other work.
 - 1. Installation Tolerance: Install each demountable partition so surfaces vary not more than 1/8 inch (3 mm) from the plane formed by the faces of adjacent partitions.
- C. Install frame components in the longest possible lengths; components up to 96 inches (2450mm) long must be one piece.

3.3 CLEANING

- A. Remove temporary coverings and protection. Frame should be cleaned using a soft clean cloth. Use clean warm water or mild detergent. Do not use acids, alkaline or fluorides, abrasive cleaning methods may damage surfaces of frames and or panel materials. Clean prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.
- B. Clean exposed frame surfaces promptly after installation, using cleaning methods recommended by frame manufacturer and according to AAMA 609 & 610.

- C. Touch up marred frame surfaces so touchup is not visible from a distance of 48 inches (1220 mm). Remove and replace frames with damaged finish that cannot be satisfactorily repaired.

3.4 PROTECTION

- A. Institute protective measures throughout the remainder of the construction period to ensure that panels will be without damage or deterioration, other than normal weathering, at the time of substantial completion.

END OF SECTION

**SECTION 10 28 00
TOILET, BATH, AND LAUNDRY ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Commercial toilet accessories.
- B. Electric hand/hair dryers.
- C. Diaper changing stations.
- D. Utility room accessories.

1.02 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2022.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.
- D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2023.
- E. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2017 (Reapproved 2022).
- F. ASTM C1036 - Standard Specification for Flat Glass; 2021.
- G. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2018.
- H. ASTM F2285 - Standard Consumer Safety Performance Specification for Diaper Changing Tables for Commercial Use; 2022.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
- C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Commercial Toilet, Shower, and Bath Accessories:
 - 1. AJW Architectural Products: www.ajw.com.
 - 2. ASI - American Specialties, Inc: www.americanspecialties.com.
 - 3. Bobrick Washroom Equipment: www.bobrick.com.
 - 4. Bradley Corporation: www.bradleycorp.com.
 - 5. Georgia-Pacific Professional: www.blue-connect.com.
 - 6. Kimberly-Clark Corporation; Kimberly-Clark Professional ICON Collection: www.kcprofessional.com.
- B. Electric Hand/Hair Dryers:
 - 1. Dyson Inc; Dyson Airblade 9kJ: www.dyson.com.

- C. Diaper Changing Stations:
 - 1. American Specialties, Inc: www.americanspecialties.com.
 - 2. Bradley Corporation: www.bradleycorp.com.
 - 3. Diaper Deck & Company: www.diaperdeck.com.
 - 4. Koala Kare Products: www.koalabear.com.
 - 5. Safe-Strap Company, Inc: www.diaperdepot.com.

2.02 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
 - 1. Grind welded joints smooth.
 - 2. Fabricate units made of metal sheet of seamless sheets with flat surfaces.
- B. Keys: Provide 2 keys for each accessory to Owner; master key lockable accessories.
- C. Stainless Steel Sheet: ASTM A666, Type 304.
- D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.
- E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.
- F. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.
- G. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.
- H. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FINISHES

- A. Stainless Steel: Satin finish, unless otherwise noted.
- B. Chrome/Nickel Plating: ASTM B456, SC 2, polished finish, unless otherwise noted.
- C. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.
- D. Powder-Coated Steel: Clean, degrease, and neutralize. Follow immediately with a phosphatizing treatment, prime coat, and two finish coats of powder coat enamel.
- E. Galvanizing for Items Other than Sheet: Comply with ASTM A123/A123M; galvanize ferrous metal and fastening devices.

2.04 COMMERCIAL TOILET ACCESSORIES

- A. Toilet Paper Dispenser: Furnish by Owner, Install by Contractor
- B. Paper Towel Dispenser: Furnish by Owner, Install by Contractor
- C. Waste Receptacle: Furnish by Owner, Install by Contractor
- D. Automated Soap Dispenser: Furnish by Owner, Install by Contractor
- E. Sanitary Napkin Disposal: Furnish by Owner, Install by Contractor
- F. Mirrors: Stainless steel framed, 1/4 inch thick annealed float glass; ASTM C1036.
 - 1. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
 - 2. Size: As indicated on drawings.
 - 3. Frame: 0.05 inch angle shapes, with mitered and welded and ground corners, and tamperproof hanging system; satin finish.
 - 4. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.
 - 5. Shelf: Stainless steel; gauge and finish to match mirror frame, turned down edges, welded to frame; 5 inches deep, full width of mirror.

- G. Seat Cover Dispenser: Stainless steel, surface-mounted, reloading by concealed opening at base, tumbler lock.
 - 1. Minimum capacity: 250 seat covers.
- H. Grab Bars: Stainless steel, peened surface.
 - 1. Standard Duty Grab Bars:
 - a. Push/Pull Point Load: 250 pound-force, minimum.
 - b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, concealed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
 - c. Finish: Satin.
 - d. Length and Configuration: As indicated on drawings.

2.05 ELECTRIC HAND/HAIR DRYERS

- A. Electric Hand Dryers: Traditional fan-in-case type, with downward fixed nozzle.
 - 1. Operation: Automatic, sensor-operated on and off.
 - 2. Mounting: Wall-mounted - surface.
 - 3. Cover: Stainless steel with brushed finish.
 - a. Tamper-resistant screw attachment of cover to mounting plate.
 - 4. Air Velocity: 18,000 linear feet per minute, minimum, at full power.
 - 5. Heater: 500 W, minimum, at full power.
 - 6. Fan/Heater Control: Field adjustable down to approximately half-speed with corresponding reduction in heat output.
 - 7. Total Wattage: 1400 W, maximum.
 - 8. Runtime: Field adjustable or automatic, up to 35 seconds.
 - 9. Air sanitizing and deodorizing without use of chemicals.

2.06 DIAPER CHANGING STATIONS

- A. Diaper Changing Station: Wall-mounted folding diaper changing station for use in commercial toilet facilities, meeting or exceeding ASTM F2285.
 - 1. Material: Polyethylene.
 - 2. Mounting: Surface.
 - 3. Color: Gray.
 - 4. Minimum Rated Load: 250 pounds.

2.07 UTILITY ROOM ACCESSORIES

- A. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.
 - 1. Drying rod: Stainless steel, 1/4 inch diameter.
 - 2. Hooks: Two, 0.06 inch stainless steel rag hooks at shelf front.
 - 3. Mop/broom holders: Three spring-loaded rubber cam holders at shelf front.
 - 4. Length: Manufacturer's standard length for number of holders/hooks.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.

3.02 PREPARATION

- A. Deliver inserts and rough-in frames to site for timely installation.
- B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
 - 1. Grab Bars: As indicated on drawings.
 - 2. Mirrors: 40 inch, measured from floor to bottom of mirrored surface.
 - 3. Electric Hand Dryers: Measured from floor to bottom of nozzle: 42"

3.04 PROTECTION

- A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

**SECTION 10 44 00
FIRE PROTECTION SPECIALTIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire extinguishers.
- B. Fire blankets.
- C. Fire extinguisher cabinets.
- D. Accessories.

1.02 REFERENCE STANDARDS

- A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2023a.
- B. NFPA 10 - Standard for Portable Fire Extinguishers; 2022.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide extinguisher operational features.
- C. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.
- D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- E. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fire Extinguishers:
 - 1. Activar Construction Products Group, Inc. - JL Industries; Cosmic Extinguisher - Multipurpose Chemical: www.activarcpg.com.
 - 2. Nystrom, Inc: www.nystrom.com.
 - 3. Potter-Roemer: www.potterroemer.com.
- B. Fire Extinguisher Cabinets and Accessories:
 - 1. Activar Construction Products Group: www.activarcpg.com.
 - 2. Larsen's Manufacturing Co: www.larsensmfg.com.
 - 3. Nystrom, Inc: www.nystrom.com.
 - 4. Potter-Roemer: www.potterroemer.com.

2.02 FIRE EXTINGUISHERS

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
- B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
 - 1. Class: A:B:C type.
 - 2. Size: 10 pound in all location except Welding Lab, 20 pound in welding lab.
 - 3. Finish: Baked polyester powder coat, red color.
 - 4. Temperature range: Minus 40 degrees F to ____ degrees F.

2.03 FIRE EXTINGUISHER CABINETS

- A. Fire Rating: Listed and labeled in accordance with ASTM E814 requirements for fire resistance rating of walls where being installed.
- B. Cabinet Construction: Non-fire rated.
 - 1. Formed primed steel sheet; 0.036 inch thick base metal.
- C. Fire Rated Cabinet Construction: One-hour fire rated.

1. Steel; double wall or outer and inner boxes with 5/8 inch thick fire barrier material.
- D. Cabinet Configuration: Recessed type.
 1. Provide cabinet enclosure with right angle inside corners and seams, and with formed perimeter trim and door stiles.
- E. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with nylon catch. Hinge doors for 180 degree opening with two butt hinges.
- F. Door Glazing: Acrylic plastic, clear, 1/8 inch thick, flat shape and set in resilient channel glazing gasket.
- G. Finish of Cabinet Exterior Trim and Door: No.4 - Brushed stainless steel.
- H. Finish of Cabinet Interior: White colored enamel.

2.04 ACCESSORIES

- A. Fire Blanket: Fire retardant treated wool; red, 62 by 84 inch size.
- B. Extinguisher Brackets: Formed steel, chrome-plated.
- C. Cabinet Signage: provide (2) sided sign above each extinguisher/cabinet location.
- D. Lettering: "FIRE EXTINGUISHER" decal, or vinyl self-adhering, prespaced black lettering in accordance with authorities having jurisdiction (AHJ).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install cabinets plumb and level in wall openings, 24 inches from finished floor to inside bottom of cabinet.
- C. Place extinguishers in cabinets.
- D. Position cabinet signage at 7'-0" AFF.

END OF SECTION

SECTION 10 51 13
METAL LOCKERS

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the lockers as shown on the drawings and/or specified herein, including, but not limited to, the following:
 - 1. Steel wardrobe lockers.
 - 2. Locker room benches.
 - 3. Trim, closures, anchors, and accessories.

1.3 RELATED SECTIONS

- A. Cast-in-Place Concrete - Section 03 30 00.

1.4 QUALITY ASSURANCE

- A. Qualifications of Installers: For installation of lockers, use only personnel who are thoroughly trained and experienced in the skills involved and who are completely familiar with the manufacturer's recommended methods of installation.
- B. Uniformity: Provide each locker and bench as produced by a single manufacturer, including necessary mounting accessories, fittings, and fastenings.

1.5 SUBMITTALS

- A. Shop Drawings: Before any materials of this Section are delivered to the job site, submit complete shop drawings, technical data, and installation instructions to the Architect. Shop drawing must show method of installation, fillers, trim, and accessories. Include locker sequencing information.
- B. Samples: Submit 6" x 6" samples of manufacturer's standard finish.

1.6 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect the materials of this Section before, during, and after installation, and to protect the installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Provide single tier 12" x 18" x 72" high steel lockers, with 6" high closed base, sloped top, equal to "Traditional Collection" manufactured by ASI Storage Solutions, or equal made by Penco Products, Republic Steel, or meet TDO sustainability standards.
- B. Additional acceptable manufacturers include Lighting Lockers (new products only) and Lyon Workspace.

2.2 MATERIALS

- A. Sheet Steel: Mild cold-rolled and leveled steel, free from buckle, scale, and surface imperfections.

2.3 FABRICATION, GENERAL

- A. Construction: Fabricate lockers square, rigid, and without warp, with metal faces flat and free of dents or distortion. Make all exposed metal edges safe to touch. Do not expose rivet heads on fronts of locker doors or frames.
- B. Finishing: Chemically pretreat metal with degreasing and phosphatizing process. Apply baked-on enamel finish to all surfaces, exposed and concealed, except plates and non-ferrous metal.
 - 1. Color: Provide locker units in color(s) as selected by Architect from manufacturer's standards. Concealed parts may be manufacturer's standard neutral color.

- C. Door Frames: Frames shall be 16 gauge formed in a channel shape. Vertical members shall have additional flange to provide a continuous door strike. Cross frame members shall also be 16 gauge channel shaped, including intermediate cross frames on double and triple tier lockers.
- D. Doors: Doors shall be 16 gauge, with louvers for ventilation; channel shaped on both the lock and hinge side, with angle formations across the top and bottom.
- E. Body: Bottoms shall be 16 gauge. Tops, sides, backs, and shelves shall be 24 gauge. Bolt spacing shall not exceed 9" o.c.
- F. Hinges: Hinges shall be full length 16 gauge continuous piano type riveted to both door and frame.
- G. Handles: Handles shall be one-piece 20 gauge deep drawn stainless steel cup designed to accommodate locks.
- H. Latching: Lifting trigger shall be 14 gauge steel, attached to the latching channel. The trigger shall have a padlock eye for use with 9/32" diameter padlock shackle. Doors to have latch clip engaging frame at three points on doors over 42" high and two points on all other doors. Locking device to be positive automatic type, whereby locker door may be locked when open, then closed without unlocking. A rubber silencer shall be firmly secured to the frame at each latch hook.

2.4 LOCKER ACCESSORIES

- A. Equipment: Furnish each locker with hat shelf, hang rod, and not less than 2 single-prong wall hooks.
- B. Number Plates: Manufacturer's standard etched, embossed, or stamped, non-ferrous metal number plates with numerals not less than 3/8" high. Number lockers in sequence as directed by Architect. Attach plates to each locker door, near top, centered, with at least 2 fasteners of same finish as number plate.
- C. Filler Panels: Provide filler panels where required of not less than 16 ga. Steel sheet, factory fabricated and finished to match locker units.

PART 3 EXECUTION 3.1 INSPECTION

- A. Examine the areas and conditions where lockers are to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 INSTALLATION

- A. Install metal lockers at locations shown in accordance with manufacturer's instructions for plumb, level, rigid and flush installation.
- B. Space fastenings 36" o.c. and apply through back-up reinforcing plates where necessary to avoid metal distortion; conceal all fasteners.
- C. Install trim, sloping top units, and metal filler panels using concealed fasteners to provide flush, hairline joints against adjacent surfaces.

3.3 ADJUST AND CLEAN

- A. Adjust doors and latches to operate easily without binding. Verify that integral locking devices are operating properly.
- B. Touch-up marred finishes; replace units that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

END OF SECTION

SECTION 10560
HIGH-DENSITY MOBILE STORAGE SYSTEM

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: High-density mobile storage system for chemicals.

1.2 PROJECT CONDITIONS

- A. Concrete subfloor must be trenched to create trough for mobile storage system bottom rail. Storage system installer shall coordinate with contractor on size and location of trough. In addition, rail shall be set at a height that coordinates with subsequent terrazzo placement for proper appearance, and for proper operation of mobile storage system.

PART 2 PRODUCTS

2.1 HIGH-DENSITY MOBILE STORAGE SYSTEM MANUFACTURER

- A. Manufacturer of system shall be Spacesaver Corporation, represented locally by Modern Office Systems (212-290-0440), or approved equal. Components of the system shall be as described below.

2.2 RAIL SYSTEM

- A. 5/8" x 5/8" steel bar interlocked and welded into a 1-11/16" wide U-channel steel base. Rail assembly shall have interlocking splice and leveling plates (max. 20" o.c.) with leveling screw adjustability, permanently anchored to the floor. All rail splices shall have interlocking braces and bolted splice plates to provide permanent horizontal and vertical alignment. Rail guidance gaps shall be 1/2" or less. All rail assemblies shall be fully grouted with a non-shrink hydraulic cement type grout with an 8,000 psi strength after curing.
- B. Recessed (flush) floor installation: Rails shall be recessed into floor so that the top of the rail is level with the finished floor material.

2.3 CARRIAGES

- A. Carriages shall be welded, uni-frame assemblies constructed of 12 ga. (min.) steel with supporting face sections 5-3/4" high with two reinforcing flanges running the full length of the carriage. Main supporting structural face sections shall provide a 3/4" shelf mounting recess for positive shelf alignment and attachment.
- B. Wheel support sections shall be 12 ga. (min.) steel and shall be welded between the main support face sections, one per rail assembly. A minimum of two carriage face panel support brackets shall be provided for each face panel to fully support its weight and provide positive alignment. Carriage face sections shall provide a smooth, clean appearance without any exposed assembly holes or protruding hardware.
- C. Shelving: Stainless steel wire shelves with a 1" high ledge at all open sides, by Metro Industries, or approved equal. Units shall be 6 shelves high, spaced 14" o.c. vertically, 24" w x 30" d x 86-5/8" h (on 6-3/4" h base, making the total height of the system 93-3/8"). Shelving front shall open with a panel for the handle.
- D. All carriage frame components shall be stainless steel with #4 finish, with all welds ground smooth and polished.

2.4 STATIONARY PLATFORMS

- A. Fixed units at the end of assemblies as shown on drawings shall be of the same construction and height as the carriages, only anchored to the floor for a complete homogeneous system.

2.5 WHEELS AND DRIVES

- A. Each wheel shall be provided with two permanently shielded bearing assemblies. Wheels shall be precision machined from steel, with double-flanged guidance, center flange guidance or roller guided wheel design. All drive wheels shall be 5" diameter. All idler wheels shall be minimum 3" diameter for maximum carriage stability, while maintaining the same weight load capacity at the 5" drive wheels. Provide spacers at both sides of wheel bearings to eliminate all friction between wheels and carriage frame.
- B. All wheels on one side of carriage shall be driven by a continuous steel drive shaft 1-1/4" o.d. x 1" i.d. connected to the 1" diameter wheel drive axles with keyway connections.
- C. Each moveable unit shall be equipped with a three-spoke handle, with rotating knob, which transmits power through a direct drive to all drive wheels. One pound of effort on the handle shall move a minimum of 4,000 lbs. carriage weight and a maximum of 6.8 turns shall open a 36" aisle. Provide and adjustable chain tensioner accessible from the front of the face panel without its removal.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Comply with Section 01 60 00 requirements.

3.2 INSTALLATION

- A. Install work plumb, level, and true-to-line, at locations and mounting heights indicated on drawings and in accordance with manufacturer's recommendations and written instructions.
- B. Install work without damaging adjoining construction, and with all evidence of drilling, cutting, and fitting concealed by the installed cabinets/brackets.

3.3 ADJUSTING, CLEANING, AND PROTECTION

- A. Correct noncomplying and damaged work. Repair minor finish abrasions. Remove and replace work that cannot be satisfactorily corrected.
- B. Cleaning: Clean all components of system. Remove fingerprints, soil, dust, and other deposits.
- C. Protection: Protect high-density mobile storage system from damage.

END OF SECTION

SECTION 11 52 13
PROJECTION SCREENS AND PROJECTOR MOUNTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Front projection screen assemblies.
- B. Ceiling projector mount assemblies.

1.02 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's catalog cuts and descriptive information on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: For custom installations, indicate dimensions, verified field measurements, mounting details, and interface with adjacent construction.
- D. Samples: For case and frame finishes, submit two samples 6 by 6 inch in size, illustrating color and texture of finish.
- E. Manufacturer's Qualification Statement.
- F. Installer's Qualification Statement.
- G. Operation and Maintenance Data: Provide manufacturer's operation and maintenance instructions.
- H. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver projection screens to project site in manufacturer's original unopened packaging, and inspect for damage and proper size before accepting delivery.
- B. Store in a protected, clean, dry area with temperature maintained above 50 degrees F, and stack in accordance with manufacturer's recommendations.
- C. Acclimate screens to building temperatures for 24 hours prior to installation, in accordance with manufacturer's recommendations.

1.05 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide 5 year manufacturer warranty for projection screen assembly.

PART 2 PRODUCTS

2.01 FRONT PROJECTION SCREENS

- A. Manufacturers:
 - 1. Draper, Inc (Manual); Luma Series: www.draperinc.com
 - 2. Da-Lite Screen Company; Advantage Series: www.da-lite.com
 - 3. Elite Screen: www.elitescreens.com

- B. Front Projection Screens: Factory assembled unless otherwise indicated.
 - 1. Located in classrooms and labs: Manual, matte light diffusing fabric screen, horizontally tensioned, wall mounted or ceiling mounted as indicated on drawings.
 - a. Screen Viewing Area: 52 inch high by 92 inch wide.
 - 2. Located in Second floor meeting room as part of add alternate: Motorized, matte light diffusing fabric screen, horizontally tensioned, ceiling mounted.
 - a. Screen Viewing Area: 52 inch high by 92 inch wide.
- C. Matte Light Diffusing Fabric: Light diffusing screen fabric; washable, flame retardant and mildew resistant.
 - 1. Material: High contrast gray vinyl on fiberglass backing, with nominal gain of 0.8 over viewing angle not less than 70 degrees from axis, horizontally and vertically.
 - 2. Seams: No seams permitted in fabric up to 96 inch high by 72 inch wide.
- D. Exposed Screen Cases: Steel, with integral roller brackets.
 - 1. Finish: Baked enamel.
 - 2. Color: White.
 - 3. End Caps: Steel; finished to match case.
 - 4. Mounting: Wall and ceiling, as indicated on drawings.
- E. Concealed-in-Ceiling Screen Cases: Steel, with integral roller brackets.
 - 1. Door Slat: Self trim; self-closing and -opening.
 - 2. Case Finish: Baked enamel.
 - 3. Case Color: As selected by architect from standard range.
 - 4. End Caps: Steel; finished to match case.
 - 5. Electrically-Operated Screens: 1-1/2 inch aluminum door roller.
- F. Manually-Operated Screens:
 - 1. Roller: 1-3/4 inch aluminum; spring loaded with locking device.
 - 2. Screen Pull: Ring on bottom bar.
 - 3. Vertical Tensioning: Screen fabric weighted at bottom with steel bar and plastic end caps.
 - 4. Horizontal Tensioning: Tab-guided cable system.
- G. Electrically-Operated Screens:
 - 1. Roller: Steel, 2 inch in diameter, with locking device.
 - 2. Vertical Tensioning: Screen fabric weighted at bottom with steel bar and plastic end caps.
 - 3. Horizontal Tensioning: Tab-guided cable system.
- H. Provide mounting hardware, brackets, supports, fasteners, and other mounting accessories required for a complete installation, in accordance with manufacturer's recommendations for specified substrates and mountings.

2.02 CEILING PROJECTOR MOUNTS

- A. Low profile, heavy duty universal projector mount for projectors up to 125 lbs.
 - 1. Basis of Design - Peerless AV PJR125-W.
 - 2. Color: as selected by architect from standard range.
- B. Adjustable extension column
 - 1. Basis of Design - Peerless AV AEC.
 - 2. Length as required to mount projector at approximately 9'-0" AFF.
 - 3. Allow for cable management within column.
 - 4. Color: as selected by architect from standard range.

2.03 ELECTRICAL COMPONENTS

- A. Electrical Components: Listed and classified by UL as suitable for the purpose specified and indicated.
- B. Motors: Direct drive, 110 V, 60 Hz.

1. Screen Motor: Mounted inside roller; three wire with ground; quick reverse type, lifetime lubricated, and _____; equipped with thermal overload cut-off, internal junction box, electric brake, pre-set accessible limit switches, and _____.
 - a. Electrical Characteristics: 1.2 amps.
 - b. Motor mounted on sound absorber.
 2. Door, Adjustable Masking, and _____ Motor: Mounted inside roller; three wire with ground; quick reverse type; equipped with thermal overload cut-off.
 - a. Electrical Characteristics: 1.2 amps.
- C. Controls: Three (3) position control switch with plate.
1. Provide two control stations to screen, with internal override to prevent more than one signal reaching the screen.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate is finished and ready to accept screen installation.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Verify that openings for recessed screens are correctly sized.
- D. Verify type and location of electrical connections.
- E. Do not install projection screens until climate control systems are in place and interior painting and other finishes are completed.

3.02 PREPARATION

- A. Coordinate screen installation and projector mount with installation of projection systems.
- B. Coordinate installation with adjacent construction and fixtures, including ceilings, walls, lighting, fire suppression, and registers and grilles.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions, using manufacturer's recommended hardware for relevant substrates.
- B. Do not field cut screens.
- C. Install screens in mountings as specified and as indicated on drawings.
- D. Handle rigid screen materials with care to avoid damage. Use equipment only on uncoated side.
- E. Install plumb and level.
- F. Install electrically operated screens ready for connection to power and control systems by others.
- G. Adjust projection screens and related hardware in accordance with manufacturer's instructions for proper placement and operation.
- H. Test electrical screens for proper working condition. Adjust as needed.

3.04 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch up, repair, or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 11 53 13
HIGH PERFORMANCE LABORATORY FUME HOODS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. High performance, constant volume, bench-top laboratory fume hoods.
 - 2. Work tops within fume hoods.
 - 3. Service fixtures and fittings in fume hoods.
 - 4. Piping and wiring within fume hoods for service fittings, light fixtures, fan switches, and other electrical devices included with fume hoods.
- B. Related Sections:
 - 1. Section 064024 Wood Laboratory Casework.
 - 2. Plumbing, HVAC and Electrical drawings for installing service fittings in fume hoods, including piping and wiring within fume hoods, and for other wiring in fume hoods, including connecting light fixtures, fan switches, and other electrical devices included with fume hoods.
 - 3. Plumbing, HVAC and Electrical drawings for connecting service utilities at back of fume hoods. Piping and wiring within fume hoods are specified in this Section.
 - 4. HVAC drawings for Testing, Adjusting, and Balancing for HVAC for field quality control testing of fume hoods.

1.2 PERFORMANCE REQUIREMENTS

- A. Containment: Provide fume hoods that comply with the following when tested according to ASHRAE 110 at a release rate of 4.0 L/min.:
 - 1. Average Face Velocity: 75 fpm (0.51 m/s) plus or minus 10 percent with sashes fully open.
 - 2. Face-Velocity Variation: Not more than 10 percent of average face velocity.
- B. Static-Pressure Loss: Not more than 1/2-inch wg (124 Pa) at 100-fpm (0.51-m/s) face velocity when measured at four locations 90 degrees apart around the exhaust duct and at least three duct diameters downstream from duct collar.
- C. Delegated Design: Design fume hoods, including comprehensive engineering analysis by a qualified professional engineer, using seismic performance requirements and design criteria indicated.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For laboratory fume hoods. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Indicate details for anchoring fume hoods to permanent building construction including blocking locations and other supports.
 - 2. Indicate locations and types of service fittings together with associated service supply connection required.
 - 3. Indicate duct connections, electrical connections, and locations of access panels.
 - 4. Include roughing-in information for mechanical, plumbing, and electrical connections.
- C. Samples: For fume hood exterior finishes interior lining and work top material], in manufacturer's standard sizes.
- D. Product Test Reports: Showing compliance with specified performance requirements for as manufactured containment and static pressure loss based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency.
- E. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Product Designations: Drawings indicate sizes, types, and configurations of fume hoods by referencing designated manufacturer's catalog numbers. Other manufacturers' hoods of similar sizes, types, and configurations, and complying with the Specifications, may be considered. See Division 01 Section "Product Requirements."
- B. Product Standards: Comply with SEFA 1, "Laboratory Fume Hoods - Recommended Practices. Provide fume hoods UL listed and labeled for compliance with UL 1805.
- C. Safety Glass: Products complying with testing requirements in 16 CFR 1201 for Category II materials.
 - 1. Permanently mark safety glass with certification label of Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction.

- D. 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.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide high performance fume hoods by:
 - 1. Mott Manufacturing LLC, represented by Spencer-Virnoche, 7900 Davis Road North, Clay, NY 13041 (315-698-0171).
 - 2. CIF Lab Solutions, represented by NEIS Collective, 7701 Maltlage Drive, Liverpool, NY 13090 (315-944-1390).
 - 3. BedcoLab, represented by Jeff Anderson (303-434-9949).
 - 4. Air Sentry by LabCrafters, Inc., 2085 Fifth Avenue, Ronkonkoma, NY 11779 (631-471-7755).

2.2 MATERIALS

- A. Steel Sheet: Cold-rolled, commercial steel (CS) sheet, complying with ASTM A 1008/A 1008M; matte finish; suitable for exposed applications.
- B. Glass-Fiber-Reinforced Polyester: Polyester laminate with a chemical-resistant gel coat on the exposed face and having a flame-spread index of 25 or less per ASTM E 84.
- C. Epoxy: Factory molded, modified epoxy-resin formulation with smooth, nonspecular finish.
 - 1. Physical Properties:
 - a. Modulus of Elasticity: Not less than 2,000,000 psi (1400 MPa).
 - b. Hardness (Rockwell M): Not less than 100.
 - c. Water Absorption (24 Hours): Not more than 0.02 percent.
 - d. Heat Distortion Point: Not less than 260 deg F (127 deg C).
 - e. Flame-Spread Index: 25 or less per ASTM E 84.
 - 2. Chemical Resistance: Epoxy-resin material has the following ratings when tested with indicated reagents according to NEMA LD 3, Test Procedure 3.4.5:
 - a. No Effect: Acetic acid (98 percent), acetone, ammonium hydroxide (28 percent), benzene, carbon tetrachloride, dimethyl formamide, ethyl acetate, ethyl alcohol, ethyl ether, methyl alcohol, nitric acid (70 percent), phenol, sulfuric acid (60 percent), and toluene.
 - b. Slight Effect: Chromic acid (60 percent) and sodium hydroxide (50 percent).
 - 3. Color: As selected by Architect from manufacturer's full range.
- D. Glass: Clear, laminated tempered glass complying with ASTM C 1172, Kind LT, Condition A, Type I, Class I, Quality-Q3 with clear, polyvinyl butyral interlayer.
- E. Fasteners: Provide stainless-steel fasteners where exposed to fumes.

2.3 FUME HOOD VENTILATION

- A. Bypass Fume Hoods: Provide bypass fume hoods. Compensating bypass above sash opens as sash is closed. Provide sufficient bypass capacity so that face velocity with sash opening of 6 inches (150 mm) does not exceed three times the face velocity with sash fully open.

2.4 FABRICATION

- A. General: Assemble fume hoods in factory to greatest extent possible. Disassemble fume hoods only as necessary for shipping and handling limitations. Fume hoods shall be capable of being partly disassembled as necessary to permit movement through a 35-by-79-inch (889-by-2007-mm) door opening.
- B. Steel Exterior: Fabricate from steel sheet, not less than 0.0478 inch (1.2 mm) thick, with component parts screwed together to allow removal of end panels, front fascia, and airfoil and to allow access to plumbing lines and service fittings. Apply chemical-resistant finish to interior and exterior surfaces of component parts before assembly.
- C. Ends: Fabricate with double-wall end panels without projecting corner posts or other obstructions to interfere with smooth, even airflow. Close area between double walls at front of fume hood and as needed to house sash counterbalance weights, utility lines, and remote-control valves.
- D. Splay top and sides of face opening to provide an aerodynamic shape to ensure smooth, even flow of air into fume hood.
- E. Interior Lining:
 - 1. Polypropylene, not less than 1/4 inch (6.35 mm) thick.
- F. Lining Assembly: Unless otherwise indicated, assemble with stainless-steel fasteners or epoxy adhesive, concealed where possible. Seal joints by filling with chemical-resistant sealant during assembly.

1. Fasten lining components together with [stainless-]steel cleats or angles to form a rigid assembly to which exterior panels are attached.
 2. Fasten lining components to a rigid frame assembly fabricated from stainless steel and to which exterior panels are attached.
 3. Punch fume hood lining side panels to receive service fittings and remote controls. Provide removable plug buttons for holes not used for indicated fittings.
- G. Rear Baffle: Unless otherwise indicated, provide baffle, of same material as fume hood lining, at rear of hood with openings at top and bottom for airflow through hood. Secure baffle to cleats at rear of hood with stainless-steel screws. Fabricate baffle for easy removal for cleaning behind baffle.
1. Provide preset baffles.
 2. Provide epoxy-coated, stainless-steel screen at bottom baffle opening to prevent paper from being drawn into the exhaust plenum behind baffles.
- H. Exhaust Plenum: Full width of fume hood and with adequate volume to provide uniform airflow from hood, of same material as hood lining, and with duct stub for exhaust connection.
1. Duct-Stub Material: Stainless steel.
- I. Sashes: Provide operable sashes of type indicated.
1. Fabricate from 0.050-inch nominal thickness stainless steel. Form into four-sided frame with bottom corners welded and finished smooth. Make top member removable for glazing replacement. Set glazing in chemical-resistant, U-shaped gaskets.
 2. Counterbalance vertical-sliding sash with sash weight and stainless-steel cable system to hold sash in place regardless of position. Provide ball-bearing sheaves, plastic glides in stainless-steel guides, and stainless-steel lift handles. Provide rubber bumpers at top and bottom of each sash unit.
 3. Fabricate horizontal-sliding sashes hung from adjustable nylon-tired, ball-bearing sheaves supported on an overhead stainless-steel track. Provide a lower track for guiding sashes only. Sashes shall bypass and be removable. Provide flush finger pulls and rubber bumpers at both stiles of each sash.
- K. Airfoil: Unless otherwise indicated, provide airfoil at bottom of fume hood face opening with 1-inch space between airfoil and work top. Sash closes on top of airfoil, leaving 1-inch opening for air intake. Airfoil directs airflow across work top to remove heavier-than-air gases and to prevent reverse airflow.
1. Fabricate airfoil from stainless steel.
- L. Light Fixtures: Provide vaporproof, LED light fixtures, of longest practicable length. Shield fixtures from hood interior with 1/4-inch- thick laminated glass or 3-mm-thick tempered glass, sealed into hood with chemical-resistant rubber gaskets.
1. Provide fixtures with color temperature of 3500 K and minimum color rendering index of 85.
- M. Base Cabinets: Coordinate with wood laboratory casework provided under Section 064025.
- N. Work Tops:
1. Work Tops, General: Provide units with smooth surfaces free of defects. Make exposed edges and corners straight and uniformly beveled. Where acid storage cabinets are indicated beneath fume hoods, provide holes in work tops as need to accommodate cabinet vents.
 2. Molded epoxy Resin Work Tops: Provide front overhang of 1 inch (25 mm), with continuous drip groove on underside 1/2 inch (13 mm) from edge. manufactured by Durcon, 206 Allison Drive, Taylor, Texas 76754, or approved equal. Color: Lunar White.
 - a. Work Top Material: Solid epoxy composition.
 - b. Work Top Configuration: Raised (marine) edge, 1-1/4 inches thick at raised edge, with beveled or rounded edge and corners.
- O. Filler Strips: Provide as needed to close spaces between fume hoods or fume hood base cabinets and adjacent building construction. Fabricate from same material and with same finish as fume hoods or fume hood base cabinets, as applicable.
- P. Ceiling Extensions: Provide filler panels matching fume hood exterior to enclose space above fume hoods at front and sides of fume hoods and extending from tops of fume hoods to ceiling.
- Q. Finished Back Panels: Where rear surfaces of fume hoods are exposed to view, provide finished back panels matching rest of fume hood enclosure.
- R. Comply with requirements in Divisions 23 and 26 Sections for installing water and laboratory gas service fittings, piping, electrical devices, and wiring. Install according to Shop Drawings. Securely anchor fittings, piping, and conduit to fume hoods unless otherwise indicated.

2.5 CHEMICAL-RESISTANT FINISH

- A. Preparation: Clean steel surfaces, other than stainless steel, of mill scale, rust, oil, and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it.
- B. Chemical-Resistant Finish: Immediately after cleaning and pretreating, apply fume hood manufacturer's standard two-coat, chemical-resistant, baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils (0.05 mm).
 - 1. Chemical and Physical Resistance of Finish System: Finish complies with acceptance levels of cabinet surface finish tests in SEFA 8. Acceptance level for chemical spot test shall be no more than four Level 3 conditions.
 - 2. Colors for Fume Hood Finish: As selected by Architect from manufacturer's full range.

2.6 ACCESSORIES

- A. Service Fittings: Comply with requirements in Division 6 Section "Laboratory Casework."
 - 1. Provide service fittings with exposed surfaces, including fittings, escutcheons, and trim, finished with acid- and solvent-resistant powder coating complying with requirements in SEFA 7 for corrosion-resistant finishes.
 - 2. Provide service fittings with exposed surfaces in laboratory casework manufacturer's white, or other color as approved by Architect.
 - 3. Service fittings shall be manufactured by WaterSaver Faucet Co., and include the following products:
 - a. Natural gas, inert gas, low-pressure vacuum and compressed air: L740N-KR.
 - b. Cold water: L740W-9VB-127 (with serrated tip and aspirator). Vacuum breakers shall be mounted to external face of fume hood jamb.
 - c. Chilled water supply and return: L4303
 - 4. Cold water, natural gas, inert gas, chilled water supply and return, and air service fittings shall be pre-piped to a point of connection 2" above the hood. Low-pressure vacuum piping shall be pre-piped to a location to be coordinated with low-pressure vacuum pumps in cabinets near fume hoods. Water and chilled water piping shall be type L copper tubing. Cold water and chilled water piping, fittings and valve bodies shall be factory insulated with ½" thick closed cell elastomeric insulation. Natural gas, inert gas, vacuum, and compressed air piping shall be ASTM A 53, type E or S, standard weight (schedule 40) black steel pipe with ASTM A 197/ANSI B16.3 class 150 black malleable iron threaded fittings using thread lubricant or teflon tape. Fittings shall be jamb mounted with clear coated outlets on the inside walls.
 - a. At noted ADA sink in the Organic Chemistry Lab provide remote control assembly for gas service fixture on the KO skirt where all services cannot be located on the jamb. At other locations do not use remote rods.
 - 5. Where shown, two-inch dia. aluminum high-pressure vacuum tubing shall be pre-piped to a point of connection at the base of the hood superstructure (for connection by the Owner to a high-pressure vacuum pump in fume hood base cabinet). Provide finished plate on hood interior side, and transition from 2" tube to ¾". Vacuum pumps in cabinets below fume hood shall be vented to hood interior.
 - 6. Provide weatherproof GFI duplex electrical receptacles within fume hoods with hinged covers (two per hood, one each side).
 - 7. Where shown, provide lab frame rods and connectors ("monkey bars") within fume hoods, for mounting the Owner's distillation apparatus. Bars shall be ½" dia. stainless steel, with stainless steel mounting brackets and connectors.
 - 8. Cupsinks: 3" x 6" and 14" x 3". Manufactured by Durcon, 206 Allison Drive, Taylor, Texas 76754, or approved equal. Color: Lunar White.
- B. Airflow Indicator: Provide each fume hood with airflow indicator of the following type(s):
 - 1. Indicator Type: Thermal anemometer that measures fume hood face velocity and displays data as digital readout.
- C. Airflow Alarm: Provide fume hoods with audible and visual alarm that activates when airflow sensor reading is outside of preset range.
 - 1. Provide with thermal-anemometer airflow sensor.
 - 2. Provide with reset and test switches.
 - 3. Provide with switch that silences audible alarm and automatically resets when airflow returns to within preset range.

- D. Sash Alarm: Provide fume hoods with audible and visual alarm that activates when sash is opened beyond preset position.
 - 1. Provide with silence and test switches.
- E. Sash Stops: Provide fume hoods with sash stops to limit hood opening to 50 percent of sash height. Sash stops can be manually released to open sash fully for cleaning fume hood and for placing large apparatus within fume hood.

2.7 SOURCE QUALITY CONTROL TESTING OF FUME HOODS

- A. Submit a test report for the standard product previously tested, if the product is identical to equipment being provided for this project.
- B. Evaluation of standard product shall have been conducted in accordance with the method prescribed in NIH Fume Hood Testing Protocol. Hood tests shall be performed by one of the independent, third party, testing agencies listed below:
 - 1. Exposure Control Technologies (www.labhoodpro.com), Cary, NC, (919) 319.4290.
 - 2. SAFELAB (www.safelab.com), Indianapolis, IN, (317) 872.6600.
 - 3. Technical Safety Services (www.techsafety.com), Berkeley, CA, (800) 877.7742.
 - 4. Micro-Clean (www.microcln.com), Lehigh Valley, PA, (610) 867.5302
- C. Testing shall be performed at an independent site, not the manufacturer's test lab.
- D. Hoods shall achieve a rating of 6.0 AM 0.01 or better for all tests with an average face velocity of 60 FPM through the 18" vertically open sash.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install fume hoods level, plumb, and true; shim as required, using concealed shims, and securely anchor to building and adjacent laboratory casework. Securely attach access panels but provide for easy removal and secure reattachment. Where fume hoods abut other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.
- B. Comply with requirements in Division 12 Section "Laboratory Casework" for installing fume hood base cabinets, work tops, and sinks.
- C. Comply with requirements in Divisions 22 and 26 Sections for installing water and laboratory gas service fittings and electrical devices.
 - 1. Install fittings according to Shop Drawings, installation requirements in SEFA 2.3, and manufacturer's written instructions. Set bases and flanges of sink and work top-mounted fittings in sealant recommended by manufacturer of sink or work top material. Securely anchor fittings to fume hoods unless otherwise indicated.

3.2 PERFORMANCE TESTING

- A. Manufacturer must have one of each fume hoods type tested to current ASHRAE 110 Standard at an independent (non-field) site. Test reports must be performed and prepared by one of the independent third-party organizations listed in section 2.2.B of this specification. Results must indicate tracer gas performance ratings of 4.0 AI 0.05 or better for all tests at the specified face velocities. Manufacturer must have a representative on-site for all tests and must assist in troubleshooting and correcting all non-conforming hoods.
- B. Testing Contractor to provide a complete report of the results of the testing program including an executive summary, an outline of the test procedures and equipment used, a table of the results of each test conducted on each hood and a conclusion and recommendation section discussing the results and (if necessary) recommendations to improve fume hood performance.
- C. Refer to Engineer's report for field testing requirements.

3.3 TRAINING

- A. Upon completion of the installation of the fume hoods, Manufacturer must conduct a training seminar for the Owner's users at the job site discussing proper operation of the fume hood, fume hood features and best use practices. Training session must be at least 30 minutes in length, not including a question and answer session. Training session must be scheduled within 30 days on completion of the installation.

3.4 WARRANTY

- A. Manufacturer must offer a minimum five-year warranty on parts and labor to fix defects in materials and workmanship for fume hoods and casework.

END OF SECTION

SECTION 12 24 13
WINDOW SHADES

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the window shades as shown on the drawings and/or specified herein, including, but not limited to, the following:
 - 1. Manually-operated window shades.
 - 2. Field measurements of as-built conditions.
 - 3. Accessories and hardware required for complete installation and operation.

1.3 RELATED SECTIONS

- A. Aluminum Windows - Section 085113.

1.4 QUALITY ASSURANCE

- A. Provide assemblies which are complete assemblies produced by one manufacturer, including hardware, accessory items, mounting brackets, and fastenings.
- B. Provide materials in colors as selected by the Architect from manufacturer's standard colors.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, and finishes.
- B. Shop Drawings: Submit floor layout and elevations, indicating location of all window treatments, mechanism details, type and size of each unit, type and location of controls. Shop drawings must also show seaming of shade fabric. Submit shop drawings showing details of installation and relation to adjoining construction and conditions.
- C. Samples: Submit full size sample of each shade type for Architect's acceptance.
- D. Mock-Up
 - 1. Install each type of shade assembly on one complete column bay for Architect's acceptance of installation details, workmanship, and operation.
 - 2. Approved mock-up shall be used as the standard for installation of work under this Section, and no further installation work shall proceed before Architect's acceptance of the mock-up.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Protect shades from damage, soiling and deterioration during transit, storage, and handling until Owner's acceptance.

1.7 WARRANTY

- A. Manufacturer's standard non-depreciating 25-year limited warranty covering all hardware, motors, motor control system and shade cloth.

PART 2 PRODUCTS

2.1 MANUALLY OPERATED SHADES

- A. Provide manually operated shade system equal to "Mecho 7 System," Manufacturer: Mecho, which is located at: 42-03 35th St.; Long Island City, NY 11101; ASD Tel: 718-729-2020; Fax: 718-729-2941; deborah.wilhelmus@mechoshade.com; <http://www.mechoshade.com>, or equal made by WT Shade, Sol -R-Veil, Inc., Draper, Rollease Acmeda Contract Series I or approved equal conforming to standards specified herein.
- B. Shade system shall be pre-engineered overrunning clutch design that disengages to 90% during the raising and lowering of the shade. The brake can stand a pull force of 50 lbs. in the stop position, or sized as required for shade weight, requiring no adjustment, Self-lubricating hub on to which the brake system is mounted includes an articulated brake assembly and bumpers which assures smooth, non-jerky operation in raising and lowering the shades. System shall include the following components:

1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing mounting hardware from opening and without requiring end or center supports to be removed.
 2. Provide shade hardware that allows for removal and remounting of shade roller tube from brackets without removing mounting hardware from opening and without requiring end or center supports to be removed.
 3. Provide universal, regular, and offset drive capacity, allowing drive chain to fall at front, rear, or non-offset for all shade drive end brackets. Universal offset shall be adjustable for future change.
 4. Provide shade hardware system that allows for removable regular and/or reverse roll fascias to be mounted continuously across two or more shade bands without requiring exposed fasteners of any kind.
 5. Provide shade hardware system that allows for operation of multiple shade bands (multi-band shades) by a single chain operator. Connectors shall be offset to ensure alignment from the first to the last shade band.
 6. Provide shade hardware constructed of minimum 1/8" thick plated steel or heavier as required to support 150% of the full weight of each shade.
- C. Clutch Operator: Manufacturer's standard material and design integrated with bracket/brake assembly.
1. Heavy-duty, 1/8" steel mounting bracket and integrated steel brake, clutch and sprocket assembly rigidly affix the shade support and user control to the building structure fully independent of the roller tube components.
 2. Permanently lubricated maintenance-free brake assembly employs an oil-impregnated steel hub with wrapped spring clutch.
 3. Brake must withstand minimum pull force of 50 pounds (22.7 kg) in the stopped position.
 4. Direct drive clutch requires no interstitial gear stages or plastic parts between the building structure and clutch ensuring reliable operation across the full range of shade sizes.
 5. Urethane dampened clutch protects bead chain and clutch from failure due to high shock loads during shade operation minimizing down time.
 6. Maximum shade hanging weight of 50 pounds (22.7 kg).
 7. Clutch shall be upgradable to motorized drive on compatible tubes without requiring change in mounting attachment method/location, roller tube or fabric band.
 8. Motorized drive options available require no additional wiring to be added for power or communication capability for switch or automated operation.
- D. Drive Chain: Continuous loop Type 304 stainless steel beaded ball chain, 100 pound (45 kg) minimum breaking strength warranted from breaking for the life of the shade system hardware under prescribed operation. Provide upper and lower limit stops.
1. Chain Retainer: Chain tensioning device complying with WCMA A100.1.
 2. Limit Stops: Bead stops affixed to the chain to maintain consistent shade band alignment at the top and bottom of shade travel across multiple shades and to help prevent shade damage resulting from unmanaged user control.
- E. Mecho/7, Managed Lift Force, Hardware: Lifts, single band or multiband shade assemblies:
1. Lifting Force: 3 to 8.5 pounds (1.4 to 3.9 kg) max pull force to lift shade assemblies with a shade band hanging weight, not including mounting hardware, of up to 50 pounds (22.7 kg).
 2. Direct drive clutch with Managed Lift Force provides the best user experience by managing the user pull force while using the fewest number of chain pulls to position a shade.
 3. Backward compatible to Mecho/5 components including fascia, regular and reverse roll, pockets, and wall-mounting accessories.
 4. Includes offset drive capability, left/right, front, or back to allow for utilization of blackout channels.
 5. Allows for ease of operation when obstructions do not allow for direct drive chain access.
 6. Offset chain drive shall not cause an increase of friction or pull force when operated up to a 26-degree angle from vertical.

- F. Shade Bands: Construction of shade band includes the fabric, the hem weight, hem pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.
 - 1. Hem Pockets and Hem Weights: Fabric hem pocket with RF welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket. Hem pocket construction and hem weights shall be the same, for all shades within one room.
 - 2. Shade Band and Shade Roller Attachment:
 - a. Provide extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without deflection. Provide for positive mechanical engagement with drive/ brake mechanism.
 - b. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable/ replaceable with a snap-on/snap-off spline mounting, without having to remove shade roller from shade brackets.
 - c. Mounting spline shall not require use of adhesives, adhesive tapes, staples and/or rivets.
 - G. Side Channels: Provide standard "blackout" side channels where black-out shades are required. Channels shall be extruded aluminum, with a black anodized finish, color selected by the Architect.
- 2.2 SHADE CLOTH**
- A. Solar Shades: Shade cloth shall be "Eco-Veil" group, 1350 Series of weave, color and optical properties as selected by the Architect made by MechoShade, or Ambient Screen 5% (PVC Free) by Rollease Acmeda Contract or equal by other manufacturers noted herein.
- 2.3 FABRICATION**
- A. The shade and the fabric shall hang flat without buckling or distortion. The edge, when trimmed, shall hang straight without curling or raveling. An unguided roller shade cloth shall roll true and straight, without tracking sideways more than +/- 1/8" in either direction due to warp distortion or weave design. Shades shall fill window openings from head to sill and jamb to jamb.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where window treatments are to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 INSTALLATION

- A. General
 - 1. Coordinate with the work of other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.
 - 2. Install the work of this Section in strict accordance with the indicated design and the installation recommendations of the manufacturer as approved by the Architect.
 - 3. Upon completion of the installation, put all components through at least ten (10) complete cycles of operation, adjusting as necessary to achieve optimum operation.
- B. Install roller shades level, plumb, square, and true according to manufacturer's written instructions and located so shade band is not closer than 2" to interior face of glass. Allow proper clearances for window operation hardware.
- C. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
- D. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

3.3 PROTECTION AND CLEANING

- A. Protect installed units to ensure proper operating condition, without damage or blemishes. Repair or replace damaged units as directed by the Architect.

END OF SECTION

SECTION 12 48 13
FLOOR MATS AND FRAMES

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the floor mats and frames as shown on the drawings and specified herein.

1.3 RELATED SECTIONS

- A. Concrete recess - Section 03 30 00.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Except as otherwise indicated, provide entrance mats and accessories by a single manufacturer for entire project.

1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's specifications and installation instructions or entrance mat. Include methods of installation for each type of substrate.
- B. Samples: Submit samples for each type and color of exposed entrance mat, frames and accessories required. Provide 12" square samples of mat including frame.
- C. Maintenance Data: Submit manufacturer's printed instructions for cleaning, drying, maintaining, and rehandling of removable entrance mat units.

1.6 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect the materials of this Section before, during and after installation and to protect the installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary.

PART 2 PRODUCTS

2.1 MAT ASSEMBLY

- A. Provide Peditred Entrances Flooring System (G7) in serrated aluminum, as manufactured by Construction Specialties, Inc., or approved equal.
- B. Framing: Recessed aluminum alloy with unit construction to support 500 pounds per square foot.
- C. Accessories: Provide hidden locking devices to prevent warping and rattling. Furnish number of lock downs as recommended by manufacturer.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where floor mats and frames are to be installed and notify the Architect of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 INSTALLATION

- A. Install mat frames integrally with principal pour of concrete floor system. Locate, align and level frame members accurately.
- B. Protection: Upon completion of frame installations and concrete work, provide temporary filler of plywood or fiberboard in mat recesses, and cover frames with plywood protective flooring. Maintain protection until construction traffic has ended and project reaches substantial completion.
- C. Delay installation of mats until work on the project reaches substantial completion.
- D. Install grating mat in frame and anchor with hidden lock downs.

END OF SECTION

SECTION 12 57 00

WELDING BOOTHS AND CURTAINS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the welding booths and curtains, exhaust arms, and lights as shown on the drawings and specified herein.

1.3 RELATED SECTIONS

- A. Unit Masonry - Section 042000.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Except as otherwise indicated, provide entrance mats and accessories by a single manufacturer for entire project.

1.5 SUBMITTALS

- A. Product Data: Submit manufacture's specifications and installation instructions or entrance mat. Include methods of installation for each type of substrate.
- B. Maintenance Data: Submit manufacturer's printed instructions for cleaning, drying, maintaining, and rehandling of removable entrance mat units.

1.6 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect the materials of this Section before, during and after installation and to protect the installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary.

PART 2 PRODUCTS

2.1 WELDING BOOTHS

- A. Provide Side-to-Side Welding Booths configured as shown on drawings by The Lincoln Electric Company, Cleveland Ohio (www.lincolnelectric.com), or approved equal.
 - 1. Panel Construction: 16-gauge sheet metal, with 11-gauge reinforced angle frames. Powder coated.
 - 2. Inside booth dimension: 60" x 72" x 90".
 - 3. Open space at bottom of booth: 18"
- B. Accessories: LED lights with 3' long light bars, mounting hardware, connecting cables and on-off switch .
 - 1. Input Power: 120V
 - 2. Lumens: 2250
 - 3. Color Temperature: 5000K
 - 4. Basis of Design Product:
 - a. Lincoln Electric product number AD1389-20

2.2 WELDING CURTAINS

- A. Provide and install Curtain Kits with overlapping red-orange strip curtains to cover entrance to booth and protect other students from arc flash and sparks.
 - 1. Strip Width: 8"
 - 2. Basis of Design Product:
 - a. Lincoln Electric Product Number K5249-2

2.3 TELESCOPING EXTRACTION ARM

- A. Provide telescoping wall-mount fume arm with a rotatable hood with a throttle valve to control airflow at the hood opening.
 - 1. Arm Length: 5' -8'.
 - 2. Arm diameter: 8'.

3. Extraction capacity range: 350 CFM – 940 CFM.
4. Maximum ambient relative humidity: 80%
5. Basis of design product:
 - a. Lincoln Electric product number K1655-14.
6. Provide necessary accessories to attach telescoping extraction arm to ductwork. Lincoln Electric part numbers K1657-5 and K5545-1 or equivalent.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where welding booths and curtains are to be installed and notify the Architect of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 INSTALLATION

- A. Install welding booths and curtains in accordance with approved shop drawings. Locate, align and level booths and curtains accurately.
- B. Protection: Upon completion of welding booth installation provide protective covering, and/or restrict access to space. Maintain protection until construction traffic has ended and project reaches substantial completion.
- C. Delay installation of curtains until work on the project reaches substantial completion.

* * * * *

SECTION 14 21 00
ELECTRIC TRACTION ELEVATORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electric traction elevator systems.
- B. Maintenance Contract.

1.02 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2020.
- B. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- C. AISC 360 - Specification for Structural Steel Buildings; 2022.
- D. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- E. ASME A17.1 - Safety Code for Elevators and Escalators Includes Requirements for Elevators, Escalators, Dumbwaiters, Moving Walks, Material Lifts, and Dumbwaiters with Automatic Transfer Devices; 2022.
- F. ASME A17.2 - Guide for Inspection of Elevators, Escalators, and Moving Walks Includes Inspection Procedures for Electric Traction and Winding Drum Elevators, Hydraulic Elevators, Inclined Elevators, Limited-Use/Limited-Application Elevators, Private Residence Elevators, Escalators, Moving Walks, and Dumbwaiters; 2020.
- G. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- H. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes; 2024.
- I. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2023.
- J. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2023, with Editorial Revision.
- K. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- L. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
- M. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).
- N. ITS (DIR) - Directory of Listed Products; Current Edition.
- O. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- P. NEMA MG 1 - Motors and Generators; 2021.
- Q. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- R. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.
- S. PS 1 - Structural Plywood; 2023.
- T. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.
- U. UL (DIR) - Online Certifications Directory; Current Edition.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate work with other installers to provide necessary conduits for proper installation of wiring, including but not limited to the following:

- a. Elevator pit for lighting and sump pump.
 - b. Fire alarm panel from controller cabinet.
- 2. Coordinate work with other installers for equipment provisions necessary for proper elevator operation, including but not limited to the following:
 - a. Shunt trip devices for automatic disconnection of elevator power prior to fire suppression system activation; include provisions for shunt trip power monitoring.
 - b. Overcurrent protection devices selected to achieve required selective coordination.
- B. Preinstallation Meeting: Convene meeting at least one week prior to start of this work.
 - 1. Review schedule of installation, proper procedures and conditions, and coordination with related work.
 - 2. Review use of elevator for construction purposes, hours of use, scheduling of use, cleanliness of car, employment of operator, and maintenance of system.
- C. Construction Use of Elevator: Not permitted.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit data on following items:
 - 1. Signal and operating fixtures, operating panels, and indicators.
 - 2. Car design, dimensions, layout, and components.
 - 3. Car and hoistway door and frame details.
 - 4. Electrical characteristics and connection requirements.
- C. Shop Drawings: Include appropriate plans, elevations, sections, diagrams, and details on following items:
 - 1. Elevator Equipment and Machines: Size and location of driving machines, power units, controllers, governors, and other components.
 - 2. Hoistway Components: Size and location of car machine beams, guide rails, buffers, ropes, and other components.
 - 3. Rail bracket spacing; maximum loads imposed on guide rails requiring load transfer to building structural framing.
 - 4. Clearances and over-travel of car and counterweight.
 - 5. Locations in hoistway of traveling cables and connections for car lighting and telephone.
 - 6. Location and sizes of hoistway and car doors and frames.
 - 7. Applicable seismic design data; certified by a licensed Professional Structural Engineer.
 - 8. Electrical characteristics and connection requirements.
 - 9. Indicate arrangement of elevator equipment and allow for clear passage of equipment through access openings.
- D. Samples: Submit samples illustrating car floor material, car interior finishes, car and hoistway door and frame finishes, and handrail material and finish in the form of cut sheets or finish color selection brochures.
- E. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- F. Initial Maintenance Contract.
- G. Maintenance Contract: Submit proposal to Owner for standard one year continuing maintenance contract agreement in accordance with ASME A17.1 and requirements as indicated, starting on date initial maintenance contract is scheduled to expire.
 - 1. Indicate in proposal the services, obligations, conditions, and terms for agreement period and for renewal options.
- H. Operation and Maintenance Data:
 - 1. Parts catalog with complete list of equipment replacement parts; identify each entry with equipment description and identifying code.

2. Operation and maintenance manual.
3. Schematic drawings of equipment and wiring diagrams of installed electrical equipment with list of corresponding symbols to identify markings on machine room and hoistway apparatus.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of each quality standard document on site.
- B. Designer Qualifications: Design guide rails under direct supervision of a licensed Professional Structural Engineer experienced in design of this type of work and licensed in the State in which the Project is located.
- C. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum ten years documented experience.
- D. Installer Qualifications: Supervisor along with trained elevator installation personnel on staff of elevator equipment manufacturer.
- E. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and no more than 12 months before start of scheduled welding work.
- F. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of type specified in this section.
- G. Products Requiring Fire Resistance Rating: Listed and classified by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
- H. Products Requiring Electrical Connection: Listed and classified by UL (DIR) or testing agency acceptable to authorities having jurisdiction as suitable for the purpose indicated in construction documents.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Provide manufacturer's warranty for elevator operating equipment and devices for one year from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Electric Traction Elevators:
 1. Schindler Elevator Corporation; Schindler 3300 Low-Rise MRL: www.us.schindler.com/#sle.
 2. KONE; KONE MonoSpace 300 DX: www.kone.us
 3. Otis Elevator Company; Gen3 Core: www.otis.com
 4. TK Elevator; EOX: www.tkelevator.com/.

2.02 ELECTRIC TRACTION ELEVATORS

- A. Electric Traction Passenger Elevator:
 1. Electric Traction Elevator Equipment:
 - a. Gearless Traction Machine: Single wrapped traction driving sheave, with dual brake.
 2. Drive System:
 - a. Solid-state electronic device with alternating current (AC) with regenerative drive.
 3. Operation Control Type:
 - a. Single Automatic (Push Button) Operation Control.
 4. Service Control Type:
 - a. Standard service control only.
 5. Interior Car Height: 93 inch.
 6. Electrical Power: 480 volts; alternating current (AC); three phase; 60 Hz.
 7. Rated Net Capacity: 2100 pounds.

8. Rated Speed: 100 feet per minute.
9. Hoistway Size: As indicated on drawings.
10. Interior Car Platform Size: As indicated on drawings.
11. Elevator Pit Depth: 60 inch.
12. Overhead Clearance at Top Floor: 151 inch.
13. Travel Distance: As indicated on drawings.
14. Number of Stops: 2.
15. Number of Openings: 2 Front.
16. Traction Machine Location: Top of hoistway shaft.

2.03 COMPONENTS

- A. Elevator Equipment:
 1. Motors, Controllers, Controls, Buttons, Wiring, Devices, and Indicators: Comply with NFPA 70 requirements; see Section 26 05 83 for additional information.
 2. Guide Rails, Cables, Counterweights, Sheaves, Buffers, Attachment Brackets, and Anchors: Design criteria for components includes safety factors in accordance with applicable requirements of Elevator Code, ASME A17.1.
 3. Buffers:
 4. Lubrication Equipment:
 - a. Provide grease fittings for periodic lubrication of bearings.
 - b. Grease Cups: Automatic feed type.
 - c. Lubrication Points: Visible and easily accessible.
- B. Electrical Equipment:
 1. Motors: NEMA MG 1.
 2. Boxes, Conduit, Wiring, and Devices: Comply with NFPA 70 requirements; see Sections 26 05 33.13 and 26 05 83 for additional information.
 3. Sump Pump in Pit: See plumbing drawings and specifications.
 4. Spare Conductors: Provide ten percent in extra conductors and two pairs of shielded audio cables in traveling cables.
 5. Include wiring and connections to elevator devices remote from hoistway and between elevator machine room. Provide additional components and wiring to suit machine room layout. See Section 26 05 83.

2.04 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with ASME A17.1, applicable local codes, and authorities having jurisdiction (AHJ).
- B. Accessibility Requirements: Comply with ADA Standards.
- C. Perform structural steel design, fabrication, and installation in accordance with AISC 360.
- D. Comply with seismic design requirements in accordance with ASME A17.1, applicable local codes, and authorities having jurisdiction (AHJ).
 1. Comply with Elevator Safety Requirements for Seismic Risk Zone in accordance with ASME A17.1, ASCE 7, and other related requirements.
 2. Provide earthquake emergency operations in accordance with ASME A17.1 requirements.
 3. Provide seismic switch in accordance with ASME A17.1 and ASCE 7 requirements.
- E. Perform welding of steel in accordance with AWS D1.1/D1.1M.
- F. Fabricate and install door and frame assemblies in accordance with NFPA 80 and complying with requirements of authorities having jurisdiction (AHJ).
- G. Perform electrical work in accordance with NFPA 70.

2.05 OPERATION CONTROLS

- A. Elevator Controls: Provide landing operating panels and landing indicator panels.

1. Landing Operating Panels: Metallic type, one for originating "Up" and one for originating "Down" calls, one button only at terminating landings; with illuminating indicators.
 2. Landing Indicator Panels: Illuminating.
 3. Comply with ADA Standards for elevator controls.
- B. Interconnect elevator control system with building fire alarm and smoke alarm systems.
- C. Door Operation Controls:
1. Program door control to open doors automatically when car arrives at floor landing.
 2. Render "Door Close" button inoperative when car is standing at dispatch landing with doors open.
 3. Door Safety Devices: Moveable, retractable safety edges, quiet in operation; equipped with photo-electric light rays.

2.06 OPERATION CONTROL TYPE

- A. Single Automatic (Push Button) Operation Control: Applies to car in single elevator shaft.
1. Refer to description provided in ASME A17.1.
 2. Set system operation so that momentary pressure of landing button dispatches car from other landing to that landing.
 3. Allow call registered by momentary pressure of landing button at any time to remain registered until car stops in response to that landing call.
 4. If elevator car door is not opened within predetermined period of time after car has stopped at terminal landing, allow car to respond to call registered from other landing.

2.07 MATERIALS

- A. Rolled Steel Sections, Shapes, Rods: ASTM A36/A36M.
- B. Steel Sheet: ASTM A1008/A1008M, Designation CS (commercial steel), with matte finish.
- C. Stainless Steel Sheet: ASTM A666, Type 304; No. 4 Brushed finish unless otherwise indicated.
- D. Stainless Steel Bars, Shapes and Moldings: ASTM A276/A276M, Type 304.
- E. Extruded Aluminum: ASTM B221 (ASTM B221M), natural anodized finish unless otherwise indicated.
- F. Plywood: PS 1, Structural I, Grade C-D or better, sanded.
- G. Resilient Flooring: Sheet flooring, see Section 09 65 00.
- H. Plastic Laminate: NEMA LD 3, Type HGS, color as selected by Architect from manufacturer's standard line of colors.

2.08 CAR AND HOISTWAY ENTRANCES

- A. Elevator, No. 1:
1. Car and Hoistway Entrances, Main Elevator Lobby:
 - a. Hoistway Fire Rating: 1 Hour.
 - b. Elevator Door Fire Rating: 3/4 hour.
 - c. Framed Opening Finish and Material: Brushed stainless steel.
 - d. Car Door Material: Stainless steel, with rigid sandwich panel construction.
 - e. Hoistway Door Material: Stainless steel, with rigid sandwich panel construction.
 - f. Door Type: Single leaf.
 - g. Door Operation: Side opening, two speed.
 - h. Door Width: 36 inch.
 - i. Door Height: 84 inch.
 - j. Sills: Extruded aluminum.

2.09 CAR EQUIPMENT AND MATERIALS

- A. Elevator Car, No. 1:

1. Car Operating Panel: Provide main and auxiliary; flush-mounted applied face plate, with illuminated call buttons corresponding to floors served with "Door Open/Door Close" buttons, "Door Open" button, "Door Close" button, and alarm button.
 - a. Panel Material: Integral with front return; one per car.
 - b. Car Floor Position Indicator: Above door with illuminating position indicators.
 - c. Locate alarm button where it is unlikely to be accidentally actuated; not more than 54 inch above car finished floor.
 - d. Provide matching service cabinet integral with front return panel, with hinged door and keyed lock in each car.
2. Ventilation: Single-speed fan with grille in ceiling.
3. Flooring: Resilient sheet flooring.
4. Front Return Panel: Match material of car door.
5. Door Wall: Plastic laminate on plywood.
6. Side Walls: Plastic laminate on plywood.
7. Rear Wall: Plastic laminate on plywood.
8. Hand Rail: Stainless steel, at three side walls. Provide open clearance space 1-1/2 inch (38 mm) wide to face of wall.
 - a. Flat Bar Stock, Solid: 1/2 inch thick by 2 inch high.
 - b. Stainless Steel Finish: No. 4 Brushed.
9. Ceiling:
 - a. Exposed Frame Suspended Ceiling: Plastic laminate on plywood, mount 7 inch below car canopy with 1-1/2 inch nominal space between edge of ceiling and wall.
 - b. Lighting: LED.
- B. Car Accessories:
 1. Protective Pads: Canvas cover, padded with impact-resistant fill material, sewn with piping edges; fire resistant in compliance with ASME A17.1; brass grommets for supports, covering side and rear walls and front return, with cut-out for control panel; provide one set for each elevator.
 - a. Color: Tan.
 - b. Provide at least 4 inch clearance from bottom of pad to finished floor.
 - c. Pad Supports: Stainless steel studs, and mounted from ceiling frame.

2.10 FINISHES

- A. Field Painting: See Section 09 90 00.
- B. Powder Coat on Steel: Clean and degrease metal surface; apply one coat of primer; two coats of powder coat.
- C. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic, comply with VOC limitations of authorities having jurisdiction (AHJ).
- D. Clear Anodized Finish: Class I, AAMA 611 AA-M12C22A41 clear anodic coating with electrolytically deposited organic seal; not less than 0.7 mils, 0.0007 inch thick.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting this work.
- B. Verify that hoistway and pit are ready for work of this section.
- C. Verify hoistway shaft and openings are of correct size and within tolerance.
- D. Verify location and size of machine foundation and position of machine foundation bolts.
- E. Verify that electrical power is available and of correct characteristics.

3.02 PREPARATION

- A. Arrange for temporary electrical power for installation work and testing of elevator components. See Section 01 50 00 - Temporary Facilities and Controls for additional requirements.
- B. Maintain elevator pit excavation free of water.

3.03 INSTALLATION

- A. Coordinate this work with installation of hoistway wall construction.
- B. Install system components, and connect equipment to building utilities.
- C. Provide conduit, electrical boxes, wiring, and accessories; see Sections 26 05 33.13 and 26 05 83.
- D. Mount machines and motors on vibration and acoustic isolators.
 - 1. Place on structural supports and bearing plates.
 - 2. Securely fasten to building supports.
 - 3. Prevent lateral displacement.
- E. Install hoistway, elevator equipment, and components in accordance with approved shop drawings.
- F. Install guide rails to allow for expansion and contraction movement of guide rails.
- G. Accurately machine and align guide rails, forming smooth joints with machined splice plates.
- H. Bolt or weld brackets directly to structural steel hoistway framing.
- I. Field Welds: Chip and clean away oxidation and residue with wire brush; spot prime with two coats.
- J. Install hoistway door sills, frames, and headers in hoistway walls; grout sills in place, set hoistway floor entrances in alignment with car openings, and align plumb with hoistway.
- K. Fill hoistway door frames solid with grout; see Section 04 20 00 for additional information.
- L. Structural Metal Surfaces: Clean surfaces of rust, oil, or grease; wipe clean with solvent; prime with two coats.
- M. Wood Surfaces not Exposed to Public View: Finish with one coat primer; one coat enamel.
- N. Adjust equipment for smooth and quiet operation.

3.04 TOLERANCES

- A. Guide Rail Alignment: Plumb and parallel to each other in accordance with ASME A17.1 and ASME A17.2.
- B. Car Movement on Aligned Guide Rails: Smooth movement, without any objectionable lateral or oscillating movement or vibration.

3.05 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Testing and inspection by regulatory agencies certified in accordance with ASME QEI 1 will be performed at their discretion.
 - 1. Schedule tests with agencies and notify Owner and Architect.
 - 2. Obtain permits as required to perform tests.
 - 3. Document regulatory agency tests and inspections in accordance with requirements.
 - 4. Perform tests required by regulatory agencies.
- C. Perform testing and inspection in accordance with requirements.
- D. Operational Tests:
 - 1. Perform operational tests in the presence of Owner and Architect.
 - 2. At an agreed time, and the building occupied with normal building traffic, conduct tests to verify performance.

- a. Furnish event recording of each landing call registrations, time initiated, and response time throughout entire working day.
- 3. Set period of time elevator takes to travel between typical floor landings at not more than 10 seconds.
 - a. Measure time from moment doors start to close until car has stopped level at next floor landing and doors are opening.

3.06 ADJUSTING

- A. Adjust for smooth acceleration and deceleration of car to minimize passenger discomfort.
- B. Adjust with automatic floor leveling feature at each floor landing to reach 1/4 inch maximum from flush with sill.

3.07 CLEANING

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.
- B. Remove protective coverings from finished surfaces.
- C. Clean surfaces and components in accordance with manufacturers written instructions.

3.08 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals for closeout submittals.
- B. Demonstrate proper operation of equipment to Owner's designated representative.
- C. Demonstration: Demonstrate operation of system to Owner's personnel.
 - 1. Use operation and maintenance data as reference during demonstration.
 - 2. Conduct walking tour of project.
 - 3. Briefly describe function, operation, cleaning, and maintenance of each component.
- D. Training: Train Owner's personnel on cleaning and operation and maintenance of system.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 - 2. Provide minimum of two hours of training.
 - 3. Instructor: Manufacturer's training personnel.
 - 4. Location: At project site, unless otherwise indicated.

3.09 PROTECTION

- A. Do not permit construction traffic within car after cleaning.
- B. Protect installed products until Date of Substantial Completion.
- C. Touch up, repair, or replace damaged products and materials before Date of Substantial Completion.

3.10 MAINTENANCE

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements relating to initial maintenance service.
- B. Provide Initial Maintenance Contract of elevator system and components in accordance with ASME A17.1 and requirements as indicated for twelve months from Date of Substantial Completion.
- C. Submit proposal for continuation of Maintenance Contract in accordance with ASME A17.1 and requirements as indicated for installed elevator equipment.
- D. Perform maintenance contract services using competent and qualified personnel under the supervision and direct employ of the elevator manufacturer or installer.
- E. Maintenance contract services shall not be assigned or transferred to any agent or other entity without prior written consent of Owner.
- F. Include systematic examination, adjustment, and lubrication of elevator equipment.

- G. Maintain and repair or replace parts whenever required using parts produced by original equipment manufacturer.
- H. Replace wire ropes when necessary to maintain the required factor of safety.
- I. Perform work without removing cars from use during peak traffic periods.
- J. Provide emergency call back service during regular working hours throughout period of this maintenance contract.
- K. Maintain an adequate stock of parts for replacement or emergency purposes, and have personnel available to ensure the fulfillment of this maintenance contract without unreasonable loss of time.

END OF SECTION