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project manual

MAINE-ENDWELL CENTRAL SCHOOL DISTRICT

2022 Capital Improvement Project – Phase 5

Homer Brink Elementary School

project no. 23-44-7956

November 10, 2025

Issued for Bid: October 12, 2026

volume 1 of 2

set no.

Job No. 23-44-7956

PROJECT MANUAL

PROJECT

Maine-Endwell Central School District
2022 CAPITAL IMPROVEMENT PROJECT – PHASE 5
HOMER BRINK ELEMENTARY SCHOOL

K-12 Building: SED # 03-11-01-06-0-001-023

License Expiration Date: 5/31/2029

ARCHITECT

KING & KING ARCHITECTS LLP
358 West Jefferson Street
Syracuse, New York 13202
(315) 682-6180

CONSULTING ENGINEERS

SEPTEMBER 30, 2029

Registration current through 9/30/2028

Landscape Architect:
APPEL OSBORNE
102 West Division Street, Suite 100
Syracuse, New York 13204

Structural Engineer:
ST. GERMAIN & AUPPERLE CONSULTING ENGINEERS, PLLC
5711 West Genesee Street
Camillus, New York 13031

Mechanical/Electrical/Plumbing Engineer:
IBC ENGINEERING, P.C.
3445 Winton Place, Suite 219
Rochester, New York 14623

EXP 6/30/2029

REGISTRATION EXPIRATION: 09.30.2025

Environmental Engineer:
DELTA ENGINEERS
860 Hooper Road
Endwell, New York 13760

To the best of our knowledge, information and belief, the plans and project manual are in accordance with applicable requirements of the New York State Uniform Fire Prevention and Building Code, the State Energy Conservation Construction Code and construction standards of the State Education Department and the New York State Department of Labor Industrial Code Rule 56.

Date: November 10th, 2025
Issued for Bid: October 12, 2026

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FOR

PROJECT

MAINE ENDWELL SCHOOL DISTRICT
2022 CAPITAL IMPROVEMENT PROJECT – PHASE 5
HOMER BRINK ELEMENTARY SCHOOL

Homer Brink Elementary School SED # 03-11-01-06-0-001-023

KING + KING ARCHITECTS, LLP
358 West Jefferson Street
Syracuse, New York 13202

Date: November 10, 2025
Issued for Bid: October 12, 2026

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ADVERTISEMENT
INVITATION FOR BIDS

The Maine-Endwell Central School District invites sealed bids, in duplicate, for:

General Construction (GC)
Mechanical Construction (MC)
Plumbing Construction (PC)
Electrical Construction (EC)

For: **2022 Capital Improvement Project – Phase 5**
Homer Brink Elementary School

SUBMISSION OF BIDS

Base Bids will be received by the Owner until **2:00 PM**, Local Time, **Tuesday, November 17, 2026** at the Maine Endwell CSD District Office (located within the High School), 712 Farm to Market Road, Endwell, NY 13760.

Contractors should refer to 2008 Wicks Reform and New York State Labor Law Section 220-i for additional submission procedures and requirements not otherwise outlined in the contract documents.

OPENING OF BIDS

Base Bids will be received and read aloud at 2:05 PM, Local Time, Tuesday, November 17, 2026 at the Maine-Endwell CSD District Office – Staff Development Room, 712 Farm to Market Road, Endwell, NY 13760.

EXAMINATION OF CONTRACT DOCUMENTS

Contract Documents may be examined at the following locations:

King + King, Architects LLP
358 West Jefferson Street
Syracuse, NY 13202
315.682.6180
315.682.7891 (f)

Plan and Print Systems, Inc.
6160 Eastern Avenue
Syracuse, NY 13211
315.437.5111
315.463.1510 (f)

Associated Building Contractors of the Triple Cities
15 Belden Street
Binghamton, NY 13903
607.771.7000
607.771.7001 (f)

LeChase Construction
31 Lewis Street, Suite 303
Binghamton, NY 13901
Brian Grinter, PM
607.238.6555

Northern NY Builders Exchange
22074 Fabco Road
Watertown, NY 13601
315.788.1330
315.788.9357 (f)

Builders Exchange of Rochester
180 Linden Oaks
Suite 100
Rochester, NY 14625
585.586.5460
585.586.1580 (f)

Syracuse Builders Exchange
6563 Ridings Road
Syracuse, NY 13206
315.437.9936
315.437.5044 (f)

Mohawk Valley Builders Exchange
10 Main Street, Suite 202
Whitesboro, New York 13492
315.736.2441
315.736.2445 (f)

Tri-County Builders Exchange Plan Room, c/o
Pickett Building Management
6459 State Highway 23
Oneonta, NY 13820
607.432.6641
607.433.6284 (f)

OBTAINING ELECTRONIC CONTRACT DOCUMENTS
Contract Documents may be downloaded from the Plan and Print Systems, Inc. website for a **non-refundable** cost of $49.00. Electronic Contract Documents on a flash drive may also be obtained from Plan & Print (Telephone: 315.437.5111, Fax: 315.463.1510) upon payment of a **non-refundable** $49.00 plus shipping and handling per flash drive. Contact Plan & Print for shipping and handling costs. Checks shall be made payable to **Plan & Print Systems, Inc.**

OBTAINING PAPER CONTRACT DOCUMENTS
Contract Documents may be obtained at Plan & Print Systems, Inc., 6160 Eastern Ave, Syracuse, NY 13211 (Telephone: 315.437.5111, Fax: 315.463.1510) upon receipt of a $100.00 deposit per set. Checks for deposit for Contract Documents shall be made payable to Maine Endwell CSD. Cash will not be accepted as a deposit. Prospective Bidders will be issued a maximum of two (2) sets each. Subcontractors, Material Suppliers, etc., will be issued a maximum of one (l) set each.

Contract documents will be delivered via UPS Ground service upon request and receipt of an additional non-refundable delivery and handling charge, payable by separate check to Plan & Print Systems, Inc. Contact Plan & Print for shipping and handling costs.

Any sets required in excess of the above-mentioned maximums are to be obtained directly by interested parties at the full cost of printing, **at their cost**, directly from Plan and Print Systems.

Only complete sets will be issued.

At the time the order is placed, plan holder shall advise Plan and Print Systems of status as to prime bidder, subcontractor, or material supplier and to trade affiliation. Postal address, telephone number, fax number, and email will also be required.

ADDENDA
Addenda for this project will be emailed to each plan holder of record, except as noted. Addenda containing full sized drawings will be issued in hard copy format only and sent via UPS. It is the responsibility of each prospective bidder to submit an accurate email address when requesting Bidding/Contract Documents and to download each addendum. Addenda will be sent to the e-mail address on record.

RETURN OF CONTRACT DOCUMENTS
Upon returning sets promptly and in re-usable condition to **Plan & Print Systems, Inc.** within **30 days** after the date of the Bid opening, deposits will be refunded as follows:

1. Any Bidder will be refunded his or her deposit in full.

2. All other persons receiving any or all the Contract Documents, including Subcontractors and Material Suppliers, will be refunded their deposit in full.

All Contract Documents received (except for Documents held by Successful Bidders) must be returned to **Plan & Print Systems, Inc**., at the above address.

For Contract Documents which are not returned to the printer within this 30-day period, deposits will NOT be refunded.

RIGHT TO WAIVE OR REJECT
The Owner reserves the right to waive any informality in or to reject any or all Bids.

BID SECURITY
Each Bidder must deposit with its Bid, security in an amount and form subject to the conditions provided in the Contract Documents.

WITHDRAWAL OF BIDS
Withdrawal of Bids will be subject to the conditions provided in the Instructions to Bidders.

COMPLETION TIME
The work of this project shall be completed by the dates set forth in Section 011100 entitled "Summary of Work."

PRE-BID MEETING
A Pre-Bid Meeting will be held to answer questions that may arise during the bidding period. The meeting will be held at 2:30 PM on October 27, 2026 at Homer Brink Elementary School – Gymnasium. Contractors are encouraged to park in the Upper Parking Lot and enter the building through the Main Entrance.

INSPECTION OF SITE
Bidders will be able to visit the Site at the convenience of the Maine-Endwell Central School District with a minimum of forty-eight hours prior notification to Brian Grinter, Project Manager at LeChase on site in M-E CSD.

REQUESTS FOR INFORMATION
Requests for interpretation, information or clarification (RFI) of the Contract Documents must be made in writing to King + King Architects and LeChase Construction. Responses to RFIs will not be made over the telephone. Responses to RFIs will be advisory only and will not modify the Contract Documents. The Contract Documents stand as published except as modified by written Addenda before bid and Modifications after execution of the Agreement.

RFIs may be emailed to both:

Mr. Michael James
mjames@kingarch.com
King + King Architects LLP
358 W. Jefferson Street
Syracuse, New York 13202

Mr. Brian Grinter
brian.grinter@lechase.com
LeChase Construction
c/o Maine-Endwell CSD
750 Farm to Market Road
Endwell, New York 13760

Deadline for RFI's is November 10, 2026.

AIA® Document A701® – 2018

Instructions to Bidders

for the following Project:

THE OWNER:

THE ARCHITECT:

King + King Architects, LLP
358 West Jefferson Street
Syracuse, New York 13202
Telephone Number: 315-671-2400

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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.

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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;

(Paragraph deleted)

- **.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.

§ 2.2 Conditions Affecting the Work: All Bidders shall visit the site and take such other steps as may be necessary to ascertain the nature and location of the Work, and the general and local conditions which can affect the Work or the cost thereof. All visits must be made with arrangements as specified in the Advertisement or Invitation to Bid. The site visitation shall be limited to those persons or firms who are "Plan holders of Record" or accompanied by "Planholders of Record." In addition, Bidders shall examine all Contract Documents in relation to the site, the structure and condition of the ground, the obstacles which may be encountered and all other conditions having a bearing upon the performance of the Work, superintendence of the Work, requirements for heat, time of completion and all other relevant matters. Failure to take such steps shall not relieve Bidders from responsibility for estimating properly the difficulty or cost of successfully performing the work. The Owner assumes no responsibility for any understanding or representations concerning conditions made by any of its agents, representatives or employees prior to the execution of the Contract, unless included in the Contract Documents.

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User Notes: (728003956)

§ 2.3 The Bidder's attention has been directed to the fact that all applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

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.
(Paragraph deleted)

§ 3.1.2 Any required deposit shall be refunded to Bidders as specified in the Advertisement or Invitation to Bid. The cost to replace missing or damaged paper documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded.

§ 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 in writing of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to Section 3.2.2.

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least ten (10) or more business days prior to the date for receipt of
(Paragraphs deleted)
Bids, or earlier if more time may be required, to permit all necessary investigation and to allow sufficient time for a reply to reach all perspective Bidders before submission of their Bids.

§ 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. Oral explanations or instructions given before award of the Contract will not be binding upon the Owner, the Architect or their representatives.

§ 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 Substitutions will be considered upon written request as specified in Section 012500, "Equivalency" and as specified in the General Conditions, Article 3, subparagraph 3.4.2 as amended by the Supplementary General Conditions..

§ 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

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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 Intentionally deleted.

§ 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

(Paragraphs deleted)

The Architect will endeavor to mail or electronically notify every plan holder of record of any addenda issued. However, it shall be the Bidder's responsibility to make inquiry as to any addenda issued. All such addenda shall become part of the Contract Documents and shall be bound by such addenda whether or not received by the bidders..

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

§ 3.4.3 Addenda will be issued no later than three 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 in duplicate on the forms included with or identified in the Bidding Documents.

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

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

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

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

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

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

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

§ 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by

(Paragraphs deleted)

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Bid security in the form of a Certified Check of the Bidder or a Bid Bond duly executed by the Bidder as principal and having a Surety Company thereon qualified to do business in the State of the project, in an amount not less than 5% of the amount of the Base Bid, pledging that the Bidder will enter into a Contract with the Owner on the terms stated in the Contract Documents and will, if required, furnish Bonds as described in Article 7 covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract within l0 days after he has been offered a Contract or fails to furnish such bonds, if required, the amount of the Bid security shall be forfeited to the Owner as liquidated damages, not as penalty. The amount of the Bid security shall not be forfeited to the Owner in the event the Owner fails to comply with Subparagraph 6.2.

§ 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 the three lowest Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) forty-five (45) days after formal Bid opening, so long as Bidder has not been notified of the acceptance of its Bid; or (c) all Bids have been rejected.

§ 4.3 Submission of Bids

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

(Paragraph deleted)

As specified in the Advertisement or Invitation to Bid.

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

§ 4.3.3 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

(Paragraphs deleted)

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Bidder shall not modify, withdraw or cancel his Bid or any part thereof for forty-five (45) days after the time designated for the receipt of Bids in the Advertisement or Invitation to Bid and the Bidder so agrees in submitting his Bid.

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 Owner's Financial Capability

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

§ 6.3 Submittals

§ 6.3.1 Within fourteen days of issuance of the Letter of Intent/Notice to Proceed, prior to the Owner's execution of contract, the Contractor shall submit the following information to the Architect in writing:

- **.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.

§ 6.3.2.1 Within seven (7) days of issuance of the Letter of Intent/Notice to Proceed, submit names of superintendent, project manager, or any other corporate representative that will be directly involved in execution of the project.

§ 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.

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§ 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.

§ 6.3.5 Within seven (7) days of issuance of the letter of Intent/Notice to Proceed the Contractor shall submit required Insurance certificates.

§ 6.3.6 Submission of any proposed equivalents shall follow guidelines as indicated in Specification Section 012500 - "Equivalency".

§ 6.3.7 Cost Breakdown: Within twenty-four (24) hours of receipt of bids, the three (3) low bidders shall provide a cost breakdown of their bid into Costs associated for each building.

§ 6.3.8 Submission of information in relation to subcontractors, materials, costs, etc., shall be as specified in the Supplementary General Conditions of the Contract Documents, unless directed otherwise.

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 The Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.
(Paragraphs deleted)

§ 7.2 Time of Delivery and Form of Bonds

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than 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 A311, 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 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

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

.1 AIA Document A132-2019, Standard Form of Agreement Between Owner and Contractor, as modified.

(Paragraphs deleted)

.2 AIA Document A232-2019, General Conditions of the Contract for Construction, as modified.

(Paragraph deleted)

.3 Drawings – see Drawing Index in the Project Manual.

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.4 Specifications – see Index in the Project Manual.

(Paragraph deleted)

.5 Addenda, if any.

(Table deleted)

.6

(Paragraphs deleted)

Other Exhibits:

Bid Form

(Paragraphs deleted)

NYS Prevailing Wage Schedule

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GENERAL CONSTRUCTION BID FORM

FOR

PROJECT

Maine Endwell Central School District

2022 Capital Improvement Project – Phase 5
Homer Brink Elementary School

SEE INVITATION TO BID FOR DATE, TIME AND PLACE FOR RECEIPT OF BIDS

The undersigned _____
(Name of Bidder)

_____
(Address)

Contact: _____

Phone: _____

Email: _____

The Bidder hereby certifies that he has visited the site and has examined and fully comprehends the requirements and intent of the Plans and Project Manual of the proposed work, and being familiar with all the conditions surrounding the construction of the project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, supplies, plant and equipment, and other facilities necessary or proper for or incidental to the performance of the proposed work and does hereby agree to perform all

GENERAL CONSTRUCTION WORK (GC)

of the project in accordance with the Contract Documents at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

The Bidder agrees to furnish all Materials, Labor, and all other costs for the Total Lump Sum Base Bid of

_____DOLLARS ($_____)

These amounts, and the amounts indicated for Alternates, if any, shall be shown in words and figures. In the event of discrepancy, words will govern.

ALLOWANCES (See Project Manual Section 012100)

The Bidder acknowledges the amount shown above **includes** the following allowances:

ALLOWANCE NO. GC-01 Contingency Cash Allowance $ 225,000.00

ALTERNATES (See Project Manual Section 012300)

The Bidder shall submit the following Alternate Bids in accordance with Contract Documents. Alternate bids, if accepted by the Owner, shall become a part of the Contract and shall comply with all of the applicable Contract Documents.

Note: Where the Alternate work does not add to or subtract from the cost of the Base Bid of this work, write the word "None" in the space for Total Add or Deduct. Where the word ADD and the word DEDUCT appear together below, cross out non-applicable word.

ALTERNATE NO. GC-01: BUS LOOP LIGHTING
The Bidder shall state the amount to be ADDED to the Base Bid if this Alternate is accepted.

Total ADD_____DOLLARS ($_____)

ALTERNATE NO. GC-02: PLAYGROUND & UPPER PARKING LOT LIGHTING
The Bidder shall state the amount to be ADDED to the Base Bid if this Alternate is accepted.

Total ADD_____DOLLARS ($_____)

ALTERNATE NO. GC-03: TEMPORARY SLOPE REGRADING AT THE EAST PARKING LOT
The Bidder shall state the amount to be ADDED to the Base Bid if this Alternate is accepted.

Total ADD_____DOLLARS ($_____)

ALTERNATE NO. GC-04: STAIR ST-1 – STAIR TREAD AND LANDING REPLACEMENT
The Bidder shall state the amount to be ADDED to the Base Bid if this Alternate is accepted.

Total ADD_____DOLLARS ($_____)

ALTERNATE NO. GC-05: STAIR ST-2 – STAIR TREAD AND LANDING REPLACEMENT
The Bidder shall state the amount to be ADDED to the Base Bid if this Alternate is accepted.

Total ADD_____DOLLARS ($_____)

UNIT PRICES (See Project Manual Section 012200)

The Bidder shall set forth the cost of all unit prices listed below. Should the work listed below be increased or decreased from the amounts shown on the Contract Drawings and/or Project Manual, upon written notice from the Architect, the undersigned Bidder agrees that the prices quoted below (including all insurance, applicable taxes, equipment, overhead and profit), shall be the basis of his compensation or deduction, as the case may be, for such increase or decrease in his work. All work added shall be at the

quoted unit prices, and all work deleted shall be at the quoted unit prices less ten percent (10%). Changes shall be processed in accordance with Contract Documents.

ITEM	UNIT OF QUANTITY	TOTAL
GC-01: Undercutting	per cubic yard, installed	$_____
GC-02: Soil Stabilization Fabric	per square yard, installed	$_____
GC-03: Rock Removal	per cubic yard, installed	$_____
GC-04: Heavy Duty Asphalt	per square yard, installed	$_____
GC-05: Standard Concrete Sidewalk/Pads	per square foot, installed	$_____
GC-06: Sodded Lawn	per square yard, installed	$_____
GC-07: 4" Storm Water Management Trench (SMT)	per linear foot, installed	$_____

RIGHT TO WAIVE OR REJECT

The Bidder understands that the right is reserved by the Owner to accept or reject any or all bids.

QUALIFICATION OF BIDDER

Upon request after the bid opening, the Bidder shall submit a fully executed AIA A305 Contractor's Qualification Statement, to be qualified as the lowest responsible bidder.

All contractors and subcontractors submitting bids or performing construction work on public work projects or private projects covered by Article 8 of the Labor Law are required to register with the New York State Department of Labor (NYSDOL) under Labor Law Section 220-i. The Bidder encloses with this Bid a copy of its valid NYSDOL Certificate of Registration. Application for registration is not accepted as a proof of registration and a Bid not accompanied by a valid NYSDOL Certificate of Registration is subject to rejection.

WITHDRAWAL OF BIDS

The Bidder agrees that this bid may not be withdrawn for a period of forty-five (45) calendar days after closing time of same.

PERFORMANCE-PAYMENT BOND

The Bidder agrees, if awarded the Contract, to execute and deliver performance and matching payment bonds in the form bound in the Specifications, both in the amount of the Contract; and to deliver insurance certificates and endorsements for insurance required by the Specifications, upon execution of

the Contract. Award of the Contract shall be contingent upon review and acceptance of bonds and insurance by the Owner.

TIME

The Bidder agrees to commence work when directed by the Owner in a Notice-To-Proceed, and to complete the work as specified in Section 011100 "Summary".

BID SECURITY

The Bidder encloses with this Bid this Bid Security required by the Contract Documents in the form of a Certified Check ( ), or Bid Bond ( ) (check one) in the amount of _____ _____DOLLARS ($_____) which represents not less than 5% of the Base Bid.

ADDENDUM RECEIPT

The Bidder Acknowledges Addendum No. ____Dated_____
____Dated_____
____Dated_____
____Dated_____
____Dated_____

SIGNED:_____

TITLE: _____

FOR: _____
(Firm - Indicate if Corporation, Partnership, Individual, Other)

FIRM ADDRESS: _____

STATE INCORPORATED, IF INCORPORATED: _____

CORPORATE SEAL, IF INCORPORATED, SHALL BE STAMPED BELOW

DATE: _____

NON-COLLUSIVE BIDDING CERTIFICATION:

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his knowledge and belief: (1) the prices in this bid have been arrived at independently without collusion, consultation, communications, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; (2) unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and (3) no attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

SIGNED: _____

TITLE: _____

FOR: _____
(Firm - Indicate if Corporation, Partnership, Individual, Other)

FIRM ADDRESS: _____

STATE INCORPORATED, IF INCORPORATED: _____

CORPORATE SEAL, IF INCORPORATED, SHALL BE STAMPED BELOW

DATE: _____

Certification of Compliance with the
NEW YORK STATE IRAN DIVESTMENT ACT OF 2012
(Must be signed and returned with Bid)

By submitting a bid in response to this solicitation or by assuming the responsibility of a Contract awarded hereunder, Bidder/Contractor (or any assignee) certifies that it is not on the "Entities Determined To Be Non-Responsive Bidders/Offerers Pursuant to The New York State Iran Divestment Act of 2012" list ("Prohibited Entities List") posted on the OGS website at: http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf and further certifies that it will not utilize on such Contract any subcontractor that is identified on the Prohibited Entities List. Additionally, Bidder/Contractor is advised that should it seek to renew or extend a Contract awarded in response to the solicitation, it must provide the same certification at the time the Contract is renewed or extended.

During the term of the Contract, should the Owner receive information that a person (as defined in State Finance Law §165-a) is in violation of the above-referenced certifications, The Owner will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the Act within 90 days after the determination of such violation, then the Owner shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, seeking compliance, recovering damages, or declaring the Contractor in default.

The Owner reserves the right to reject any bid, request for assignment, renewal or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.

Any bid hereafter made to any political subdivision of the state or any public department, agency or official thereof by a corporate bidder for work or services performed or to be performed or goods sold or to be sold, where competitive bidding is required by statute, rule, regulation, or local law, deemed to have been authorized by the board of directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of this certificate as to compliance with the New York State Iran Divestment Act of 2012.

NAME (PRINT OR TYPE) _____

SIGNATURE _____

TITLE _____

Certification Of Compliance with the
DAVIS-BACON ACT
(Must be signed and returned with Bid)

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

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

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

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

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

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

SIGNED: _____

TITLE: _____

FOR: _____
(Name of Bidder)

STATE OF NEW YORK)
COUNTY OF)

On _____, before me, the undersigned, a Notary Public in and for said to me State, personally appeared _____ personally known to me or proved on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her capacity(ies), and that by his/her signature(s) on the instrument, the individual(s) or the person on behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public

Certification of Compliance with the
NEW YORK STATE FINANCE LAW §139-L
(Must be signed and returned with Bid)

State Finance Law §139-L requires bidders on state procurements to certify that they have a written policy addressing sexual harassment prevention in the workplace and provide annual sexual harassment training (that meets the Department of Labor's model policy and training standards) to all its employees.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of N.Y. State Labor Law §201-G.

SIGNED: _____

TITLE: _____

FOR: _____
(Name of Bidder)

END OF BID FORM

MECHANICAL CONSTRUCTION BID FORM

FOR

PROJECT

Maine Endwell Central School District

2022 Capital Improvement Project – Phase 5
Homer Brink Elementary School

SEE INVITATION TO BID FOR DATE, TIME AND PLACE FOR RECEIPT OF BIDS

The undersigned _____
(Name of Bidder)

_____
(Address)

Contact: _____

Phone: _____

Email: _____

The Bidder hereby certifies that he has visited the site and has examined and fully comprehends the requirements and intent of the Plans and Project Manual of the proposed work, and being familiar with all the conditions surrounding the construction of the project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, supplies, plant and equipment, and other facilities necessary or proper for or incidental to the performance of the proposed work and does hereby agree to perform all

MECHANICAL CONSTRUCTION WORK (MC)

of the project in accordance with the Contract Documents at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

The Bidder agrees to furnish all Materials, Labor, and all other costs for the Total Lump Sum Base Bid of

_____DOLLARS ($_____)

These amounts, and the amounts indicated for Alternates, if any, shall be shown in words and figures. In the event of discrepancy, words will govern.

ALLOWANCES (See Project Manual Section 012100)

The Bidder acknowledges the amount shown above **includes** the following allowances:

ALLOWANCE NO. MC-01	Contingency Cash Allowance	$ 70,000.00

ALTERNATES - None.

UNIT PRICES – None.

RIGHT TO WAIVE OR REJECT

The Bidder understands that the right is reserved by the Owner to accept or reject any or all bids.

QUALIFICATION OF BIDDER

Upon request after the bid opening, the Bidder shall submit a fully executed AIA A305 Contractor's Qualification Statement, to be qualified as the lowest responsible bidder.

All contractors and subcontractors submitting bids or performing construction work on public work projects or private projects covered by Article 8 of the Labor Law are required to register with the New York State Department of Labor (NYSDOL) under Labor Law Section 220-i. The Bidder encloses with this Bid a copy of its valid NYSDOL Certificate of Registration. Application for registration is not accepted as a proof of registration and a Bid not accompanied by a valid NYSDOL Certificate of Registration is subject to rejection.

WITHDRAWAL OF BIDS

The Bidder agrees that this bid may not be withdrawn for a period of forty-five (45) calendar days after closing time of same.

PERFORMANCE-PAYMENT BOND

The Bidder agrees, if awarded the Contract, to execute and deliver performance and matching payment bonds in the form bound in the Specifications, both in the amount of the Contract; and to deliver insurance certificates and endorsements for insurance required by the Specifications, upon execution of the Contract. Award of the Contract shall be contingent upon review and acceptance of bonds and insurance by the Owner.

TIME

The Bidder agrees to commence work when directed by the Owner in a Notice-To-Proceed, and to complete the work as specified in Section 011100 “Summary”.

BID SECURITY

The Bidder encloses with this Bid this Bid Security required by the Contract Documents in the form of a Certified Check ( ), or Bid Bond ( ) (check one) in the amount of _____ _____DOLLARS ($_____) which represents not less than 5% of the Base Bid.

ADDENDUM RECEIPT

The Bidder Acknowledges Addendum No. ____Dated_____
____Dated_____
____Dated_____
____Dated_____
____Dated_____

SIGNED:_____

TITLE: _____

FOR: _____
(Firm - Indicate if Corporation, Partnership, Individual, Other)

FIRM ADDRESS: _____

STATE INCORPORATED, IF INCORPORATED: _____

CORPORATE SEAL, IF INCORPORATED, SHALL BE STAMPED BELOW

DATE: _____

NON-COLLUSIVE BIDDING CERTIFICATION:

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his knowledge and belief: (1) the prices in this bid have been arrived at independently without collusion, consultation, communications, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; (2) unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and (3) no attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

SIGNED: _____

TITLE: _____

FOR: _____
(Firm - Indicate if Corporation, Partnership, Individual, Other)

FIRM ADDRESS: _____

STATE INCORPORATED, IF INCORPORATED: _____

CORPORATE SEAL, IF INCORPORATED, SHALL BE STAMPED BELOW

DATE: _____

Certification of Compliance with the
NEW YORK STATE IRAN DIVESTMENT ACT OF 2012
(Must be signed and returned with Bid)

By submitting a bid in response to this solicitation or by assuming the responsibility of a Contract awarded hereunder, Bidder/Contractor (or any assignee) certifies that it is not on the "Entities Determined To Be Non-Responsive Bidders/Offerers Pursuant to The New York State Iran Divestment Act of 2012" list ("Prohibited Entities List") posted on the OGS website at: http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf and further certifies that it will not utilize on such Contract any subcontractor that is identified on the Prohibited Entities List. Additionally, Bidder/Contractor is advised that should it seek to renew or extend a Contract awarded in response to the solicitation, it must provide the same certification at the time the Contract is renewed or extended.

During the term of the Contract, should the Owner receive information that a person (as defined in State Finance Law §165-a) is in violation of the above-referenced certifications, The Owner will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the Act within 90 days after the determination of such violation, then the Owner shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, seeking compliance, recovering damages, or declaring the Contractor in default.

The Owner reserves the right to reject any bid, request for assignment, renewal or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.

Any bid hereafter made to any political subdivision of the state or any public department, agency or official thereof by a corporate bidder for work or services performed or to be performed or goods sold or to be sold, where competitive bidding is required by statute, rule, regulation, or local law, deemed to have been authorized by the board of directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of this certificate as to compliance with the New York State Iran Divestment Act of 2012.

NAME (PRINT OR TYPE) _____

SIGNATURE _____

TITLE _____

Certification Of Compliance with the
DAVIS-BACON ACT
(Must be signed and returned with Bid)

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

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

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

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

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

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

SIGNED: _____

TITLE: _____

FOR: _____
(Name of Bidder)

STATE OF NEW YORK)
COUNTY OF)

On _____, before me, the undersigned, a Notary Public in and for said to me State, personally appeared _____ personally known to me or proved on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her capacity(ies), and that by his/her signature(s) on the instrument, the individual(s) or the person on behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public

Certification of Compliance with the
NEW YORK STATE FINANCE LAW §139-L
(Must be signed and returned with Bid)

State Finance Law §139-L requires bidders on state procurements to certify that they have a written policy addressing sexual harassment prevention in the workplace and provide annual sexual harassment training (that meets the Department of Labor's model policy and training standards) to all its employees.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of N.Y. State Labor Law §201-G.

SIGNED: _____

TITLE: _____

FOR: _____
(Name of Bidder)

END OF BID FORM

PLUMBING CONSTRUCTION BID FORM

FOR

PROJECT

Maine Endwell Central School District

2022 Capital Improvement Project – Phase 5
Homer Brink Elementary School

SEE INVITATION TO BID FOR DATE, TIME AND PLACE FOR RECEIPT OF BIDS

The undersigned _____
(Name of Bidder)

_____
(Address)

Contact: _____

Phone: _____

Email: _____

The Bidder hereby certifies that he has visited the site and has examined and fully comprehends the requirements and intent of the Plans and Project Manual of the proposed work, and being familiar with all the conditions surrounding the construction of the project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, supplies, plant and equipment, and other facilities necessary or proper for or incidental to the performance of the proposed work and does hereby agree to perform all

PLUMBING CONSTRUCTION WORK (PC)

of the project in accordance with the Contract Documents at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

The Bidder agrees to furnish all Materials, Labor, and all other costs for the Total Lump Sum Base Bid of

_____DOLLARS ($_____)

These amounts, and the amounts indicated for Alternates, if any, shall be shown in words and figures. In the event of discrepancy, words will govern.

ALLOWANCES (See Project Manual Section 012100)

The Bidder acknowledges the amount shown above **includes** the following allowances:

ALLOWANCE NO. PC-01	Contingency Cash Allowance	$ 15,000.00

ALTERNATES – None.

UNIT PRICES – None.

RIGHT TO WAIVE OR REJECT

The Bidder understands that the right is reserved by the Owner to accept or reject any or all bids.

QUALIFICATION OF BIDDER

Upon request after the bid opening, the Bidder shall submit a fully executed AIA A305 Contractor's Qualification Statement, to be qualified as the lowest responsible bidder.

All contractors and subcontractors submitting bids or performing construction work on public work projects or private projects covered by Article 8 of the Labor Law are required to register with the New York State Department of Labor (NYSDOL) under Labor Law Section 220-i. The Bidder encloses with this Bid a copy of its valid NYSDOL Certificate of Registration. Application for registration is not accepted as a proof of registration and a Bid not accompanied by a valid NYSDOL Certificate of Registration is subject to rejection.

WITHDRAWAL OF BIDS

The Bidder agrees that this bid may not be withdrawn for a period of forty-five (45) calendar days after closing time of same.

PERFORMANCE-PAYMENT BOND

The Bidder agrees, if awarded the Contract, to execute and deliver performance and matching payment bonds in the form bound in the Specifications, both in the amount of the Contract; and to deliver insurance certificates and endorsements for insurance required by the Specifications, upon execution of the Contract. Award of the Contract shall be contingent upon review and acceptance of bonds and insurance by the Owner.

TIME

The Bidder agrees to commence work when directed by the Owner in a Notice-To-Proceed, and to complete the work as specified in Section 011100 “Summary”.

BID SECURITY

The Bidder encloses with this Bid this Bid Security required by the Contract Documents in the form of a Certified Check ( ), or Bid Bond ( ) (check one) in the amount of _____

_____DOLLARS ($_____) which represents not less than 5% of the Base Bid.

ADDENDUM RECEIPT

The Bidder Acknowledges Addendum No. ____Dated_____
____Dated_____
____Dated_____
____Dated_____
____Dated_____

SIGNED:_____

TITLE: _____

FOR: _____
(Firm - Indicate if Corporation, Partnership, Individual, Other)

FIRM ADDRESS: _____

STATE INCORPORATED, IF INCORPORATED: _____

CORPORATE SEAL, IF INCORPORATED, SHALL BE STAMPED BELOW

DATE: _____

NON-COLLUSIVE BIDDING CERTIFICATION:

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his knowledge and belief: (1) the prices in this bid have been arrived at independently without collusion, consultation, communications, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; (2) unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and (3) no attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

SIGNED: _____

TITLE: _____

FOR: _____
(Firm - Indicate if Corporation, Partnership, Individual, Other)

FIRM ADDRESS: _____

STATE INCORPORATED, IF INCORPORATED: _____

CORPORATE SEAL, IF INCORPORATED, SHALL BE STAMPED BELOW

DATE: _____

Certification of Compliance with the
NEW YORK STATE IRAN DIVESTMENT ACT OF 2012
(Must be signed and returned with Bid)

By submitting a bid in response to this solicitation or by assuming the responsibility of a Contract awarded hereunder, Bidder/Contractor (or any assignee) certifies that it is not on the "Entities Determined To Be Non-Responsive Bidders/Offerers Pursuant to The New York State Iran Divestment Act of 2012" list ("Prohibited Entities List") posted on the OGS website at: http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf and further certifies that it will not utilize on such Contract any subcontractor that is identified on the Prohibited Entities List. Additionally, Bidder/Contractor is advised that should it seek to renew or extend a Contract awarded in response to the solicitation, it must provide the same certification at the time the Contract is renewed or extended.

During the term of the Contract, should the Owner receive information that a person (as defined in State Finance Law §165-a) is in violation of the above-referenced certifications, The Owner will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the Act within 90 days after the determination of such violation, then the Owner shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, seeking compliance, recovering damages, or declaring the Contractor in default.

The Owner reserves the right to reject any bid, request for assignment, renewal or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.

Any bid hereafter made to any political subdivision of the state or any public department, agency or official thereof by a corporate bidder for work or services performed or to be performed or goods sold or to be sold, where competitive bidding is required by statute, rule, regulation, or local law, deemed to have been authorized by the board of directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of this certificate as to compliance with the New York State Iran Divestment Act of 2012.

NAME (PRINT OR TYPE) _____

SIGNATURE _____

TITLE _____

Certification Of Compliance with the
DAVIS-BACON ACT
(Must be signed and returned with Bid)

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

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

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

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

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

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

SIGNED: _____

TITLE: _____

FOR: _____
(Name of Bidder)

STATE OF NEW YORK)
COUNTY OF)

On _____, before me, the undersigned, a Notary Public in and for said to me State, personally appeared _____ personally known to me or proved on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her capacity(ies), and that by his/her signature(s) on the instrument, the individual(s) or the person on behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public

Certification of Compliance with the
NEW YORK STATE FINANCE LAW §139-L
(Must be signed and returned with Bid)

State Finance Law §139-L requires bidders on state procurements to certify that they have a written policy addressing sexual harassment prevention in the workplace and provide annual sexual harassment training (that meets the Department of Labor's model policy and training standards) to all its employees.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of N.Y. State Labor Law §201-G.

SIGNED: _____

TITLE: _____

FOR: _____
(Name of Bidder)

END OF BID FORM

ELECTRICAL CONSTRUCTION BID FORM

FOR

PROJECT

Maine Endwell Central School District

2022 Capital Improvement Project – Phase 5
Homer Brink Elementary School

SEE INVITATION TO BID FOR DATE, TIME AND PLACE FOR RECEIPT OF BIDS

The undersigned _____
(Name of Bidder)

_____
(Address)

Contact: _____

Phone: _____

Email: _____

The Bidder hereby certifies that he has visited the site and has examined and fully comprehends the requirements and intent of the Plans and Project Manual of the proposed work, and being familiar with all the conditions surrounding the construction of the project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, supplies, plant and equipment, and other facilities necessary or proper for or incidental to the performance of the proposed work and does hereby agree to perform all

ELECTRICAL CONSTRUCTION WORK (EC)

of the project in accordance with the Contract Documents at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

The Bidder agrees to furnish all Materials, Labor, and all other costs for the Total Lump Sum Base Bid of

_____DOLLARS ($_____)

These amounts, and the amounts indicated for Alternates, if any, shall be shown in words and figures. In the event of discrepancy, words will govern.

ALLOWANCES (See Project Manual Section 012100)

The Bidder acknowledges the amount shown above **includes** the following allowances:

ALLOWANCE NO. EC-01 Contingency Cash Allowance $ 30,000.00

ALTERNATES (See Project Manual Section 012300)

The Bidder shall submit the following Alternate Bids in accordance with Contract Documents. Alternate bids, if accepted by the Owner, shall become a part of the Contract and shall comply with all of the applicable Contract Documents.

Note: Where the Alternate work does not add to or subtract from the cost of the Base Bid of this work, write the word "None" in the space for Total Add or Deduct. Where the word ADD and the word DEDUCT appear together below, cross out non-applicable word.

ALTERNATE NO. EC-01: BUS LOOP LIGHTING
The Bidder shall state the amount to be ADDED to the Base Bid if this Alternate is accepted.

Total ADD_____DOLLARS ($_____)

ALTERNATE NO. EC-02: PLAYGROUND & UPPER PARKING LOT LIGHTING
The Bidder shall state the amount to be ADDED to the Base Bid if this Alternate is accepted.

Total ADD_____DOLLARS ($_____)

UNIT PRICES – None.

RIGHT TO WAIVE OR REJECT

The Bidder understands that the right is reserved by the Owner to accept or reject any or all bids.

QUALIFICATION OF BIDDER

Upon request after the bid opening, the Bidder shall submit a fully executed AIA A305 Contractor's Qualification Statement, to be qualified as the lowest responsible bidder.

All contractors and subcontractors submitting bids or performing construction work on public work projects or private projects covered by Article 8 of the Labor Law are required to register with the New York State Department of Labor (NYSDOL) under Labor Law Section 220-i. The Bidder encloses with this Bid a copy of its valid NYSDOL Certificate of Registration. Application for registration is not accepted as a proof of registration and a Bid not accompanied by a valid NYSDOL Certificate of Registration is subject to rejection.

WITHDRAWAL OF BIDS

The Bidder agrees that this bid may not be withdrawn for a period of forty-five (45) calendar days after

closing time of same.

PERFORMANCE-PAYMENT BOND

The Bidder agrees, if awarded the Contract, to execute and deliver performance and matching payment bonds in the form bound in the Specifications, both in the amount of the Contract; and to deliver insurance certificates and endorsements for insurance required by the Specifications, upon execution of the Contract. Award of the Contract shall be contingent upon review and acceptance of bonds and insurance by the Owner.

TIME

The Bidder agrees to commence work when directed by the Owner in a Notice-To-Proceed, and to complete the work as specified in Section 011100 "Summary".

BID SECURITY

The Bidder encloses with this Bid this Bid Security required by the Contract Documents in the form of a Certified Check ( ), or Bid Bond ( ) (check one) in the amount of _____ _____DOLLARS ($_____) which represents not less than 5% of the Base Bid.

ADDENDUM RECEIPT
The Bidder Acknowledges Addendum No. ____Dated_____
____Dated_____
____Dated_____
____Dated_____
____Dated_____

SIGNED:_____

TITLE: _____

FOR: _____
(Firm - Indicate if Corporation, Partnership, Individual, Other)

FIRM ADDRESS: _____

STATE INCORPORATED, IF INCORPORATED: _____

CORPORATE SEAL, IF INCORPORATED, SHALL BE STAMPED BELOW

DATE: _____

NON-COLLUSIVE BIDDING CERTIFICATION:

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his knowledge and belief: (1) the prices in this bid have been arrived at independently without collusion, consultation, communications, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; (2) unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and (3) no attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

SIGNED: _____

TITLE: _____

FOR: _____
(Firm - Indicate if Corporation, Partnership, Individual, Other)

FIRM ADDRESS: _____

STATE INCORPORATED, IF INCORPORATED: _____

CORPORATE SEAL, IF INCORPORATED, SHALL BE STAMPED BELOW

DATE: _____

Certification of Compliance with the
NEW YORK STATE IRAN DIVESTMENT ACT OF 2012
(Must be signed and returned with Bid)

By submitting a bid in response to this solicitation or by assuming the responsibility of a Contract awarded hereunder, Bidder/Contractor (or any assignee) certifies that it is not on the "Entities Determined To Be Non-Responsive Bidders/Offerers Pursuant to The New York State Iran Divestment Act of 2012" list ("Prohibited Entities List") posted on the OGS website at: http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf and further certifies that it will not utilize on such Contract any subcontractor that is identified on the Prohibited Entities List. Additionally, Bidder/Contractor is advised that should it seek to renew or extend a Contract awarded in response to the solicitation, it must provide the same certification at the time the Contract is renewed or extended.

During the term of the Contract, should the Owner receive information that a person (as defined in State Finance Law §165-a) is in violation of the above-referenced certifications, The Owner will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the Act within 90 days after the determination of such violation, then the Owner shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, seeking compliance, recovering damages, or declaring the Contractor in default.

The Owner reserves the right to reject any bid, request for assignment, renewal or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.

Any bid hereafter made to any political subdivision of the state or any public department, agency or official thereof by a corporate bidder for work or services performed or to be performed or goods sold or to be sold, where competitive bidding is required by statute, rule, regulation, or local law, deemed to have been authorized by the board of directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of this certificate as to compliance with the New York State Iran Divestment Act of 2012.

NAME (PRINT OR TYPE) _____

SIGNATURE _____

TITLE _____

Certification Of Compliance with the
DAVIS-BACON ACT
(Must be signed and returned with Bid)

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

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

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

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

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

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

Project.

SIGNED: _____

TITLE: _____

FOR: _____
(Name of Bidder)

STATE OF NEW YORK)
COUNTY OF)

On _____, before me, the undersigned, a Notary Public in and for said to me State, personally appeared _____ personally known to me or proved on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her capacity(ies), and that by his/her signature(s) on the instrument, the individual(s) or the person on behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public

Certification of Compliance with the
NEW YORK STATE FINANCE LAW §139-L
(Must be signed and returned with Bid)

State Finance Law §139-L requires bidders on state procurements to certify that they have a written policy addressing sexual harassment prevention in the workplace and provide annual sexual harassment training (that meets the Department of Labor's model policy and training standards) to all its employees.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of N.Y. State Labor Law §201-G.

SIGNED: _____

TITLE: _____

FOR: _____
(Name of Bidder)

END OF BID FORM

AIA® Document A232™ – 2019

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

for the following PROJECT:
(Paragraph deleted)

THE CONSTRUCTION MANAGER:

THE OWNER:

THE ARCHITECT:

King + King Architects, LLP
358 West Jefferson Street
Syracuse, New York 13202

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

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

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

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract and Performance and Payment Bonds. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. The Contract Documents do include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, and the Contractor's bid or proposal.

The Contract Documents form the Contract for Construction. The Contract Documents represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract Documents may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind between any persons or entities other than the Owner and Contractor. The Construction Manager and Architect shall, however, be entitled to performance and enforcement of obligations under the Contract Documents intended to facilitate performance of their duties.

(Paragraph deleted)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

§ 1.1.16 MISCELLANEOUS DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

§ 1.2 Correlation and Intent of the Contract Documents

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

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

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

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

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

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

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

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

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

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

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

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

§ 1.3 Capitalization

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

§ 1.4 Interpretation

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

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

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

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

§ 1.6 Notice

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

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

§ 1.7 Digital Data Use and Transmission

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

§ 1.8 Building Information Models Use and Reliance

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

§ 1.9 Disclaimer

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

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

ARTICLE 2 OWNER

§ 2.1 General

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

§ 2.1.2 Intentionally deleted.

§ 2.2 Intentionally deleted.

(Paragraphs deleted)

§ 2.3 Information and Services Required of the Owner

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

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

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

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

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

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

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

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

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§ 2.4 Owner's Right to Stop the Work

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

§ 2.5 Owner's Right to Carry Out the Work

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

ARTICLE 3 CONTRACTOR

§ 3.1 General

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

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

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

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

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

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

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

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

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

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

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

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

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

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

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

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

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

.2 The Work required by the Contract Documents, including, without limitation, all construction details, construction means, methods, procedure and techniques necessary to perform the Work, use of materials, selection of equipment and requirements of product manufacturers are consistent with: (1) good and sound practices within the construction industry; (2) generally prevailing and accepted industry standards applicable to Work; (3) requirements of any warranties applicable to the Work; and (4) all laws, ordinances, regulations, rules, and orders, and Owner's policies and procedures which bear upon the Contractor's performance of the Work.

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

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

§ 3.2.2.8 If the Contractor performs any construction activity which involves a recognized error, inconsistency or omission in the Contract Documents without first providing notice to the Owner, Architect and Construction Manager of such condition and receiving authorization to proceed, the Contractor shall assume

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responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

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

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

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

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

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

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

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

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

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

§ 3.2.7 Whenever the Drawings show existing or other construction not required as part of the Contract Work, it is understood that it is so shown as a matter of information and that the Owner, while believing such information to be

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substantially correct, assumes no responsibility thereof. The Contractor shall become familiar with all conditions affecting the nature and manner of conducting the Work.

§ 3.3 Supervision and Construction Procedures

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

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

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

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

.2 The General Construction Contractor shall establish finished floor elevations and finished grade lines for the building for all trades when requested to do so; and shall establish center lines of all interior partitions on floor forms before concrete is placed in order that Mechanical/Electrical Contractors will be able to place sleeves, etc., in proper locations.

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

§ 3.3.1.3 The Contractor shall:

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

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

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

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

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

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

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

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

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

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

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

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

1. The materials, products and equipment described in the Contract Documents establish the standard of required quality, function, dimension and appearance expected.
2. Requests for substitutions must be submitted prior to, and acceptance provided by Architect prior to, time that bids are received (see below for post-bid substitution requests).
3. Substitution requests will be considered only if standards are met or exceeded as described above and are subsequently approved by the Architect and Owner.
4. Each such request shall include the name of the material, product or equipment item for which

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substitution is requested and a complete description of the proposed substitute, including drawings, cuts, performance and test data and any other information necessary for a complete evaluation.

5. Each such request shall include a statement setting forth any changes in other materials, product or equipment or other work that incorporation of the substitution would require.
6. The burden of proof of the merit of the proposed substitution is upon the proposer.
7. The Architect's decision of approval or disapproval of a proposed substitution shall be final and will be set forth in writing.
8. Additional substitution requests, during construction, will be considered only if substitution is caused by specific material, product or equipment's subsequent removal from, or unavailability in the market place and only if the substitution(s) complies with the requirements Herein and each is at "no change" or "credit" to Contract amount.
9. Contractor's Responsibilities: If any of the following conditions occur due to substitutions, the contractor making the substitution shall bear the cost of such conditions, including payment for services rendered by the Architect and/or Construction Manager:
   (a) Redesign required for any of the Work.
   (b) Material or quantity changes for any of the Work.
   (c) Delays in any of the Work.
   (d) Request for information generated due to substitutions.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner, Construction Manager, and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements including substitutions not properly approved and authorized, shall be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Construction Manager or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. Contractor

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shall perform the Work in strict accordance with the Contract Documents and best industry practices. All materials are to be new, unless specified otherwise. Contractor, at its expense, shall remove and replace materials not meeting specifications or materials failing to perform as represented or warranted by the manufacturer, regardless of whether incorporated into the Work. Contractor shall promptly replace or correct any work or materials which Owner, Construction Manager or Architect shall reject as failing to conform to the requirements of the Contract Documents. The foregoing warranty obligations are not limited by the provisions of Article 12, and are in addition to and not in limitation of any other warranty set forth in the Contract Documents or otherwise prescribed by law.

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

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

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

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

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

§ 3.6 Taxes

§ 3.6.1 Owner represents that it is an organization operated for purposes that make it exempt from New York Sales and Compensating Use Tax pursuant to Section 1115(a) (15) of the tax law, as amended by laws of New York 1974, CH. 513 and 514. The Contractor is advised that the Owner is exempt from payment of all State and Local sales and compensating use taxes of the State of New York, cities and counties on the purchase of all materials and supplies incorporated in and becoming an integral component part of the structures, buildings or real property, pursuant to the provisions of this Contract. Such taxes are not to be included in the Contract price, bid or costs to be reimbursed, as the case may be. This exemption does not, however, apply to tools, machinery, equipment or other property leased by or to the Contractor or a subcontractor or to supplies and materials which, even though they are consumed in the performance of the Contract, are not incorporated into the completed permanent work, and the Contractor and his or her subcontractors shall be responsible for and pay any and all applicable taxes, including sales and compensating use taxes, on such leased tools, machinery, equipment or other property upon all such unincorporated supplies and materials. Owner shall deliver to Contractor the appropriate exemption certificate required to be supplied by the Owner and Contractor and his or her subcontractors and material men shall be solely responsible for obtaining or delivering any and all exemption or other certificates and for furnishing a Contractor Exempt Purchase Certificate or other appropriate certificates to all persons, firms, or corporations from whom they purchase supplies, materials, and equipment for the performance of the Work.

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

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

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

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

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

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

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

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner, Construction Manager, and Architect. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15. No adjustment in the Contract Time or Contract Sum will be permitted, however, in connection with a concealed or unknown condition that does not differ materially from those conditions disclosed or that reasonably should have been disclosed by the Contractor's (1) prior inspections, test, and reviews, or (2) inspections, tests, and reviews the Contractor had the opportunity to make or should have performed in connection with the Project.

§ 3.8 Allowances

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

§ 3.8.2

(Paragraphs deleted)

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

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

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§ 3.9 Superintendent

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

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

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

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

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

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

§ 3.10 Contractor's Construction and Submittal Schedules

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

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

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

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

§ 3.10.5 Procedure and Schedule of Work:

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

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

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

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

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

§ 3.10.6 Project Scheduling

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

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

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

.4 Once a Project Schedule is published by the Construction Manager and approved by the Owner, it shall

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be strictly enforced until the Project is completed, unless it becomes necessary to revise it by an appropriate modification. Upon issuance of the approved Project Schedule, each Contractor shall be responsible for interfacing and/or integrating its Work with that of other Contractors and the Owner and for completing its Work in the allotted time. In the event that the Contractors do not create and/or agree on an integrated Project Schedule, the Contractors will abide by the Project schedule previously developed by the Construction Manager and contained in the bid documents.

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

§ 3.10.7 Continuing Performance and Schedule Adjustments

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

.2 The Contractor shall not be entitled to additional compensation in connection with such extraordinary measures required by the Owner except when Work progress has been delayed by events such as labor strikes or natural catastrophes.

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

§ 3.11 Documents and Samples at the Site

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

§ 3.12 Shop Drawings, Product Data, and Samples

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

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

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

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

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

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

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

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

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

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

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

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner, the Architect, and the Construction Manager shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must

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satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Construction Manager shall review submittals for sequencing, constructability, and coordination impacts on other Contractors.

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

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

§ 3.13 Use of Site

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

§ 3.13.1.1 Use of Buildings and Site:

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

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

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

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

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

§ 3.14 Cutting and Patching

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

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

§ 3.14.1.2 In order to eliminate cutting and patching as much as possible, each Contractor shall, during the progress of

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

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

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

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

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

§ 3.15 Cleaning Up

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

(Paragraph deleted)

§ 3.15.2 All debris required to be removed from the Project shall be removed in accordance with all applicable rules, regulations and statutes, which may pertain thereto & in accordance with the authority having jurisdiction. The Contractor shall warrant that all debris shall be disposed of in accordance with all rules, regulations and statutes applicable thereto and at a facility permitted and authorized to receive materials of the type and nature so removed from the premises. The Contractor shall hold the Owner free and harmless of, from or concerning any claimed liability resulting from the improper or unlawful removal and/or disposal of such debris. Contractors are encouraged to recycle as much material as is practical.

§ 3.16 Access to Work

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

§ 3.17 Royalties, Patents and Copyrights

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

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Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect through the Construction Manager.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Owner's consultants, Construction Manager, Architect, Construction Manager's and Architect's consultants, and each of their respective representatives employees, directors, officers, and agents from and against any and all claims, suits, actions, damages, losses, fines, penalties, costs, charges, and expenses, including but not limited to attorneys' fees and the costs of any proceeding, arising out of, relating to or resulting from performance of the Work, including, but not limited to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property to the extent caused in whole or in part by acts, actions, omissions, negligence, fault or breach of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18. The Contractor agrees to include the following indemnity provision in each and every contract it enters into with a subcontractor, and to require that subcontractor to include such provision in each contract it enters into with any lower tier subcontractor: "To the fullest extent permitted by law, Subcontractor shall indemnify and hold harmless the Contractor, Owner, Owner's consultant's, Construction Manager, Architect, Construction Manager's and Architect's consultants, and each of their respective representatives, employees, directors, officers, and agents, from and against any and all claims, suits, actions, debts, damages, fines, penalties, costs, charges and expenses, including but not limited to attorneys' fees and the costs of any proceeding, arising out of, relating to or resulting from the performance of this Subcontract, including, but not limited to, bodily injury and/or property damage, to the extent caused, in whole or in part, by acts, actions, omissions, negligence, fault or breach of the Subcontractor, its employees, agents, subcontractors, suppliers and/or materialmen, regardless of whether or not such claim is caused in part by a party indemnified hereunder."

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

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

§ 3.18.1.2 Except to the extent, if any, expressly prohibited by law, should any such damage or injury referred to in Section 3.18.1.1 be sustained, suffered, or incurred by Owner, Architect, or Construction Manager, or should any claim for such damage or injury be made or asserted against any of them, whether or not such claim is based upon Owner's, Architect's, or Construction Manager's alleged active or passive negligence or participation in the wrong or upon any alleged breach of any statutory duty or obligation on the part of the Owner, Architect, or Construction Manager, Contractor shall indemnify and hold harmless Owner, Architect, and Construction Manager along with their Board of Education, Administration officers, agents, partners, and employees (hereinafter collectively referred to as "Indemnitees"), of, from and against any and all other loss, cost, expense, and liability, including without limitation, legal fees and disbursements, that Indemnitees may directly or indirectly sustain, suffer or incur as a result of such damages, injuries and claims; and Contractor agrees to assume, on behalf of any and all Indemnitees the defense (with counsel satisfactory to the party indemnified) of any action at law or in equity, or other legal proceeding, which may be brought against any Indemnitee upon or by reason of such damage, injury or claim and to pay on behalf of every Indemnitee, the amount of any judgment, decree, award, or order that may be entered against each said Indemnitee in any such action or proceeding. In the event that any such claim, loss, cost, expense, liability, damage or injury is sustained, suffered, or incurred by, or is made, asserted or threatened against any Indemnitee, Owner shall, in addition to all other rights and remedies, have the right to withhold from any payments due and to become due to Contractor an

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amount sufficient in Owner's judgment to protect and indemnify the Indemnitee(s) from and against any and all such claim, loss, cost, expense, liability, damage or injury, including legal fees and disbursements; or Owner, in its discretion, may require Contractor to furnish a surety bond satisfactory to Owner guaranteeing such protection which bond shall be furnished by Contractor within 5 days after written demand has been made therefore. In the event more than one Contractor is connected with an event or occurrence (or series of events or occurrences) covered by this indemnification, then all such Contractors shall be jointly and severally responsible to the Indemnitee, and the ultimate responsibility among such indemnifying Contractors shall be settled or otherwise determined by separate proceedings and without loss, expense or damage to any Indemnitee.

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

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

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

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

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

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

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

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

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

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ARTICLE 4 ARCHITECT AND CONSTRUCTION MANAGER

§ 4.1 General

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

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

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

§ 4.2 Administration of the Contract

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

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

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

§ 4.2.2.2 On the basis of onsite observations and otherwise, the Architect shall keep the Owner informed of the progress of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work.

§ 4.2.2.3 The Architect will promptly report to the Owner any observed defects or deficiencies of the Work.

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

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

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

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Construction Manager believes that the Contractor is failing to perform the Work in accordance with the requirements of the Construction Documents, it shall promptly disclose such failure to the Owner in writing.

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

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

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

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

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

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

§ 4.2.11.1 If the Architect is required to review more than two (2) submittals by a Contractor for the reason that the submittal and one (1) re-submittal failed to conform to the information given or the design concept expressed in the Contract Documents, the Contractor shall reimburse the Owner for the amount of compensation paid by the Owner to

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the Architect for such additional reviews. The Owner shall be entitled to withhold from any payment due the Contractor any such amount due from the Contractor.

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

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

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

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

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

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

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

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

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

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

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

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

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

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

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

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

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

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

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

(Paragraph deleted)

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

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents including but not limited to all deadlines and substantial completion dates, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, that the Contractor, by these Contract Documents, assumes toward the Owner, Construction Manager and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner, Construction Manager and Architect under the Contract Documents

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

§ 5.4 Contingent Assignment of Subcontracts

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

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

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

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

(Paragraph deleted)

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

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

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

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

§ 6.2 Mutual Responsibility

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

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

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

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

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

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

§ 6.3 Owner's Right to Clean Up

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

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

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

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

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

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

§ 7.1.4 Unit Prices

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

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

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

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

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

§ 7.1.5.2 Changes in the Work whether or not involving additions or deductions from the Contract Sum shall not be

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made until an appropriate Change Order or Change Directive has been issued.

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

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

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

§ 7.1.7.1 For Work done by the Contractor's own forces, mark-up for combined overhead and profit on materials and on cost of labor shall not exceed 15%.

§ 7.1.7.2 For Work done by the subcontractors, mark-up of costs as defined Herein by subcontractors for combined overhead and profit on materials and on cost of labor shall not exceed 10%.

a. To this amount, 5% may be added for the Contractor's combined overhead and profit, except as otherwise specified for allowances and unit prices (See 7.1.5.1 above.)

§ 7.1.8 Material costs shall be as described in 7.3.4.

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

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

§ 7.2 Change Orders

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

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

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

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

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

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

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Construction Manager and signed by the Owner, Construction Manager and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without

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invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

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

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

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 Unit prices stated in the Contract Documents or subsequently agreed upon;

.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.3.4.

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

.1 Costs of labor, including applicable payroll taxes, social security, unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance directly related to the work of the change, and other employee costs approved by the Construction Manager and Architect;

.2 Costs of materials, supplies, and equipment, including cost of transportation directly related to the work of the change, whether incorporated or consumed;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others directly related to the work of the change;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and

.5 Costs of supervision and field office personnel directly attributable to the change.

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

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

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

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

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

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

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

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

§ 7.4 Minor Changes in the Work

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

§ 7.5 OVERHEAD AND PROFIT

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

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

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

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

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

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

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

§ 7.5.2 Performance and Payment Bond Adjustments: Do not itemize increases for bond premiums for each individual Change Order per General Conditions of the Contract, Section 11.1.1.

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.

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

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

§ 8.2 Progress and Completion

§ 8.2.1 TIME IS OF THE ESSENCE IN THE COMMENCEMENT, PROSECUTION AND COMPLETION OF THE WORK. Contractor shall be responsible for all direct and consequential damages to Owner and Architect arising from the delay of Contractor, its Subcontractors and suppliers, in performing or completing the Work in accordance with the time requirements of paragraph 8.2. The indemnity provisions of Articles 3 and 11 are applicable to such damages and to claims arising in respect thereto. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

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

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

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

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

.1 Project schedules and revisions thereof, given from time to time to Contractor;
.2 The time requirements for various portions of Work;
.3 The requirements of the Project including, but not limited to, coordination requirements as may from time to time be known to Contractor; and
.4 Schedules of the Work provided by Contractor to Architect upon the Owner's request.

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

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

§ 8.2.6 The Work shall be performed during designated working hours, except that in the event of emergency or when necessary to perform the Work in accordance with the requirements of Section 8.2, Work shall be performed at Contractor's cost and expense on other shifts, overtime, Saturdays, Sundays, Holidays and at other times, if permission to do so has been obtained in writing from Owner. Without limiting the requirements of the preceding sentence, if the progress of the Work or of the Project has been delayed by any fault, neglect, act or failure to act of Contractor or any of its Subcontractors or suppliers, Contractor shall work such overtime, at Contractor's cost and expense as aforesaid, as Architect shall deem necessary or desirable to make up for all time lost and to avoid delay in the completion of the Work and of the Project. The failure by Architect to direct Contractor to engage in such

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overtime shall not relieve Contractor of the consequences of its delay.

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

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

.1 Additional premiums on wages actually paid, at rates that have been accepted by Architect;
.2 Taxes imposed by law on such additional wages; and
.3 Premiums for worker's compensation and liability insurance if required to be paid on such additional wages.

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

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

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

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

§ 8.3.2 If Contractor claims an increase in the Contract Sum or an extension in the completion time required by reason of a change in the Work, Contractor shall give Architect written notice within fifteen (15) days after Contractor's knowledge of the occurrence of the matter giving rise to such claim. This notice shall be given by Contractor before proceeding to execute the changed Work, except in an emergency endangering life or property in which case Contractor shall proceed in accordance with Article 10. No such claim will be valid unless notice is given as required

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in this Section. Contractor shall proceed to execute the Work, even though the increase or time extension has not been agreed upon.

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

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

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

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

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

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

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

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

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

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

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

§ 9.2 Schedule of Values

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

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§ 9.3 Applications for Payment

§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner, Construction Manager or Architect require, such as copies of requisitions, releases of waivers of lien from Subcontractors and suppliers, certified payroll information in accordance with NYS law, and shall reflect retainage if provided for in the Contract Documents.

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

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

§ 9.3.1.3 Until Substantial Completion, the Owner shall pay ninety-five percent (95%) of the amount due to the Contractor on account of progress payments.

§ 9.3.1.4 The Contractor shall supply with each of its applications for payment any information requested by the Architect, Owner, or Construction Manager such as lien waivers for work performed to date by subcontractors and suppliers.

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

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

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

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

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Owner for all legal fees and costs incurred by Owner in connection with any such actual or threatened action, lawsuit or proceeding.

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

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

§ 9.4 Certificates for Payment

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

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

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

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

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

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

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

§ 9.5 Decisions to Withhold Certification

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

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

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

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

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

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

§ 9.6 Progress Payments

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

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

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

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

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

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

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

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

§ 9.7 Failure of Payment

If the Construction Manager and Architect do not issue a Certificate for Payment or a Project Certificate for Payment, through no fault of the Contractor, within fourteen days after the Construction Manager's receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Construction Manager and Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner, Construction Manager and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents. This Section 9.7 shall not

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apply to the extent that the Contractor owes the Owner any amount pursuant to the indemnification or other provisions of the Contract Documents, or the Owner is required to incur any cost or expense to purchase additional insurance or pay premiums for the Contractor's insurance as a result of a failure of the Contractor to obtain or maintain insurance meeting the requirements set forth in the Contract Documents.

§ 9.8 Substantial Completion

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

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

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

§ 9.8.3.1 Except with the consent of the Owner, the Architect in conjunction with the Construction Manager will perform no more than two (2) inspections to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. The two (2) inspections will include not only determining if the area is substantially complete, but will also include any follow-up inspection to confirm all open punch list items have been completed for that specific item. The Owner may deduct from the Contract Sum amounts paid to the Architect for any additional inspections necessitated by the Contractor's misrepresentation of conditions.

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

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

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of any items of Work remaining to be completed and two (2) times the amount necessary to satisfy any claims, liens, or judgments against the Contractor that have not been discharged.

§ 9.9 Partial Occupancy or Use

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

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

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

§ 9.10 Final Completion and Final Payment

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

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6), 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.

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§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or the Contractor's Subcontractors or Sub-subcontractors, or any other person for whom the Contractor shall be responsible, or by issuance of Change Orders affecting final completion, and the Construction Manager and Architect so confirm, the Owner shall, upon application by the Contractor and certification by the Construction Manager and Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect through the Construction Manager prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

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

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

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

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

§9.11 Retainage

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

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

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

§ 10.2 Safety of Persons and Property

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

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

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§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss, including but not limited to all infectious disease exposure precautions. The Contractor represents and warrants to the Owner that its services and compensation set forth herein contemplate compliance with all of the Owner's policies and procedures and all current and reasonably foreseeable federal, state and local orders, regulations, and guidance related to limiting the spread of the COVID-19 virus, including but not limited to regulations and guidance from the NYS Education Department and the NYS Department of Health. Accordingly, the Contractor hereby waives any claim for an increase in compensation or a change to the Substantial Completion date due to said compliance.

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

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

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

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

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

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

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

§ 10.2.10 The Contractor shall be solely responsible for the conditions which develop during construction and in the event any structure is dislocated, over strained, or damaged so as to affect is usefulness, the Contractor shall be solely responsible. The Contractor shall take whatever steps necessary to strengthen, relocate or rebuild the structure to meet requirements.

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

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§ 10.3 Hazardous Materials

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

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

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

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

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

(Paragraph deleted)

§ 10.4 Emergencies

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

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Liability Insurance

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located and one to which the Owner has no reasonable objection,

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such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

§ 11.1.3 Each certificate of insurance must describe the services to be provided by Contractor, be acceptable to the Owner, and shall be submitted to the Construction Manager for transmittal to the Owner with a copy to the Architect prior to commencement of the Work; and thereafter upon renewal or replacement of each required policy of insurance. The certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for

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completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness. The Contractor shall provide written notification to the Owner of the cancellation or expiration of any insurance required by Section 11.1. The Contractor shall provide such written notice within five (5) business days of the date the Contractor is first aware of the cancellation or expiration or is first aware that the cancellation or expiration is threatened or otherwise may occur, whichever comes first.

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

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

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

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

General Aggregate	$2,000,000
Products Completed Operations Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Each Occurrence	$1,000,000
Fire Damage	$100,000
Medical Expense	$10,000

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

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

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

§ 11.1.4.3 Umbrella Liability Insurance:

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

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

§ 11.1.4.4 Worker's Compensation Insurance covering the obligations of the Contractor in accordance with applicable law at statutory limits and Employer's Liability Insurance with a policy limit of not less than required by applicable

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law, covering all operations under this Agreement, whether performed by the Contractor, its subcontractors or consultants, containing a Blanket Waiver of Subrogation Endorsement.

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

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

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

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

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

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

§ 11.1.4.7.3 Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice directly to the Owner and its bonding company, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Waivers of Subrogation

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

(Paragraphs deleted)

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§ 11.3 Owner's Insurance

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

(Paragraph deleted)

§ 11.4

(Paragraphs deleted)

Performance Bond and Payment Bond

(Paragraphs deleted)

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

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

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

§ 11.4.1.3 Both bonds shall be made out to the Owner, prepared on AIA Form A311-1970 and submitted by the Contractor to the Owner within ten (10) days of notification that its Bid was accepted.

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

§ 11.4.1.5 All Bonds shall be maintained in full force for a period of twelve (12) months after the date of the Contractor's acceptance of final payment as guarantee that the Contractor will make good any faults or defects in the Work arising from improper or defective workmanship or materials which may appear during the period.

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

§ 11.4.1.7 Additional performance and payment bonds may be required by the Owner, in the Owner's discretion, from any Subcontractor whose Subcontract exceeds One Hundred Thousand Dollars ($100,000.00). The Owner shall pay for any premiums charged for obtaining required Subcontractor bonds by executing a Change Order which shall increase the Contract Sum in an amount equal to such premiums. All such bonds shall be in form and substance satisfactory to the Owner in the Owner's sole judgment.

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

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

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

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

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If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

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

§ 12.2.2 After Substantial Completion

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

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

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

§ 12.2.2.3 Upon completion of any Work under or pursuant to this Section 12.2, the one-year Correction Period in connection with the Work requiring correction shall be renewed and recommence.

§ 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.

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

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

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obligations shall cover any repair and replacement to any part of the Work or other property caused by the defective Work.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the Correction Period as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

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

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

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

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

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

1. The Contractor will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, sexual orientation, military status, sex, disability, predisposing genetic characteristics, marital status, or domestic violence victim status;
2. If directed to do so by the Owner or the State Commissioner of Human Rights, the Contractor will send to each labor union or representative of workers which with the Contractor has or is bound by a collective bargaining or other agreement or understanding, a notice, to be provided by the State Commissioner of Human Rights, advising such labor union or representative of the Contractor's agreement under clauses (I) through (6) (hereinafter called "non-discrimination clauses"). If the Contractor was directed to do so by the Owner as part of the bid or negation of this Contract, the Contractor shall request such labor union or representative to furnish a written statement that such labor union or representative will not discriminate because of age, race, creed, color, national origin, sexual orientation, military status, sex, disability, predisposing genetic characteristics, or marital status, and that such labor union or representative will cooperate, within the limits of its legal contractual authority, in the implementation of the policy and provisions of these non-discrimination clauses and that it consents and agrees that the recruitment, employment and the terms and conditions of employment under this Contract shall be in accordance with the purposes and provision of these non-discrimination clauses. If such labor union or representative fails or refuses to comply with such a request that it furnish such a statement, the Contractor shall promptly notify the Owner and the State Commissioner of Human Rights of such failure or refusal;
3. If directed to do so by the Owner or the Commissioner of Human Rights, the Contractor will post and keep posted in conspicuous places, available to employees and applicants for employment, notices to be provided by the State Commissioner of Human Rights setting forth the substance of provisions of clauses (1) and (2) and such provision of the State's law against discrimination as the State Commissioner of Human Rights shall determine;
4. The Contractor will state in all solicitations or advertisements for employees placed by or on behalf of the Contractor, that all qualified applicants will be afforded equal employment opportunities without discrimination because of age, race, creed, color, national origin, sexual orientation, military status, sex, disability, predisposing genetic characteristics, marital status, or domestic violence victim status;

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5. The Contractor will comply with the provisions of Sections 290-299 of the Executive Law, and with the Civil Rights Law, will furnish all information and reports deemed necessary by the State Commissioner of Human Rights under these non-discrimination clauses and such section of the Executive Law, and will permit access to the Contractor's books, records, and accounts by the Owner, the State Commissioner of Human Rights, the Attorney General and the Industrial Commissioner for the purposes of investigation to ascertain compliance with the non-discrimination clauses and such sections of the Executive Law Civil Rights Law;
6. This Contract may be forthwith cancelled, terminated or suspended, in whole or in part, by the Owner upon the basis of a finding made by the State Commissioner of Human Rights that the Contractor has not complied with the non-discrimination clauses, and that the Contractor may be declared ineligible for future contracts made by or on behalf of the Owner, the State or a public authority or agency of the State, until the Contractor satisfies the State Commissioner of Human Rights that the Contractor has established and is carrying out a program in conformity with the provisions of these non-discrimination clauses. Such findings may be made by the State Commissioner of the Human Rights after conciliation efforts by the Commissioner have failed to achieve compliance with these non-discrimination clauses and after a verified complaint has been filed with the Commissioner, notice thereof has been given to the Contractor to be heard publicly in accordance with the Executive Law. Such sanctions may be imposed and remedies invoked independently of or in addition to sanctions and remedies otherwise provided by law; and
7. The Contractor will include the provisions of clauses .1 through .6 in every subcontract or purchase order in such a manner that such provisions will be binding upon each subcontractor or vendor as to operations to be performed within the State of New York. The Contractor will take action in enforcing such provisions of such subcontract or purchase order as the State Commissioner of Human Rights or the Owner may direct, including sanctions or remedies for non-compliance. If the Contractor becomes involved or is threatened with litigation with a subcontractor or vendor as a result of such directions by the State Commissioner of Human Rights or the Owner, the Contractor shall promptly so notify the Owner and the Attorney General requesting the Attorney General to intervene and protect the interests of the State of New York.

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

§ 13.2 Successors and Assigns

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

(Paragraph deleted)

§ 13.3 Rights and Remedies

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

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

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Construction Manager and Architect timely notice of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. The

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Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, or inspections where building codes or applicable laws or regulations so require.

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

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

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

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

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

§ 13.5 Interest

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

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

§ 13.7 General Provisions

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

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

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

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

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

(Paragraphs deleted)

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work,

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repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

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

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

§ 14.2 Termination by the Owner for Cause

§ 14.2.1

(Paragraphs deleted)

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

§ 14.2.2

(Paragraphs deleted)

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

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

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(Paragraph deleted)

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and the Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. No adjustment shall be made to the extent:

.1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of this Contract.

§ 14.3.3 In the event the Owner terminates the contract pursuant to this provision, the Contractor shall be paid for Work performed in accordance with this Contract as certified by the Architect and Owner's Consultant, and Contractor shall be entitled to no other payment and shall make no claim for damages.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 Notwithstanding any other provision to the contrary in this Agreement, the Owner reserves the right at any time and in its absolute discretion to terminate the services of the Contractor and/or the Work for the Owner's convenience and without cause by giving written notice to the Contractor. This termination for the convenience of the Owner provision allows and authorizes the Owner to terminate this Agreement at any time and for any reason whatsoever. This right may be exercised by the Owner in its complete discretion.

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

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to, and the Owner shall reimburse the Contractor for an equitable pro rata portion of the Contractor's fee based on the portion of the Work properly completed before the effective date of termination and for any other reasonable costs incurred before the effective date of termination. Contractor's entitlement to payment for all such work shall be predicated on its performance of such work in accordance with the Contract Documents as certified by the Architect and Construction Manager. Contractor shall be entitled to no other payment and waives any claim for damages.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. The Owner may, but is not required to, refer a claim to the Construction Manager and or the Architect for their review and assistance.

§ 15.1.2 Notice of Claims

Claims by the Contractor must be initiated by written notice to the Owner and to the Initial Decision Maker with a copy sent to the Construction Manager and Architect. Claims by the Contractor must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the Contractor should have been aware of the condition giving rise to the Claim, whichever is later. The notice requirements set forth in this Agreement dealing with Claims and Disputes are in addition to and not a substitution or replacement of any and all notice requirements contained in applicable law.

§ 15.1.2.1 Claims by the Contractor must be made by written notice in accordance with the following procedures.

.1 The Contractor may submit a Claim concerning a matter properly noticed in accordance with the time requirements of this Contract set forth in Section 15.1.2 and elsewhere;

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.2 Failure by the Contractor to furnish the required Claim documentation within the time set forth above shall constitute waiver of the Contractor's right to compensation for such Claim.

.3 Contractor shall furnish three (3) certified copies of the required Claim documentation, with a copy submitted to the Owner, Architect, and Construction Manager. The Claim documentation shall be complete when furnished. The evaluation of the Contractor's Claim will be based, among other things, upon the Owner's Project Records and the Contractor's furnished Claim documentation.

.4 Claim documentation shall conform to Generally Accepted Accounting Principles and shall be in the following format:

a. general introduction;
b. general background discussion
c. issues
   i. index of issues (listed numerically);
   ii. for each issue:
      (1) background
      (2) chronology
      (3) Contractor's position (reason for Owner's potential liability)
      (4) supporting documentation of merit or entitlement
      (5) supporting documentation of damages
      (6) begin each issue on a new page
d. all critical path method schedules (as-planned, monthly updates, schedule revisions and as-built), along with computer disks of all schedules related to the Claim;
e. productivity exhibits (if appropriate); and
f. summary of issues and damages.

.5 Supporting documentation of merit for each issue shall be cited by reference, photocopies or explanation. Supporting documentation may include, but shall not be limited to General Conditions, General Requirements, technical specifications, drawings, correspondence, conference notes, Shop Drawings and submittals, shop drawing logs, survey books, inspection reports, delivery schedules, test reports, daily reports, subcontracts, fragmentary CPM schedules or time impact analyses, photographs, technical reports, requests for information, field instructions and all other related records necessary to support the Contractor's claim.

.6 Supporting documentation of damages for each issue shall be cited, photocopied or explained. Supporting documentation may include, but shall not be limited to, any or all documents related to the preparation and submission of the bid; certified, detailed labor records including labor distribution reports; material and equipment procurement records; construction equipment ownership, cost records or rental records; subcontractor or vendor files and cost records; service cost records; purchase orders; invoices; Project as-planned and as-built cost records; general ledger records; variance reports; accounting adjustment records, and any other accounting material necessary to support the Contractor's Claims.

.7 Each copy of the Claim documentation shall be certified by a responsible officer of the Contractor in accordance with the requirements of these Contract Documents..

§ 15.1.3 Continuing Contract Performance

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Construction Manager will prepare Change Orders and the Architect will issue a Certificate for Payment or Project Certificate for Payment in accordance with the decisions of the Initial Decision Maker.

(Paragraphs deleted)

§ 15.1.4 Claims for Additional Cost. If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.3. Claims for additional compensation relating to Contractor's non-compliance with its representations and warranties in this Contract will not be allowed.

(Paragraphs deleted)

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§ 15.1.5 Claims for Additional Time

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary. Claims for an extension of time relating to Contractor's non-compliance with its representations and warranties in this Contract will not be allowed.

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

§ 15.1.6 Waiver of Claims for Consequential Damages. The Contractor waives all Claims for consequential damages arising out of or relating to this Contract. This waiver includes, but is not limited to:

- **.1** damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit; and
- **.2** all consequential damages incurred by the Contractor as a result of Owner's termination in accordance with Article 14.

(Paragraphs deleted)

§ 15.2 Initial Decision

§ 15.2.1 Claims, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response to the requested supporting data, or (2) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect and Construction Manager, if the Architect or Construction Manager is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate with respect to the initial decision.

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§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 are subject to mediation upon mutual agreement of the parties.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered in accordance with the Construction Industry Mediation Procedures of the American Arbitration Association in effect on the date of this Agreement. However, the American Arbitration Association will not be involved in the mediation unless the parties mutually agree. A request for mediation shall be made in writing, delivered to the other party to the Contract. The parties shall select a mutually acceptable mediator. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

(Paragraph deleted)

§ 15.4 Litigation

If for any reason the Claim or dispute is not resolved by the mediation or the parties fail to agree on mediation as a dispute resolution process, then the Claim or dispute shall be resolved in New York State Supreme Court in the County where the Project is located. The Owner shall be entitled to recover its reasonable attorney's fees and costs if it prevails in the litigation. The Owner and the Contractor consent to exclusive jurisdiction of the New York State Supreme Court with jurisdiction over the County in which the Project is located and waive any and all objections to the jurisdiction of such court.

(Paragraphs deleted)

§ 15.5 SAVING CLAUSE

If, during the term of this Contract, it is found that a specific clause of the Contract is illegal under Federal or State law, the remainder of the Contract not affected by such a ruling shall remain in full force and effect.

ARTICLE 16 PROVISIONS REQUIRED BY LAW

§ 16.1 PROVISIONS DEEMED INSERTED

Each and every provision or obligation required by law and/or required to be inserted in the Contract shall be deemed to be inserted Herein and the Contract shall be read and enforced as though it were included Herein and in the event any such provision is not inserted or is not correctly inserted then, upon the application of either party, this Contract shall forthwith be physically amended to make such insertion or correction.

§ 16.2 MINIMUM RATE OF WAGE AND SUPPLEMENT

§ 16.2.1 The minimum hourly wage rates (including supplements) to be paid shall not be less than that designated by the New York State Department of Labor, Bureau of Public Works and any redetermination of the prevailing rate of wages after the Contract is approved shall be deemed to be incorporated Herein by reference as of the effective date of redetermination and shall form a part of these Contract Documents.

§ 16.2.2 The minimum hourly supplement to be paid shall be in accordance with the prevailing practices in the locality where the work is located and shall be not less than that designated by the Industrial Commissioner. Supplements as defined in Section 220 of the Labor Law, as amended, means all remuneration for employees paid in any medium other than cash or reimbursements for expenses or any payments which are not wages within the meaning of the law, including, but not limited to, health, welfare, non-occupational disability, retirement, vacation benefits, holiday pay

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and life insurance.

§ 16.2.3 The Contract shall be forfeited by a Contractor and he shall not be entitled to receive any sum of money for any work performed hereunder on his or her second conviction for willfully paying less than the stipulated wage scale (including supplements) as provided in the Labor Law, Section 220, as amended, or the stipulated minimum hourly wage scale (including supplements) as provided in the Labor Law, Section 220-d, as amended.

§ 16.3 APPRENTICES

Where required by law apprentices must be registered, individually, under a bona fide program registered with the New York State Department of Labor. The allowable ratio of apprentices to journeymen in any craft classification shall not be greater than the ratio permitted to the contractor as to his or her work force on any job under the registered program. Any employee, who is not registered as above, shall be paid the prevailing wage rate for the classification of work he actually performed. The contractor or subcontractor will be required to furnish written evidence of the registration of his or her program and apprentices as well as of the appropriate ratios and wage rates for the area of construction, prior to using any apprentices on the contract work. (See Section 220.3-e).

§ 16.4 ASSIGNMENT OF PUBLIC CONTRACTS

As provided in Section 109 of the General Municipal Law, the Contractor is prohibited from assigning, transferring, conveying, subletting or otherwise disposing of this Contract, or of his or her right title, or interest therein, or his or her power to execute such contract or any other person or corporation without the previous consent in writing of the officer, board or agency awarding the Contract. If any Contractor, to whom any contract is let, granted and awarded, as required by law, by any officer, board or agency in a political subdivision, or of any district therein, shall without the previous written consent specified in subdivision one of this section, assign, transfer, convey, sublet or otherwise dispose of such contract, or his or her right, title or interest therein, or his or her power to execute such contract, to any other person or corporation, the officer, board or agency which let, made, granted, or awarded such contract shall revoke and annul such contract, and the political subdivision or district therein, as the case may be, and such officer, board or agency shall be relieved and discharged form any and all liability and obligations growing out of such contract to such contractor, and to the person or corporation to which such contract shall have been assigned, transferred, conveyed, sublet or otherwise disposed of, and such contractor, and his or her assignees, transferees or sublessees shall forfeit and lose all moneys, theretofore earned under such contract, except so much as may be required to pay his or her employees. The provisions of this section shall not hinder, prevent, or affect an assignment by any such contractor for the benefit of his or her creditors made pursuant to the laws of this state."

§ 16.5 FINGERPRINTING

Pursuant to the Safe Schools Against Violence in Education Act ("SAVE" legislation) and Part 87 of the Regulations of the Commissioner of Education, any individual who, as a result of their work on this capital project, will move (or migrate) in and out of student occupied areas for more than five (5) days a year, must be fingerprinted. All contractors shall be responsible to ensure that they (and their employees) are in full compliance with the fingerprinting provisions of New York's SAVE Legislation and Part 87 of the Regulations of the Commissioner of Education at their sole cost and expense.

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AIA® Document A132™ – 2019

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

AGREEMENT made as of the day of in the year
(Paragraphs deleted)
BETWEEN the Owner:

and the Contractor:

for the following Project:

King + King Project #

The Construction Manager:

The Architect:

King + King Architects, LLP
358 West Jefferson Street
Syracuse, New York 13202
Telephone Number: 315-671-2400

The Owner and Contractor agree as follows.

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

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

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

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TABLE OF ARTICLES

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(Paragraphs deleted)

ARTICLE 1 THE CONTRACT DOCUMENTS

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

ARTICLE 2 THE WORK OF THIS CONTRACT

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

ARTICLE 3 DATE OF COMMENCEMENT AND DATES OF SUBSTANTIAL COMPLETION

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

[X] The date of this Agreement.

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

[ ] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

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

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

§ 3.3 Substantial Completion of the Project or Portions Thereof

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

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

Portion of Work	Substantial Completion Date

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

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

(Paragraph deleted)

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

[ ] By the following date:

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

Portion of Work	Date to be substantially complete

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

ARTICLE 4 CONTRACT SUM

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

[X] Stipulated Sum, in accordance with Section 4.2

(Paragraphs deleted)

below

§ 4.2 Stipulated Sum

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

§ 4.2.2 Alternates

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

Item	Price

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

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

Item	Price	Conditions for Acceptance

§ 4.2.3 Allowances, if any, included in the Contract Sum:

(Identify each allowance.)

Item	Price

§ 4.2.4 Unit prices, if any:

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

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Item	Units and Limitations	Price per Unit ($0.00)

§ 4.3 Intentionally deleted.

(Paragraph deleted)
(Table deleted)
(Paragraphs deleted)
§ 4.4 Intentionally deleted.

(Paragraphs deleted)
(Table deleted)
(Paragraphs deleted)
(Table deleted)
(Paragraphs deleted)
(Table deleted)
(Paragraphs deleted)
(Table deleted)
(Paragraphs deleted)
§ 4.5 Liquidated damages, if any:

None.

§ 4.6 Other:

None.

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

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

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month.

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

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

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

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

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

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

.1 That portion of the Contract Sum properly allocable to completed Work;

.2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and

.3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

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

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232–2019;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232–2019; and

.5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.5 Intentionally deleted

(Paragraphs deleted)

§ 5.1.6 Intentionally deleted

(Paragraphs deleted)

§ 5.1.7 Retainage

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

(Paragraph deleted)

1. Five percent (5%); and

2. Less two hundred percent (200%) of the amount required to complete the Work plus the amount necessary to satisfy any claims, liens, or judgments against the Contractor which have not been resolved, settled, or discharged.

(Paragraphs deleted)

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

(Paragraph deleted)

Only as agreed to in writing by the Owner.

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, when the Work of this Contract is substantially complete, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7.

(Paragraphs deleted)

§ 5.2 Final Payment

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

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

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A232–2019, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect, and Contractor has submitted acceptable original, signed and where required notarized Closeout Documents, including but not limited to: AIA Document G706-1994 Contractor's Affidavit of Payment of Debts and Claims; AIA Document G706A-1994 Contractor's Affidavit of Release of Liens; AIA Document G707-1994 Consent of Surety to Final Payment, if applicable; and Contractor's or Subcontractor's Final Release of Lien Waiver for the Contractor and each Subcontractor and material supplier.

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§ 5.2.1.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the final Certificate for Payment or Project Certificate for Payment AND the receipt by the Owner of all Closeout Documents required by this Contract.

(Paragraphs deleted)
§ 5.3 Payments due and unpaid under the Contract shall bear interest from the date payment is due
(Paragraphs deleted)
in accordance with New York State General Municipal Law §106-b and Tax Law §1096(e).

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

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

§ 6.2 Binding Dispute Resolution

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

[X] Litigation in New York State Supreme Court with jurisdiction over the Project Location..

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 Where the Contract Sum is a Stipulated Sum

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

§ 7.1.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A232–2019, then the Owner shall pay the Contractor a termination fee as follows:
(Paragraph deleted)
The Owner shall pay the Contractor a termination fee to be determined by the Architect, in its capacity as Initial Decision Maker. The Architect shall establish the termination fee based exclusively on a reasonable estimate of the Contractor's anticipated profit for the portion of the work that is not completed by the Contractor as a result of the Owner's termination for convenience.

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

§ 7.2 Intentionally deleted

(Paragraphs deleted)

§ 7.3 Suspension

The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2019; in such case, the Contract Sum and Contract Time shall be increased as provided in Article 14 of AIA Document A232–2019, except that the term "profit" shall be understood to mean the Contractor's Fee as described in Section 4.3.2 or 4.4.2, as applicable, of this Agreement.

ARTICLE 8 MISCELLANEOUS PROVISIONS

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

§ 8.2 The Owner's representative:
(Paragraph deleted)

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§ 8.3 The Contractor's representative:
(Paragraph deleted)

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

§ 8.5 Insurance and Bonds
§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A232–2019, General Conditions of the Contract for Construction, Supplementary Conditions to General Conditions of the Contract for Construction, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A232–2019, General Conditions of the Contract for Construction, Supplementary Conditions to General Conditions of the Contract for Construction.

§ 8.6 Notice in electronic format may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if
(Paragraphs deleted)
completed.

§ 8.7 Other provisions:

(Paragraphs deleted)
§ 8.7.1 The Architect's review of the Contractor's submittals is limited to an initial submittal and one (1) resubmittal. The Owner is entitled to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of additional resubmittals.

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS
§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition, as modified

.2 AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, as modified

(Paragraph deleted)

.3 upplementary General Conditions of the Contract for Construction

(Paragraph deleted)

.5 Drawings – Listed in Exhibit B, Index under Drawing List

(Table deleted)

.6 Specifications – Listed in Exhibit B, Index under Project Manual List

(Table deleted)

.7 Addenda, if any:

Number	Date	Pages

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

.8 Other Exhibits:
(Paragraph deleted)

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

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

[ ] The Sustainability Plan:

Title	Date	Pages

[ ] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents, if any, listed below:

Exhibit A – Contractor's Executed Bid Form
Exhibit B – Prevailing Wage Rate

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

OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
(Printed name and title)	*(Printed name and title)*

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SELECTED AIA DOCUMENTS

Contractors are required to obtain and use the following AIA documents, which can be ordered directly from the American Institute of Architects, at https://shop.aiacontracts.com/search/role/Contractor?curpage=3

CONTRACTOR'S QUALIFICATION STATEMENT - AIA Document A305 (1986)

An owner preparing to request bids or to award a contract for a construction project often requires a means of verifying the background, references, and financial stability of any contactor being considered. These factors, along with the time frame for construction, are important for an owner to investigate. Using AIA Document A305-1986, the contractor may provide a sworn, notarized statement and appropriate attachments to elaborate on important aspects of the contractor's qualifications.

BID BOND - AIA Document A310 (2010)

AIA Document A310-2010, a simple, one-page form, establishes the maximum penal amount that may be due to the owner if the selected bidder fails to execute the contract or fails to provide any required performance and payment bonds. Note: A310-2010 replaces AIA Document A310-1970 (expired December 31, 2010)

PERFORMANCE BOND AND PAYMENT BOND - AIA Document A312 (1970)

AIA Document A312 incorporates two bonds – one covering the contractor's performance, and the other covering the contractor's obligations to pay subcontractors and others for material and labor. In addition, AIA A312 obligates the surety to act responsively to the owner's requests for discussions aimed at anticipating or preventing a contractor's default.

APPLICATION AND CERTIFICATION FOR PAYMENT - AIA Document G732 (1992)

AIA Document G732-2009 serves as both the contractor's application and the architect's certification. Its use can expedite payment and reduce the possibility of error. If the application is properly completed and acceptable to the architect, the architect's signature certifies to the owner that a payment in the amount indicated is due to the contractor. The form also allows the architect to certify an amount different than the amount applied for, with explanation provided by the architect. The standard AIA Document G703-1992, Continuation Sheet, is appropriate for use with G732-2009. Note: G732-2009 replaces AIA Document G702 CMa-1992 (expired December 31, 2010).

CONTINUATION SHEET – AIA Document G703 (1992)

AIA Document G703-1992, Continuation Sheet, and G702-1992 (or G732-2009 if there is a Construction Manager), provide convenient and complete forms on which the contractor can apply for payment and the architect can certify that payment is due. The forms require the contractor to show the staus of the contract sum to date, including the total dollar amount of the work completed and stored to date, the amount of retainage (if any), the total of previous payments, a summary of change orders, and the amount of current payment requested. AIA Document G703-1992 breaks the contract sum into portions of the work in accordance with the schedule of values prepared by the contractor as require by the general conditions. Note: The AIA does not publish a standard schedule of values form.

CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS – AIA Document G706 (1994)

The contractor submits this affidavit with the final request for payment, stating that all payrolls, bills for materials and equipment, and other indebtedness connected with the work for which the owner might be responsible has been paid or otherwise satisfied. AIA Document G706-1994 requires the contractor to list any indebtedness or known claims in connection with the construction contract that have not been paid or otherwise satisfied. The contractor may also be required to furnish a lien bond or indemnity bond to protect the owner with respect to each exception.

CONTRACTOR'S AFFIDAVIT OR RELEASE OF LIENS – AIA Document G706A (1994)

AIA Document G706A-1994 supports AIA Document G706-1994 in the event that the owner requires a sworn statement of the contractor stating that all releases or waivers of liens have been received. In such event, it is normal for the contractor to submit AIA Documents G706-1994 and G706A-1994 along with attached releases or waivers of liens for the contractor, all subcontractors, and others who may have lien rights against the owner's property. The contractor is required to list any exceptions to the sworn statement provided in G706A-1994 and may be required to furnish to the owner a lien bond or indemnity bond to protect the owner with respect to such exceptions.

CONSENT OF SURETY TO FINAL PAYMENT – AIA Document G707 (1994)

AIA Document G707-1994 is intended for use as a companion to AIA G706-1994, Contractor's Affidavit of Payment of Debts and Claims, on construction projects where the contractor is required to furnish a bond. By obtaining the surety's approval of final payment to the contractor and its agreement that final payment will not relieve the surety of any of its obligations, the owner may preserve its rights under the bond.

CONSENT OF SURETY TO FINAL REDUCTION IN OR PARTIAL RELEASE OF RETAINAGE – AIA Document G707A (1994)

This is a standard form for use when a surety company is involved and the owner/contractor agreement contains a clause whereby retainage is reduced during the course of the construction project. When duly executed, AIA Document G707A-1994 assures the owner that such reduction or partial release of retainage does not relieve the surety of its obligations.

ARCHITECT'S SUPPLEMENTAL INSTRUCTIONS - AIA Document G710 (1992)

AIA Document G710-1992 is used by the architect to issue additional instructions or interpretations or to order minor changes in the work. It is intended to assist the architect in performing its obligations as interpreter of the contract documents in accordance with the owner/architect agreement and the general conditions of the contractor for construction. AIA Document G710-1992 should not be used to change the contract sum or contract time. It is intended to help the architect perform its services with respect to minor changes not involving adjustment in the contract sum or contract time.

REQUEST FOR INFORMATION (RFI) – AIA Document G716 (2004)

AIA Document G716-2004 provides a standard form for an owner, architect and contractor to requires further information from each other during construction. The form asks the requesting party to list the relevant drawing, specification or submittal reviewed in attempting to find the information. Neither the request nor the response received provides authorization for work that increases the cost or time of the project.

INFORMATION AVAILABLE TO BIDDERS

LIMITED PRE-RENOVATION ASBESTOS SURVEY REPORT
MAINE ENDWELL CENTRAL SCHOOL DISTRICT – HOMER BRINK ES
PHASE 5 – 2022 CAPITAL PROJECT
(Number of Pages - 46)
Prepared by:
DELTA Engineers
November 2025

EXTERIOR BUILDING CAULK PCB SAMPLING REPORT
MAINE-ENDWELL CENTRAL SCHOOL DISTRCIT – HOMER BRINK ES
PHASE 5 – 2022 CAPITAL PROJECT
(Number of Pages – 16)
Prepared by:
DELTA Engineers
April 2025

LIMITED LEAD-BASED PAINT SURVEY REPORT
MAINE-ENDWELL CENTRAL SCHOOL DISTRICT – HOMER BRINK ES
PHASE 4 -2022 CAPITAL PROJECT
(Number of Pages – 44)
Prepared by:
DELTA Engineers
April 2025

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There is no guarantee, either expressed or implied, that the conditions indicated are representative of those actually existing throughout the area or in any part of it, or that unforeseen developments may not occur. Interpretation or extrapolation of the reports presented is the responsibility of the Contractor.

Limited Pre-Renovation Asbestos Survey Report

Performed at

Maine-Endwell Central School District
Homer Brink Elementary School

3618 Briar Lane, Endwell, New York 13760

For the

Maine-Endwell CSD 2022 CIP - Phase 5 Homer Brink

SED PROJECT NO. 03-11-01-06-0-001-023

Prepared for:

Mr. Jeff L'Amoreaux, Assistant Superintendent for Business & Personnel
Maine-Endwell Central School District
712 Farm to Market Road
Endwell, NY 13760

Prepared by:

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Delta Project No. 2016.424.017

Field work performed by: Greg Umbra & Stephen Prislupsky
April 24th, April 25th and November 11th, 2025

Report prepared by: Greg Umbra

Report reviewed by: Stephen Prislupsky

Report Date: November 13th, 2025

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1.0 INTRODUCTION:

Delta Engineers, Architects, Land Surveyors, & Landscape Architects, DPC (Delta EAS) was contracted by the Maine-Endwell Central School District to perform a "Limited" Pre-Renovation Asbestos Survey at the Homer Brink Elementary School located at 3618 Briar Lane in Endwell, New York. The survey is being performed in support of the upcoming Maine-Endwell CSD 2022 CIP - Phase 5 Homer Brink Project and addressed accessible suspect building materials in the Phase 5 Project renovation areas with the potential to be impacted by the proposed Renovation Scope as delineated by King & King Architects. Reference the Appendix E Bulk Sample Location Drawings for the Ground Floor and 1st Floor Survey Locations / Limits.

The initial stage of the survey included a review of existing bulk sample information for the building. Bulk sample results through previous Delta sampling efforts and sample information through previous AHERA Triennial Reports have been incorporated into this Survey and associated Survey Report where applicable.

On April 24th, April 25th, and November 11th, 2025, Delta NYS DOL Certified Asbestos Inspectors Greg Umbra and Stephen Prislupsky conducted a walkthrough to identify the various accessible suspect materials present in the renovation areas with the potential to be impacted by the anticipated project scope. Based on a visual inspection of the affected renovation areas along with a review of the project scope and existing sample information for the building, a total of twenty-three (23) bulk samples were collected representing eleven (11) separate suspect homogenous building materials. Twelve (12) of the samples collected were non-friable organically bound (NOB) representing the six (6) homogenous materials. The remaining eleven (11) samples were "friable" Non-NOB's representing five (5) separate suspect homogenous materials.

In addition to the samples collected above, other suspect homogenous materials with the potential to be impacted by the project were observed but not sampled as they were either addressed through previous sampling efforts or included in the 2022 AHERA Triennial Report. For these previously sampled materials, results are available through the Maine-Endwell District Offices. The suspect homogenous building materials identified and/or sampled in the affected project renovation areas included the following:

Homogenous Area (HA)	Suspect Building Material
01	Interior Aluminum Storefront Gray Frame Caulk
02	Interior Gray Window Frame Caulk
03	Exterior Gray Door Frame Caulk
04	Exterior Aluminum Storefront-Window Gray Frame Caulk
05	Exterior Gray Building Expansion Joint Caulk
06	Tectum Roof Deck
07	Lower Level Mechanical Room Spray-on Fireproofing
08	Incinerator Unit Interior Yellow Fire Brick
09	Mortar from HA 08 Fire Brick
10	Incinerator Exhaust Interior Yellow Fire Brick
11	Mortar from HA 10 Fire Brick

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Homogenous Area (HA)	Suspect Building Material (Continued)
12*	**Hard-packed Pipe Fitting Insulation**
13*	**All Colors / Patterns of 9” x 9” Floor Tile**
14*	**Mastics from all colors / patterns of 9” x 9” floor tile**
15*	**Gym Woodblock Flooring Mastic / Vapor Barrier**
16*	**Hard-packed Duct Insulation**
17*	**Ductwork Stick-Pin Adhesive**
18*	**Rear Gym Entry Vestibules Fascia Panel Caulk**
19*	All Colors / Patterns of 12” x 12” Floor Tile and their associated Mastics
20*	All sizes / colors of Ceramic Floor Tile
21*	All colors of grout from Ceramic Floor Tile
22*	Ceramic Floor Tile Mortar Beds
23*	Ceramic Floor Areas Mastic / Vapor Barrier
24*	Covering / Jacket from non-suspect fiberglass duct and pipe insulations
25*	Cloth Electric Wire Wrap
26*	All sizes / colors of Ceramic Wall Tile
27*	All colors of grout from Ceramic Wal Tile
28*	Ceramic Wall Tile Mortar Beds / Adhesives
29*	All Colors of Floor Fillers / Levelers
30*	All Colors / Sizes of Cove Base and their associated Mastics
31*	**Vapor Barrier Felt Paper Layer beneath Custodial Slop Sinks**
32*	Vapor Barrier Tar Layer beneath Custodial Slop Sinks
33*	All Ceiling and Wall System Sheetrock
34*	All Ceiling and Wall System Joint Compound
35*	All Ceiling and Wall System Top-Coat Plaster
36*	All Ceiling and Wall System Base-Coat Plaster
37*	All Sizes / Patterns of Suspended Acoustical Ceiling Tiles
38*	All Patterns of 1’ x 1’ Splined & Adhered Ceiling Tiles
39*	Mastic from 1’ x 1’ Adhered Ceiling Tiles
40*	All Carpet Mastics / Adhesives
41*	**Gym Roof Skylights Flashing**
42*	All roofing system materials other than HA 36* Gym Roof Skylights Flashing
43*	Quarry Tile Flooring and its associated grout / mortar bed / vapor barrier
44*	Terrazzo Flooring System

** - Materials previously sampled as a part of the AHERA Program or by Delta / “other” Consultants as a part of previous Capital Improvement Projects (results are available through the Maine-Endwell CSD District Offices).*

Specific information required by 12 NYCRR Part 56-5.1, (f) – “Building/Structure Asbestos Survey Information” to be included in this pre-renovation report is as follows:

1) Building Name/Address: Homer Brink Elementary School
3618 Briar Lane
Endwell, NY 13760

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2) Owner's Name/Address:	Maine-Endwell Central School District 712 Farm to Market Road Endwell, NY 13760
3) Owner's Agent:	Mr. Jeff L'Amoreaux Assistant Superintendent for Business & Personnel
4) Survey Performed By:	Delta Engineers, Architects, Land Surveyors,& Landscape Architects, DPC 860 Hooper Road Endwell, NY 13760
5) Certified Inspectors:	Greg Umbra, Certificate No. 25-6SD3Z-SHAB Stephen Prislupsky, Certificate No. 24-6L43B-SHAB
6) Date of Survey:	April 24th & 25th, 2025 and November 11th, 2025
7) Laboratory:	America Science Team New York, Inc. 117 East 30th Street, New York, NY 10016

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2.0 ASBESTOS SURVEY AND SAMPLING PROCEDURES AND METHODS:

2.1 Survey requirements

Requirements to perform Pre-Demolition/Pre-Renovation Asbestos Surveys are based on the following State and Federal Regulations.

Occupational Safety and Health Administration (OSHA): OSHA survey requirements and sampling protocols are included in 29 CFR Part 1910.1001(j)(2) & (j)(8) and 29 CFR Part 1926.1101(k),(5):

29 CFR Part 1910.1001(j)(2), Installed Asbestos Containing Material: Employers and building owners are required to treat installed TSI and sprayed on and troweled-on surfacing materials as ACM in buildings constructed no later than 1980 for purposes of this standard. These materials are designated "presumed ACM or PACM", and are defined in paragraph (b) of this section. Asphalt and vinyl flooring material installed no later than 1980 also must be treated as asbestos-containing. The employer or building owner may demonstrate that PACM and flooring material do not contain asbestos by complying with paragraph (j)(8)(iii) of this section.

29 CFR Part 1910.1001(j)(8), Criteria to rebut the designation of installed material as PACM:
1910.1001(j)(8)(i) - At any time, an employer and/or building owner may demonstrate, for purposes of this standard, that PACM does not contain asbestos. Building owners and/or employers are not required to communicate information about the presence of building material for which such a demonstration pursuant to the requirements of paragraph (j)(8)(ii) of this section has been made. However, in all such cases, the information, data and analysis supporting the determination that PACM does not contain asbestos, shall be retained pursuant to paragraph (m) of this section.

1910.1001(j)(8)(ii) - An employer or owner may demonstrate that PACM does not contain asbestos by the following:

1910.1001(j)(8)(ii)(A) - Having a completed inspection conducted pursuant to the requirements of AHERA (40 CFR 763, Subpart E) which demonstrates that no ACM is present in the material; or

1910.1001(j)(8)(ii)(B) - Performing tests of the material containing PACM which demonstrate that no ACM is present in the material. Such tests shall include analysis of bulk samples collected in the manner described in 40 CFR 763.86. The tests, evaluation and sample collection shall be conducted by an accredited inspector or by a CIH. Analysis of samples shall be performed by persons or laboratories with proficiency demonstrated by current successful participation in a nationally recognized testing program such as the National Voluntary Laboratory Accreditation Program (NVLAP) or the National Institute for Standards and Technology (NIST) or the Round Robin for bulk samples administered by the American Industrial Hygiene Association (AIHA) or an equivalent nationally-recognized round robin testing program.

1910.1001(j)(8)(iii) -The employer and/or building owner may demonstrate that flooring material including associated mastic and backing does not contain asbestos, by a determination of an industrial hygienist based upon recognized analytical techniques showing that the material is not ACM.

29 CFR Part 1926.1101(k)(5), Criteria to rebut the designation of installed material as PACM:
1926.1101(k)(5)(i) - At any time, an employer and/or building owner may demonstrate, for purposes of this standard, that PACM does not contain asbestos. Building owners and/or employers are not required to communicate information about the presence of building material for which such a demonstration pursuant to the requirements of paragraph (k)(5)(ii) of this section has been made. However, in all such cases, the information, data and analysis supporting the determination that PACM does not contain asbestos, shall be retained pursuant to paragraph (n) of this section.

1926.1101(k)(5)(ii) – An employer or owner may demonstrate that PACM does not contain more than 1 percent asbestos by the following:

1926.1101(k)(5)(ii)(A) - Having a completed inspection conducted pursuant to the requirements of AHERA (40 CFR Part 763, Subpart E) which demonstrates that the material is not ACM; or

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1926.1101(k)(5)(ii)(B) - Performing tests of the material containing PACM which demonstrate that no ACM is present in the material. Such tests shall include analysis of bulk samples collected in the manner described in 40 CFR 763.86. The tests, evaluation and sample collection shall be conducted by an accredited inspector or by a CIH. Analysis of samples shall be performed by persons or laboratories with proficiency demonstrated by current successful participation in a nationally recognized testing program such as the National Voluntary Laboratory Accreditation Program (NVLAP) or the National Institute for Standards and Technology (NIST) or the Round Robin for bulk samples administered by the American Industrial Hygiene Association (AIHA) or an equivalent nationally-recognized round robin testing program.

1926.1101(k)(5)(iii) - The employer and/or building owner may demonstrate that flooring material including associated mastic and backing does not contain asbestos, by a determination of an industrial hygienist based upon recognized analytical techniques showing that the material is not ACM.

EPA National Emissions Standard for Hazardous Air Pollutants (NESHAPs): (NESHAPs) regulates asbestos under "40 CFR Part 61, Subpart M - National Emission Standard for Asbestos". Subpart M regulates demolition and/or renovation of "facilities" that may contain asbestos-containing materials (ACMs). "Facilities," as defined by NESHAPs, includes any institutional, commercial, public, industrial, or residential structure or building, *except* residential buildings having four or fewer units. ACMs are defined in NESHAPs as materials containing more than 1 percent asbestos. Section 61.145 states:

61.145 Standard for demolition and renovation.
(a) Applicability. To determine which requirements of paragraphs (a), (b), and (c) of this section apply to the owner or operator of a demolition or renovation activity and prior to the commencement of the demolition or renovation, thoroughly inspect the affected facility or part of the facility where the demolition or renovation operation will occur for the presence of asbestos, including Category I and Category II nonfriable ACM.

It should be noted that 40 CFR Part 1 Subpart M, NESHAPS has no cut-off date exempting survey requirements.

New York State Department of Labor (NYS DOL): Guidelines followed for the inspection are those established by the NYS DOL's Industrial Code Rule 56 (Cited as 12 NYCRR Part 56, as amended, adopted January 11, 2006; effective September 5, 2006). The specific survey, sampling and reporting requirements included in 12 NYCRR Part 56-5.1(e) – "Building/Structure Asbestos Survey Requirements" include:

56-5.1 Asbestos Survey Requirements for Building/Structure Demolition, Renovation, Remodeling and Repair

(a) **Asbestos Survey Required.** An owner or an owner's agent, except the owner of one and two-family dwellings who contracts for, but does not direct or control the work, shall cause to be conducted, an asbestos survey completed by a licensed asbestos contractor using inspectors certified in compliance with Section 56-3.2(d), to determine whether or not the building or structure, or portion(s) thereof to be demolished, renovated, remodeled, or have repair work, contains ACM, PACM or asbestos material. This asbestos survey shall be completed and submitted as indicated in Subdivision (g) of this Section, prior to commencing work. All such asbestos surveys shall be conducted in conformance with the requirements of Subdivision (e) of this Section.

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(b) **Exemptions to Asbestos Survey Requirements**: The asbestos survey required by this Subdivision (a) of this Section shall not be required for the following classes of buildings or structures:

(1) An agricultural building;

(2) Buildings or structures for which original construction commenced on or after January 1, 1974;

(3) A structure certified in writing to be structurally unsound by a licensed Professional Engineer, Registered Architect, Building Inspector, Fire Inspector or other official of competent jurisdiction. (See Section 56-11.5)

(c) **Building/Structure Demolition**. If a building/structure asbestos survey is not required or performed per Subdivision (b) of this Section, and the building/structure is certified to be unsound or slated for contracted demolition, the building/structure shall be assumed to contain asbestos, and shall be demolished per this Part, unless the building/structure is adequately certified to be free of asbestos containing material. Acceptable documentation for certification shall be a previous thorough building/structure asbestos survey, abatement records or other documentation acceptable to the Commissioner or his or her representative.

(d) **Responsibility to Comply.** No exemption to the requirement to conduct an asbestos survey shall exempt any person, asbestos contractor, property owner or business entity from the inspection or asbestos survey requirements of EPA, OSHA, and any other applicable section of this Part.

(e) **Building/Structure Asbestos Survey Requirements.** The asbestos survey shall include a thorough inspection for and identification of all PACM, suspect miscellaneous ACM, or asbestos material throughout the building/structure or portion thereof to be demolished, renovated, remodeled, or to have repair work. The required inspection shall be performed by a certified asbestos inspector, and, at a minimum, shall include identification of PACM, suspect miscellaneous ACM or asbestos material by all of the following methods:

(1) The review of building/structure plans and records, if available, for references to asbestos, ACM, PACM, suspect miscellaneous ACM or asbestos material used in construction, renovation or repair; and

(2) A visual inspection for PACM and suspect miscellaneous ACM throughout the building/structure or portion thereof to be demolished, renovated, remodeled, or repaired. For the purpose of this Part, all PACM and suspect miscellaneous ACM visually assessed shall be treated and handled as ACM and shall be assumed to be ACM, unless bulk sampling is conducted as per this Section, standard EPA and OSHA accepted methods, including multi-layered systems sampling protocols; the subsequent analyses are performed by a laboratory that meets the requirements of Section 56-4.2 of this Part; and the analyses satisfies both ELAP and federal requirements, including multi-layered sample analyses, to document non-asbestos containing material.

(f) **Building/Structure Asbestos Survey Information.**

(1) The asbestos survey shall, at a minimum, identify and assess with due diligence, the locations, quantities, friability and conditions of all types of installations at the affected portion of the building/structure relative to the ACM, suspect miscellaneous ACM, PACM or asbestos material

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contained therein. The following list is not inclusive of all types of ACMs, it only summarizes typical ACMs. The certified asbestos inspector is responsible for identification and assessment of all types ACM, PACM, suspect miscellaneous ACM and asbestos material within the affected portion of the building/structure:

PACM

(i) **Surfacing Treatments:**

(a) Fireproofing;
(b) Acoustical Plaster;
(c) Finish Plasters; and
(d) Skim Coats of Joint Compound.

(ii) **Thermal System Insulation:**

(a) Equipment Insulation;
(b) Boiler, Breeching, Boiler Rope, Duct, or Tank Insulation, Cement or Mortar Used for Boilers and Refractory Brick;
(c) Piping and Fitting Insulations including but not limited to, Wrapped Paper, Aircell, Millboard, Rope, Cork, Preformed Plaster, Job Molded Plaster and coverings over fibrous glass insulation.

SUSPECT MISCELLANEOUS ACM

(i) **Roofing and Siding Miscellaneous Materials:**

(a) Insulation Board;
(b) Vapor Barriers;
(c) Coatings;
(d) Non-Metallic or Non-Wood Roof Decking
(e) Felts;
(f) Cementitious Board (Transite);
(g) Flashing;
(h) Shingles; and
(i) Galbestos.

(ii) **Other Miscellaneous Materials:**

(a) Dust and Debris;
(b) Floor Tile;
(c) Cove Base;
(d) Floor Leveler Compound;
(e) Ceiling Tile;
(f) Vermiculite Insulation
(g) Gaskets, Seals, Sealants (including for condensate control);
(h) Vibration Isolators;
(i) Laboratory Tables and Hoods;
(j) Chalkboards;
(k) Pipe Penetration Packing or Other Firestopping Materials
(l) Cementitious Board;
(m) Electrical Wire Insulation;
(n) Fire Curtains;
(o) Fire Blankets;
(p) Fire Doors;

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(q) Brakes and Clutches;
(r) Mastics, Adhesives and Glues;
(s) Caulks;
(t) Sheet Flooring (Linoleum);
(u) Wallpaper;
(v) Drywall;
(w) Plasterboard
(x) Spackling/Joint Compound;
(y) Textured Paint;
(z) Grout;
(aa) Glazing Compound; and
(ab) Terrazzo.

(2) All ACM, PACM, suspect miscellaneous ACM, or asbestos material reported under Paragraph (1) of this Subdivision shall include the location of the materials, an estimate of the quantities, types, friability and condition of the identified materials to be treated and handled as ACM. For the purpose of this Part, all PACM and suspect miscellaneous ACM visually assessed shall be treated and handled as ACM and shall be assumed to be ACM, unless bulk sampling is conducted as per this Section, standard EPA and OSHA accepted methods, including multilayered systems sampling protocols; the subsequent analyses are performed by a laboratory that meets the requirements of Section 56-4.2 of this Part; and the analyses satisfies both ELAP and federal requirements, including multi-layered sample analyses, to document non-asbestos containing material.

(3) The building/structure asbestos survey shall also include the building/structure name, address, the building/structure owner's name and address, the name and address of the owner's agent, the name of the firm performing the asbestos survey and a copy of the firm's current asbestos handling license, the names of the certified inspector(s) performing the survey and a copy of the current asbestos handling certificate for each inspector utilized, the dates of the asbestos survey, a listing of homogeneous areas identifying which ones are ACM, all laboratory analyses reports for bulk samples collected, and copies of the appropriate certifications for the laboratory used for analysis of samples taken during the asbestos survey.

(g) **Transmittal of Building/Structure Asbestos Survey Information.** One (1) copy of the results of the building/structure asbestos survey shall be immediately transmitted by the building/structure owner as follows:

(1) One (1) copy of the completed asbestos survey shall be sent by the owner or their agent to the local government entity charged with issuing a permit for such demolition, renovation, remodeling or repair work under applicable State or local laws.
(2) The completed asbestos survey for controlled demolition (as per Subpart 56-11.5) or pre-demolition asbestos projects shall also be submitted to the appropriate Asbestos Control Bureau district office.
(3) The completed asbestos survey shall be kept on the construction site with the asbestos notification and variance, if required, throughout the duration of the asbestos project and any associated demolition, renovation, remodeling or repair project.

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(h) **Removal Required.** If the building/structure asbestos survey finds that the portion of the building/structure to be demolished, renovated, remodeled, or have repair work contains ACM, PACM, suspect miscellaneous ACM assumed to be ACM, or asbestos material, which is impacted by the work, the owner or the owner's agent shall conduct, or cause to have conducted, asbestos removal performed by a licensed asbestos abatement contractor in conformance with all standards set forth in this Part. All ACM, PACM, suspect miscellaneous ACM assumed to be ACM, or asbestos material impacted by the demolition, renovation, remodeling or repair project shall be removed as per this Part, prior to access or disturbance by other uncertified trades or personnel. No demolition, renovation, remodeling or repair work shall be commenced by any owner or the owner's agent prior to the completion of the asbestos abatement in accordance with the notification requirements of this Part. For multi-phased work, the access restriction for uncertified trades or personnel applies to each intermediate portion of the entire project. Upon completion of the intermediate portion of the asbestos project, other trades or personnel may access that portion of the work site.

For demolition projects that are exempt from asbestos survey requirements due to being structurally unsound, the demolition is considered an asbestos project and shall proceed as per Section 56-11.5.

(1) All building/structure owners and asbestos abatement contractors on a demolition, renovation, remodeling, or repair project, which includes work covered by this Part, shall inform all trades on the work site about PACM, ACM, asbestos material and suspect miscellaneous ACM assumed to be ACM at the work site.

(i) **Bidding.** Bids may be advertised and contracts awarded for demolition, remodeling, renovation, or repair work, but no work on the current intermediate portion of the project shall commence on the demolition, renovation, remodeling or repair work by any owner or agent prior to completion of all necessary asbestos abatement work for the current intermediate portion of the entire project, in conformance with all standards set forth in this Part.

(j) **Unidentified and Unassessed Asbestos.** When any construction activity, such as demolition**,** remodeling, renovation or repair work, reveals PACM or suspect miscellaneous ACM that has not been identified by the asbestos survey per this Part, or has not been identified by other inspections as per current OSHA or EPA requirements, all activities shall cease in the area where the PACM or suspect miscellaneous ACM is found and the Asbestos Control Bureau shall be notified by telephone by the building/structure owner or their representative, followed with a written notice in accordance with the notification requirements of this Part. Unassessed PACM or suspect miscellaneous ACM shall be treated and handled as ACM and assumed to be ACM, unless proven otherwise by standard EPA and OSHA accepted methods, including multi-layered systems sampling protocols; subsequent analyses performed by a laboratory that meets the requirements of Section 56-4.2 of this Part; and the analyses satisfies both NYS ELAP and federal requirements, including multi-layered sample analyses, to document non-asbestos containing material.

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2.2 Sample Analysis

Bulk sample analysis was performed by American Science Team New York Inc., an independent laboratory approved/accredited by the NYS Department of Health (ELAP), the American Industrial Hygiene Association (AIHA), and the National Voluntary Laboratory Accreditation Program (NVLAP).

Samples collected during the course of this survey fell into one of two categories. The first category includes non-friable organically bound (NOB) materials. These materials are those which have an organic binder in their matrix and include items such as floor tiles, sheet flooring, mastics, glazings, caulks and roofing materials. The second category includes non-NOB "friable" materials including parging, sheetrock, joint compound, wall insulations, and wallboard.

Analysis of all "NOB" materials was initially performed by Polarized Light Microscopy (PLM) following the New York State Department of Health ELAP 198.6 Gravimetric Reduction Methodology. If a given sample was reported as non-asbestos following this analysis, it was then analyzed by Transmission Electron Microscopy (TEM) following the NYS DOH ELAP 198.4 Methodology.

Analysis of all "non-NOB" materials was performed by Polarized Light Microscopy (PLM) following the EPA 600/M4/82/020 and the NYS DOH ELAP 198.1 Methodologies.

2.3 Materials not sampled

There were several materials present at the site which were not considered "suspect" by the inspector and were not sampled. These included various fiberglass, foam, vinyl, silicone, wood/cellulose products and concrete/cinder block/brick components. Backsplash mastic observed for the non-suspect Trespa countertop was observed to be non-suspect silicone. No mastics were observed on the remaining countertops. All shelving and wall standards were observed to be mechanical fastened. All fume hood duct work seams were observed to be welded. All wiring was observed to be non-suspect vinyl wire wrap.

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3.0 Survey Findings and Conclusions

3.1) Maine-Endwell CSD 2022 CIP – Phase 5 Homer Brink Elementary School Project Pre-Renovation Asbestos Survey, Non-Asbestos Materials – Based on information presented in the District's AHERA Report / subsequent Triennial Report, previous sample results, and results reported for samples collected during this Survey of accessible suspect materials present in the Homer Brink Elementary School with the potential to be impacted by the 2022 CIP Phase 5 Project, the following were identified as non-asbestos:

Homogenous Area (HA)	Non-Asbestos Material
01	Interior Aluminum Storefront Gray Frame Caulk
02	Interior Gray Window Frame Caulk
03	Exterior Gray Door Frame Caulk
04	Exterior Aluminum Storefront-Window Gray Frame Caulk
05	Exterior Gray Building Expansion Joint Caulk
06	Tectum Roof Deck
07	Lower Level Mechanical Room Spray-on Fireproofing
08	Incinerator Unit Interior Yellow Fire Brick
09	Mortar from HA 08 Fire Brick
10	Incinerator Exhaust Interior Yellow Fire Brick
11	Mortar from HA 10 Fire Brick
19*	All Colors / Patterns of 12" x 12" Floor Tile and their associated Mastics
20*	All sizes / colors of Ceramic Floor Tile
21*	All colors of grout from Ceramic Floor Tile
22*	Ceramic Floor Tile Mortar Beds
23*	Ceramic Floor Areas Mastic / Vapor Barrier
24*	Covering / Jacket from non-suspect fiberglass duct and pipe insulations
25*	Cloth Electric Wire Wrap
26*	All sizes / colors of Ceramic Wall Tile
27*	All colors of grout from Ceramic Wal Tile
28*	Ceramic Wall Tile Mortar Beds / Adhesives
29*	All Colors of Floor Fillers / Levelers
30*	All Colors / Sizes of Cove Base and their associated Mastics
32*	Vapor Barrier Tar Layer beneath Custodial Slop Sinks
33*	All Ceiling and Wall System Sheetrock
34*	All Ceiling and Wall System Joint Compound
35*	All Ceiling and Wall System Top-Coat Plaster
36*	All Ceiling and Wall System Base-Coat Plaster
37*	All Sizes / Patterns of Suspended Acoustical Ceiling Tiles
38*	All Patterns of 1' x 1' Splined & Adhered Ceiling Tiles
39*	Mastic from 1' x 1' Adhered Ceiling Tiles
40*	All Carpet Mastics / Adhesives
42*	All roofing system materials other than HA 36* Gym Roof Skylights Flashing
43*	Quarry Tile Flooring and its associated grout / mortar bed / vapor barrier
44*	Terrazzo Flooring System

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** - Materials previously sampled as a part of the AHERA Program or by Delta / "other" Consultants as a part of previous Capital Improvement Projects (results are available through the Maine-Endwell CSD District Offices).*

3.2) Maine-Endwell CSD 2022 CIP – Phase 5 Homer Brink Elementary School Project Pre-Renovation Asbestos Survey, Asbestos Containing Materials – Based on information presented in the District's AHERA Report / subsequent Triennial Reports, previous sample results, and results reported for samples collected during this Survey of accessible suspect materials present in the Homer Brink Elementary School with the potential to be impacted by the 2022 CIP Phase 5 Project, the following were identified as being ***asbestos-containing***:

Homogenous Area (HA)	Asbestos-Containing Material
12*	**Hard-packed Pipe Fitting Insulation**
13*	**All Colors / Patterns of 9" x 9" Floor Tile**
14*	**Mastics from all colors / patterns of 9" x 9" floor tile**
15*	**Gym Woodblock Flooring Mastic / Vapor Barrier**
16*	**Hard-packed Duct Insulation**
17*	**Ductwork Stick-Pin Adhesive**
18*	**Rear Gym Entry Vestibules Fascia Panel Caulk**
31*	**Vapor Barrier Felt Paper Layer beneath Custodial Slop Sinks**
41*	**Gym Roof Skylights Flashing**

A breakdown of asbestos-containing materials by Homogeneous Area is as follows:

A) Hard-Packed Pipe Fitting Insulation, HA 12*: Hard-packed fitting insulation was previously sampled and reported as being Asbestos Containing. This Material was observed to be present in accessible Ceiling Plenum Spaces and is "assumed" within "original" bathroom wet-walls, "original" interstitial wall spaces, and "original" hard-ceiling plenum spaces throughout the Phase 5 Homer Brink Project Ground Floor and 1st Floor Renovation Areas.

B) 9" x 9" Floor Tiles and their associated Mastics, HA 13* & HA 14*: All colors / patterns of 9" x 9" floor tile and their associated mastics were previously identified as being asbestos containing. These tiles / mastics were observed to be present as the finished flooring system, beneath carpeting, and beneath new 12" x 12" non-asbestos floor tile in the following Phase 5 Homer Brink Project Ground Floor and 1st Floor Renovation Areas:

- 1st Floor Locker Entry Foyer Corridor Section 134.2
- 1st Floor Storage Room 139.1
- Ground Floor Corridors G-1 and G-3 (beneath new 12" x 12" non-asbestos floor tile).

C) Mastic / Vapor Barrier from Gym Woodblock Flooring System, HA 15*: The Mastic / Vapor Barrier associated with the Gym Wood Block Flooring System was previously identified as being asbestos containing.

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D) Hard-packed Ductwork Insulation, HA 16*: The hard-packed duct insulation observed to be present in the 1st Floor Storage Space 136.1 and its adjacent foyer area ceiling plenum space was previously identified as being asbestos containing.

E) Ductwork Stick-pin Mastic, HA 17*: The mastic associated with ductwork stick-pins was previously sampled and reported as being Asbestos Containing. This Material was observed to be present in accessible Ceiling Plenum Spaces and is "assumed" within "original" hard-ceiling plenum spaces throughout the Phase 5 Homer Brink Project Ground Floor and 1st Floor Renovation Areas.

F) Rear Gym Entry Vestibules Fascia Panel Seam Caulk, HA 18*: The caulk associated with Gym North-East and South-East Entry Vestibules overhead Fascia Panels was previously sampled and reported as being Asbestos Containing.

G) Vapor Barrier Felt Paper beneath Custodial Closet Slop Sinks, HA 31*: The felt paper component of the vapor barrier system present beneath slop sinks in custodial closets was previously sampled and reported as being Asbestos Containing (the tar component of the vapor barrier system was reported as being non-asbestos).

H) Gym Roof Skylights Flashing Materials, HA 41*: The flashing associated with the six skylights on the Gym Roof was previously sampled and reported as being Asbestos Containing. All other roofing system materials were previously sampled and reported as being non-asbestos.

The specific locations and quantities of the Asbestos Containing Materials referenced above to be impacted as a part of the Maine-Endwell CSD 2022 CIP - Phase 5 Homer Brink Project was not known at the time this survey was performed. As referenced in section 1.0 of this report.

4.0 INACCESSIBLE AREAS

This Survey was performed in accordance with 12 NYCRR Part 56, which references the application of "due diligence" during the identification and assessment of materials, i.e. a reasonable standard of care will be applied based upon training and experience. Performing this Survey in full compliance with the applicable statutory code does not guarantee that every asbestos-containing material will be identified.

Renovation spaces and areas which were visible and accessible were inspected and sampled as a part of this survey. Inaccessible areas such as wall chases/interstitial wall space, hard ceiling plenum spaces, and enclosed pipe chases could not be inspected without select demolition. Based on the fact that the school was partially occupied by staff at the time of the survey, the inaccessible areas were not included as a part of this survey. Any materials encountered in those areas not accessible that are not referenced as ACM or Non-ACM in this report shall be assumed ACM until tested.

As stated above, this survey was limited to only those accessible spaces / areas and associated accessible suspect materials anticipated to be impacted during the upcoming Maine-Endwell CSD 2022 CIP - Phase 5 Homer Brink Project.

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APPENDIX A

Asbestos Bulk Sample Report Form

860 Hooper Road, Endwell, NY 13760 Tel:607.231.6600 Fax:607.231.6640
www.delta-eas.com

Client: Maine Endwell CSD	**SED Project No.:** 03-11-01-06-0-001-023	**Delta Proj. No.:** 2016.424.017
Project: Maine Endwell CSD 2022 CIP - Phase 5 Homer Brink Elementary School Limited Pre-Renovation Asbestos Survey	**Date Sampling Performed:** 04/24-25/2025 & 11/11/2025	**Asbestos Inspector(s):** Greg Umbra, S. Prislupsky
	Date of Report: 11/13/2025	**Number of Samples Collected:** 23
	Laboratory: AmeriSci, NY Labs	**Number of Samples Analyzed:** PLM - 23, TEM - 12

Asbestos Bulk Sample Report Form

Sample Number		HA*	Floor	Bulk Sample Description / Details	Material Type	Asbestos Type	PLM Result % Asbestos	TEM Result % Asbestos
2016.424.017 -	01A	01	1	Grey - Interior Aluminum Store Front Frame Caulk - Boys Locker Room	Miscellaneous	ND	ND	ND
2016.424.017 -	01B	01	1	Grey - Interior Aluminum Store Front Frame Caulk - Girls Locker Room	Miscellaneous	ND	ND	ND
2016.424.017 -	02A	02	1	Grey - Interior Window Frame Caulk - Music Room	Miscellaneous	ND	ND	ND
2016.424.017 -	02B	02	1	Grey - Interior Window Frame Caulk - Music Room	Miscellaneous	ND	ND	ND
2016.424.017 -	03A	03	Ext	Grey - Exterior Door Frame Caulk - Boys Locker Room	Miscellaneous	ND	ND	ND
2016.424.017 -	03B	03	Ext	Grey - Exterior Door Frame Caulk - Girls Locker Room	Miscellaneous	ND	ND	ND
2016.424.017 -	04A	04	Ext	Grey - Exterior Aluminum Store Front Caulk - Boys Locker Room	Miscellaneous	ND	ND	ND
2016.424.017 -	04B	04	Ext	Grey - Exterior Aluminum Store Front Caulk - Girls Locker Room	Miscellaneous	ND	ND	ND
2016.424.017 -	05A	05	Ext	Grey - Exterior Building Expansion Joint - South Wall	Miscellaneous	ND	ND	ND
2016.424.017 -	05B	05	Ext	Grey - Exterior Building Expansion Joint - North Wall	Miscellaneous	ND	ND	ND
2016.424.017 -	06A	06	Ext	Tectum Roof Deck	Miscellaneous	ND	ND	ND
2016.424.017 -	06B	06	Ext	Tectum Roof Deck	Miscellaneous	ND	ND	ND

Client: Maine Endwell CSD	**SED Project No.:** 03-11-01-06-0-001-023	**Delta Proj. No.:** 2016.424.017
Project: Maine Endwell CSD 2022 CIP - Phase 5 Homer Brink Elementary School Limited Pre-Renovation Asbestos Survey	**Date Sampling Performed:** 04/24-25/2025 & 11/11/2025	**Asbestos Inspector(s):** Greg Umbra, S. Prislupsky
	Date of Report: 11/13/2025	**Number of Samples Collected:** 23
	Laboratory: AmeriSci, NY Labs	**Number of Samples Analyzed:** PLM - 23, TEM - 12

Asbestos Bulk Sample Report Form

Sample Number		HA*	Floor	Bulk Sample Description / Details	Material Type	Asbestos Type	PLM Result % Asbestos	TEM Result % Asbestos
2016.424.017 -	07A	07	LL	Spray-on Fireproofing	Surfacing	ND	ND	NA
2016.424.017 -	07B	07	LL	Spray-on Fireproofing	Surfacing	ND	ND	NA
2016.424.017 -	07C	07	LL	Spray-on Fireproofing	Surfacing	ND	ND	NA
2016.424.017 -	08A	08	LL	Incinerator Interior Yellow Fire Brick	Miscellaneous	ND	ND	NA
2016.424.017 -	08B	08	LL	Incinerator Interior Yellow Fire Brick	Miscellaneous	ND	ND	NA
2016.424.017 -	09A	09	LL	Mortar from HA 08 Brick	Miscellaneous	ND	ND	NA
2016.424.017 -	09B	09	LL	Mortar from HA 08 Brick	Miscellaneous	ND	ND	NA
2016.424.017 -	10A	10	LL	Incinerator Exhaust Yellow Fire Brick	Miscellaneous	ND	ND	NA
2016.424.017 -	10B	10	LL	Incinerator Exhaust Yellow Fire Brick	Miscellaneous	ND	ND	NA
2016.424.017 -	11A	11	LL	Mortar from HA 10 Brick	Miscellaneous	ND	ND	NA
2016.424.017 -	11B	11	LL	Mortar from HA 10 Brick	Miscellaneous	ND	ND	NA

HA - Homogenous Area **ND** - No Asbestos Detected **NA** - Not Analyzed by Methodology **NA/PS** - Not Analyzed, Positive Stop
TSI - Thermal System Insulation **Misc** - Miscellaneous Material **Trace / < 1%** - Non-asbestos by definition

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APPENDIX B

Laboratory Analytical Results

AmeriSci New York
117 EAST 30TH ST.
NEW YORK, NY 10016
TEL: (212) 679-8600 • FAX: (212) 679-3114

PLM Bulk Asbestos Report

Delta Engineers
Attn: Stephen Prislupsky
860 Hooper Road

Endwell, NY 13760

Date Received 4/25/2025 **AmeriSci Job #** 225043150
Date Examined 04/27/25 **P.O. #**
ELAP # 11480 **Page** 1 **of** 2

RE: 2016.424.017; Maine-Endwell Central School; Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary School Pre-Renovation Asbestos Survey, Client Project No.: 23-44-7956

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
2016.424.017-01A 01	225043150-01	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by Valeriu Voicu on 04/27/25	*1*
Location: 1st Fl. - Grey - Interior Aluminum Store Front Frame Caulk - Boy's Locker Room **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 16%				
2016.424.017-01B 01	225043150-02	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by Valeriu Voicu on 04/27/25	*1*
Location: 1st Fl. - Grey - Interior Aluminum Store Front Frame Caulk - Girls Locker Room **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.6%				
2016.424.017-02A 02	225043150-03	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by Valeriu Voicu on 04/27/25	*1*
Location: 1st Fl. - Grey - Interior Window Frame Caulk - Music Room **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 5.6%				
2016.424.017-02B 02	225043150-04	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by Valeriu Voicu on 04/27/25	*1*
Location: 1st Fl. - Grey - Interior Window Frame Caulk - Music Room **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 9.7%				
2016.424.017-03A 03	225043150-05	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by Valeriu Voicu on 04/27/25	*1*
Location: Ext - Grey - Exterior Door Frame Caulk - Boys Locker Room **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 8.0%				

See Reporting notes on last page

PLM Bulk Asbestos Report

2016.424.017; Maine-Endwell Central School; Maine Endwell CSD
2022 CIP Phase 5 Homer Brink Elementary School Pre-Renovation
Asbestos Survey, Client Project No.: 23-44-7956

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
2016.424.017-03B 03 **Location:** Ext - Grey - Exterior Door Frame Caulk - Girls Locker Room **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 6.5%	225043150-06	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by Valeriu Voicu on 04/27/25	*1*
2016.424.017-04A 04 **Location:** Ext - Grey - Exterior Aluminum Store Front Caulk - Boys Locker Room **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 18%	225043150-07	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by Valeriu Voicu on 04/27/25	*1*
2016.424.017-04B 04 **Location:** Ext - Grey - Exterior Aluminum Store Front Caulk - Girls Locker Room **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 15%	225043150-08	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by Valeriu Voicu on 04/27/25	*1*
2016.424.017-05A 05 **Location:** Ext - Grey - Exterior Building Expansion Joint - South Wall **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 3.5%	225043150-09	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by Valeriu Voicu on 04/27/25	*1*
2016.424.017-05B 05 **Location:** Ext - Grey - Exterior Building Expansion Joint - North Wall **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 9.3%	225043150-10	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by Valeriu Voicu on 04/27/25	*1*

Reporting Notes:

(1) NAD results by NYS 198.6 are inconclusive and are not considered non-ACM

Analyzed by: Valeriu Voicu
Date: 4/27/2025

Reviewed by: Marwan A. Alahiri

*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 Olympus, Model BH-2 Pol Scope, Microscope, Serial #: 229915, 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_____

AmeriSci Job #: **225043150**

Client Name: Delta Engineers

Table I
Summary of Bulk Asbestos Analysis Results by NYS ELAP 198.4

2016.424.017; Maine-Endwell Central School; Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary School Pre-Renovation Asbestos Survey, Client Project No.: 23-44-7956

AmeriSci Sample #	Client Sample#	HG Area	NOB Sample Weight (gram)	NOB Heat Sensitive Organic %	NOB Acid Soluble Inorganic %	NOB Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	2016.424.017-01A	01	0.232	36.8	46.9	16.3	NAD	NAD
Location:	1st Fl. - Grey - Interior Aluminum Store Front Frame Caulk - Boy's Locker Room							
02	2016.424.017-01B	01	0.209	37.6	59.8	2.6	NAD	NAD
Location:	1st Fl. - Grey - Interior Aluminum Store Front Frame Caulk - Girls Locker Room							
03	2016.424.017-02A	02	0.188	39.8	54.6	5.6	NAD	NAD
Location:	1st Fl. - Grey - Interior Window Frame Caulk - Music Room							
04	2016.424.017-02B	02	0.199	36.8	53.5	9.7	NAD	NAD
Location:	1st Fl. - Grey - Interior Window Frame Caulk - Music Room							
05	2016.424.017-03A	03	0.239	36.6	55.4	8.0	NAD	NAD
Location:	Ext - Grey - Exterior Door Frame Caulk - Boys Locker Room							
06	2016.424.017-03B	03	0.242	38.6	54.9	6.5	NAD	NAD
Location:	Ext - Grey - Exterior Door Frame Caulk - Girls Locker Room							
07	2016.424.017-04A	04	0.229	33.9	47.3	18.8	NAD	NAD
Location:	Ext - Grey - Exterior Aluminum Store Front Caulk - Boys Locker Room							
08	2016.424.017-04B	04	0.224	25.8	58.6	15.6	NAD	NAD
Location:	Ext - Grey - Exterior Aluminum Store Front Caulk - Girls Locker Room							
09	2016.424.017-05A	05	0.117	77.9	18.6	3.5	NAD	NAD
Location:	Ext - Grey - Exterior Building Expansion Joint - South Wall							
10	2016.424.017-05B	05	0.254	49.0	41.7	9.3	NAD	NAD
Location:	Ext - Grey - Exterior Building Expansion Joint - North Wall							

Analyzed by: Marwan A. Alahiri
Date: 4/27/2025

Reviewed by: Marwan A. Alahiri

**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 H7650-Noran 7 System, Microscope, Serial #: 6944-03. 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).

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#225043150

Bulk Sample Data Sheet / COC

Client: Maine-Endwell Central School	**Delta Project No.:** 2016.424.017	**Date:** 4/25/2025
Project: Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary School Pre-Renovation Asbestos Survey	**Client Project No.:** 23-44-7956	**Turnaround Time:** 48 Hours
	Collected By: Greg Umbra	

Sample Number		Material Type	Material Condition	Floor	Description / Sample Location
2016.424.017 -	01A	Miscellaneous	Intact	1	Grey - Interior Aluminum Store Front Frame Caulk - Boys Locker Room
2016.424.017 -	01B	Miscellaneous	Intact	1	Grey - Interior Aluminum Store Front Frame Caulk - Girls Locker Room
2016.424.017 -	02A	Miscellaneous	Intact	1	Grey - Interior Window Frame Caulk - Music Room
2016.424.017 -	02B	Miscellaneous	Intact	1	Grey - Interior Window Frame Caulk - Music Room
2016.424.017 -	03A	Miscellaneous	Intact	Ext	Grey - Exterior Door Frame Caulk - Boys Locker Room
2016.424.017 -	03B	Miscellaneous	Intact	Ext	Grey - Exterior Door Frame Caulk - Girls Locker Room
2016.424.017 -	04A	Miscellaneous	Intact	Ext	Grey - Exterior Aluminum Store Front Caulk - Boys Locker Room
2016.424.017 -	04B	Miscellaneous	Intact	Ext	Grey - Exterior Aluminum Store Front Caulk - Girls Locker Room
2016.424.017 -	05A	Miscellaneous	Intact	Ext	Grey - Exterior Building Expansion Joint - South Wall

Instructions: Analyze all non-NOB samples by NYS ELAP 198.1 PLM methodology. Analyze all NOB samples initially by NYS ELAP 198.6 PLM methodology. If all samples from a given sample set are reported as non-asbestos by 198.6, analyze by NYS ELAP 198.4 TEM methodology. Stop analysis after 1st positive for a given sample set.

Email results to wjohnson@delta-eas.com, sprislupsky@delta-eas.com, rcherevko@delta-eas.com

Notes:

Submitted By: Greg Umbra (Printed) / (Signature) **Date:** 4/24/2025

Received By: Ben Hong (Printed) / (Signature) **Date:** 4/25/25 1015

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#225043150

Bulk Sample Data Sheet / COC

Client: Maine-Endwell Central School	**Delta Project No.:** 2016.424.017	**Date:** 4/25/2025
Project: Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary School Pre-Renovation Asbestos Survey	**Client Project No.:** 23-44-7956	**Turnaround Time:** 48 Hours
	Collected By: Greg Umbra	

Sample Number		Material Type	Material Condition	Floor	Description / Sample Location
2016.424.017 -	05B	Miscellaneous	Intact	Ext	Grey - Exterior Building Expansion Joint - North Wall

AmeriSci New York
117 EAST 30TH ST.
NEW YORK, NY 10016
TEL: (212) 679-8600 • FAX: (212) 679-3114

PLM Bulk Asbestos Report

Delta Engineers
Attn: Stephen Prislupsky
860 Hooper Road

Endwell, NY 13760

Date Received 4/28/2025 **AmeriSci Job #** 225043315
Date Examined 04/29/25 **P.O. #**
ELAP # 11480 **Page** 1 **of** 1

RE: 2016.424.017; Maine-Endwell Central School; Maine Endwell Central School CIP Phase 5 Homer Brick Elementary School Pre-Renovation Asbestos Survey - Client Project #: 23-44-7956

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
2016.424.017-06A 06 **Location:** Roof - Tectum Roof Deck **Analyst Description:** Gray/White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	225043315-01	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by Kensen Caro on 04/29/25	*1*
2016.424.017-06B 06 **Location:** Roof - Tectum Roof Deck **Analyst Description:** Gray/White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 32%	225043315-02	***No***	Inconclusive - NAD (NOB by NYS ELAP 198.6) by Kensen Caro on 04/29/25	*1*

Reporting Notes:

(1) NAD results by NYS 198.6 are inconclusive and are not considered non-ACM

Analyzed by: Kensen Caro
Date: 4/29/2025

Reviewed by: Hongyan Ran

*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 Olympus, Model BH-2 Pol Scope, Microscope, Serial #: 229003, 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_____

AmeriSci Job #: **225043315**

Client Name: Delta Engineers

Table I
Summary of Bulk Asbestos Analysis Results by NYS ELAP 198.4

2016.424.017; Maine-Endwell Central School; Maine Endwell Central School CIP Phase 5 Homer Brick Elementary School Pre-Renovation Asbestos Survey - Client Project #: 23-44-7956

AmeriSci Sample #	Client Sample#	HG Area	NOB Sample Weight (gram)	NOB Heat Sensitive Organic %	NOB Acid Soluble Inorganic %	NOB Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	2016.424.017-06A	06	0.215	23.5	68.1	8.4	NAD	NAD
Location:	Roof - Tectum Roof Deck							
02	2016.424.017-06B	06	0.452	24.2	43.3	32.5	NAD	NAD
Location:	Roof - Tectum Roof Deck							

Analyzed by: Hongyan Ran
Date: 4/29/2025

Reviewed by: Hongyan Ran

**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).

DELTA
ENGINEERS, ARCHITECTS, & SURVEYORS

860 Hooper Road, Endwell, NY 13760 Tel:607.231.6600 Fax:607.231.6640
www.delta-eas.com

Bulk Sample Data Sheet / COC

#225043315

Client: Maine-Endwell Central School	**Delta Project No.:** 2016.424.017	**Date:** 4/25/2025
Project: Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary School Pre-Renovation Asbestos Survey	**Client Project No.:** 23-44-7956	**Turnaround Time:** 48 Hours
	Collected By: Greg Umbra	

Sample Number		Material Type	Material Condition	Floor	Description / Sample Location
2016.424.017 -	06A	Miscellaneous	Intact	Roof	Tectum Roof Deck
2016.424.017 -	06B	Miscellaneous	Intact	Roof	Tectum Roof Deck

Instructions: Analyze all non-NOB samples by NYS ELAP 198.1 PLM methodology. Analyze all NOB samples initially by NYS ELAP 198.6 PLM methodology. If all samples from a given sample set are reported as non-asbestos by 198.6, analyze by NYS ELAP 198.4 TEM methodology. Stop analysis after 1st positive for a given sample set.

Email results to wjohnson@delta-eas.com, sprislupsky@delta-eas.com, rcherevko@delta-eas.com

Notes: _____

Submitted By: Greg Umbra / [signature] **Date:** 4/25/2025
(Printed) (Signature)

Received By: Makeda Howell / [signature] **Date:** 4/28/25 9:46
(Printed) (Signature)

AmeriSci New York
117 EAST 30TH ST.
NEW YORK, NY 10016
TEL: (212) 679-8600 • FAX: (212) 679-3114

PLM Bulk Asbestos Report

Delta Engineers
Attn: Stephen Prislupsky
860 Hooper Road

Endwell, NY 13760

Date Received 11/12/2025 **AmeriSci Job #** 225111892
Date Examined 11/13/25 **P.O. #**
ELAP # 11480 **Page** 1 **of** 3

RE: 2016.424.017; Maine-Endwell Central School; Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary School Pre-Renovation Asbestos Survey - Incinerator Supplemental Bulk Sampling - Client Project No.: 23-44-7956

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
2016.424.017-07A 07 **Location:** Floor: LL / Spray-On Fireproofing **Analyst Description:** Gray, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Fibrous glass 60%, Non-fibrous 40%	225111892-01	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 11/13/25	
2016.424.017-07B 07 **Location:** Floor: LL / Spray-On Fireproofing **Analyst Description:** Gray, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Fibrous glass 60%, Non-fibrous 40%	225111892-02	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 11/13/25	
2016.424.017-07C 07 **Location:** Floor: LL / Spray-On Fireproofing **Analyst Description:** Gray, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Fibrous glass 60%, Non-fibrous 40%	225111892-03	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 11/13/25	
2016.424.017-08A 08 **Location:** Floor: LL / Incinerator Interior Yellow Fire Brick **Analyst Description:** Yellow, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	225111892-04	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 11/13/25	
2016.424.017-08B 08 **Location:** Floor: LL / Incinerator Interior Yellow Fire Brick **Analyst Description:** Yellow, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	225111892-05	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 11/13/25	

See Reporting notes on last page

PLM Bulk Asbestos Report

2016.424.017; Maine-Endwell Central School; Maine Endwell CSD
2022 CIP Phase 5 Homer Brink Elementary School Pre-Renovation
Asbestos Survey - Incinerator Supplemental Bulk Sampling - Client
Project No.: 23-44-7956

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos	Notes
2016.424.017-09A 09 **Location:** Floor: LL / Mortar From HA 08 Brick **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	225111892-06	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 11/13/25	
2016.424.017-09B 09 **Location:** Floor: LL / Mortar From HA 08 Brick **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	225111892-07	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 11/13/25	
2016.424.017-10A 10 **Location:** Floor: LL / Incinerator Exhaust Yellow Fire Brick **Analyst Description:** Yellow, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	225111892-08	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 11/13/25	
2016.424.017-10B 10 **Location:** Floor: LL / Incinerator Exhaust Yellow Fire Brick **Analyst Description:** Yellow, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	225111892-09	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 11/13/25	
2016.424.017-11A 11 **Location:** Floor: LL / Mortar From HA 10 Brick **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	225111892-10	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 11/13/25	
2016.424.017-11B 11 **Location:** Floor: LL / Mortar From HA 10 Brick **Analyst Description:** Gray, Homogeneous, Non-Fibrous, Cementitious, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100%	225111892-11	***No***	NAD (by NYS ELAP 198.1) by Kensen Caro on 11/13/25	

See Reporting notes on last page

PLM Bulk Asbestos Report

2016.424.017; Maine-Endwell Central School; Maine Endwell CSD
2022 CIP Phase 5 Homer Brink Elementary School Pre-Renovation
Asbestos Survey - Incinerator Supplemental Bulk Sampling - Client
Project No.: 23-44-7956

Reporting Notes:

Analyzed by: Kensen Caro
Date: 11/13/2025

Reviewed by: Kensen Caro

*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 Olympus, Model BH-2 Pol Scope, Microscope, Serial #: 229003, 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_____

DELTA
ENGINEERS, ARCHITECTS, & SURVEYORS

860 Hooper Road, Endwell, NY 13760 Tel:607.231.6600 Fax:607.231.6640
www.delta-eas.com

Bulk Sample Data Sheet / COC

Client: Maine-Endwell Central School	**Delta Project No.:** 2016.424.017	**Date:** 11/11/2025
Project: Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary School Pre-Renovation Asbestos Survey - Incinerator Supplemental Bulk Sampling	**Client Project No.:** 23-44-7956	**Turnaround Time:** 24 Hours
	Collected By: Stephen Prislupsky	

Sample Number		Material Type	Material Condition	Floor	Description / Sample Location
2016.424.017 -	07A	Surfacing	Intact	LL	Spray-on Fireproofing
2016.424.017 -	07B	Surfacing	Intact	LL	Spray-on Fireproofing
2016.424.017 -	07C	Surfacing	Intact	LL	Spray-on Fireproofing
2016.424.017 -	08A	Miscellaneous	Intact	LL	Incinerator Interior Yellow Fire Brick
2016.424.017 -	08B	Miscellaneous	Intact	LL	Incinerator Interior Yellow Fire Brick
2016.424.017 -	09A	Miscellaneous	Intact	LL	Mortar from HA 08 Brick
2016.424.017 -	09B	Miscellaneous	Intact	LL	Mortar from HA 08 Brick
2016.424.017 -	10A	Miscellaneous	Intact	LL	Incinerator Exhaust Yellow Fire Brick
2016.424.017 -	10B	Miscellaneous	Intact	LL	Incinerator Exhaust Yellow Fire Brick

Instructions: Analyze all non-NOB samples by NYS ELAP 198.1 PLM methodology. Analyze all NOB samples initially by NYS ELAP 198.6 PLM methodology. If all samples from a given sample set are reported as non-asbestos by 198.6, analyze by NYS ELAP 198.4 TEM methodology. Stop analysis after 1st positive for a given sample set.

#2251118 92

Email results to wjohnson@delta-eas.com, sprislupsky@delta-eas.com, rcherevko@delta-eas.com

Notes: _____

Submitted By: Stephen Prislupsky / _____ **Date:** 11/11/2025
(Printed) (Signature)

Received By: B. Horne / _____ **Date:** 11/12/25 1030
(Printed) (Signature)

DELTA
ENGINEERS, ARCHITECTS, & SURVEYORS

860 Hooper Road, Endwell, NY 13760 Tel:607.231.6600 Fax:607.231.6640
www.delta-eas.com

Bulk Sample Data Sheet / COC

Client: Maine-Endwell Central School	**Delta Project No.:** 2016.424.017	**Date:** 11/11/2025
Project: Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary School Pre-Renovation Asbestos Survey - Incinerator Supplemental Bulk Sampling	**Client Project No.:** 23-44-7956	**Turnaround Time:** 24 Hours
	Collected By: Stephen Prislupsky	

Sample Number		Material Type	Material Condition	Floor	Description / Sample Location
2016.424.017 -	11A	Miscellaneous	Intact	LL	Mortar from HA 10 Brick
2016.424.017 -	11B	Miscellaneous	Intact	LL	Mortar from HA 10 Brick

#2251118 92

ENGINEERS, ARCHITECTS, & SURVEYORS

860 Hooper Road
Endwell, NY 13760
Tel: 607.231.6600
Fax: 607.231.6650
www.delta-eas.com

APPENDIX C

Delta Engineers, Architects, & Land Surveyors
Company and Personnel Certifications

WE ARE YOUR DOL

NEW YORK STATE | Department of Labor

DIVISION OF SAFETY & HEALTH LICENSE AND CERTIFICATE UNIT, STATE OFFICE CAMPUS, BLDG. 12, ALBANY, NY 12226

ASBESTOS HANDLING LICENSE

Delta Engineers, Architects, Land Surveyors, & Landscape, Architects, D.P.C.
860 Hooper Road, Endwell, NY, 13760

License Number: 29322
License Class: RESTRICTED
Date of Issue: 10/22/2024
Expiration Date: 10/31/2025
Duly Authorized Representative: Stephen Prislupsky

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

WE ARE YOUR DOL

NEW YORK STATE | Department of Labor

DIVISION OF SAFETY & HEALTH LICENSE AND CERTIFICATE UNIT, STATE OFFICE CAMPUS, BLDG. 12, ALBANY, NY 12226

ASBESTOS HANDLING LICENSE

Delta Engineers, Architects, Land Surveyors, & Landscape, Architects, D.P.C.
860 Hooper Road, Endwell, NY, 13760

License Number: 29322
License Class: RESTRICTED
Date of Issue: 10/21/2025
Expiration Date: 10/31/2026
Duly Authorized Representative: William Johnson

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

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

Amy Phillips, Director
For the Commissioner of Labor

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE

N.Y.S

STEPHEN M PRISLUPSKY
CLASS(EXPIRES)
C ATEC (11/25) D INSP (11/25)
H PM (11/25) I PD (11/25)

CERT# 24-6L43B-SHAB
DMV# 793406449

MUST BE CARRIED ON ASBESTOS PROJECTS

01213 007311608 99

IF FOUND, RETURN TO:
NYSDOL - L&C UNIT
ROOM 161A BUILDING 12
STATE OFFICE CAMPUS
ALBANY NY 12226

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE

GREGORY D UMBRA
CLASS(EXPIRES)
C ATEC (01/26) D INSP (01/26)
H PM (01/26)

CERT# 25-6SD3Z-SHAB
DMV# 358658422

MUST BE CARRIED ON ASBESTOS PROJECTS

01213 007426821 05

IF FOUND, RETURN TO:
NYSDOL - L&C UNIT
ROOM 161A BUILDING 12
STATE OFFICE CAMPUS
ALBANY NY 12226

ENGINEERS, ARCHITECTS, & SURVEYORS

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Endwell, NY 13760
Tel: 607.231.6600
Fax: 607.231.6650
www.delta-eas.com

APPENDIX D

Laboratory Certifications

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 200546-0

AmeriSci New York

New York, NY

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique on ISO/IEC 17025).

2024-07-01 through 2025-06-30

Effective Dates

For the National Voluntary Laboratory Accreditation Program

National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

AmeriSci New York
117 E. 30th Street
New York, NY 10016
Mr. Andrew Lee
Phone: 212-679-8600
Email: alee@amerisci.com
http://www.amerisci.com

ASBESTOS FIBER ANALYSIS — NVLAP LAB CODE 200546-0

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 200546-0

AmeriSci New York

New York, NY

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique on ISO/IEC 17025).

2025-07-01 through 2026-06-30

Effective Dates

For the National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

AmeriSci New York
117 E. 30th Street
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Mr. Andrew Lee
Phone: 212-679-8600
Email: alee@amerisci.com
http://www.amerisci.com

ASBESTOS FIBER ANALYSIS — NVLAP LAB CODE 200546-0

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2026
Issued April 01, 2025

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. KAROL H. LU
AMERICA SCIENCE TEAM NEW YORK, INC
117 EAST 30TH ST
NEW YORK, NY 10016

NY Lab Id No: 11480

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

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual
	EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual

Serial No.: 70488

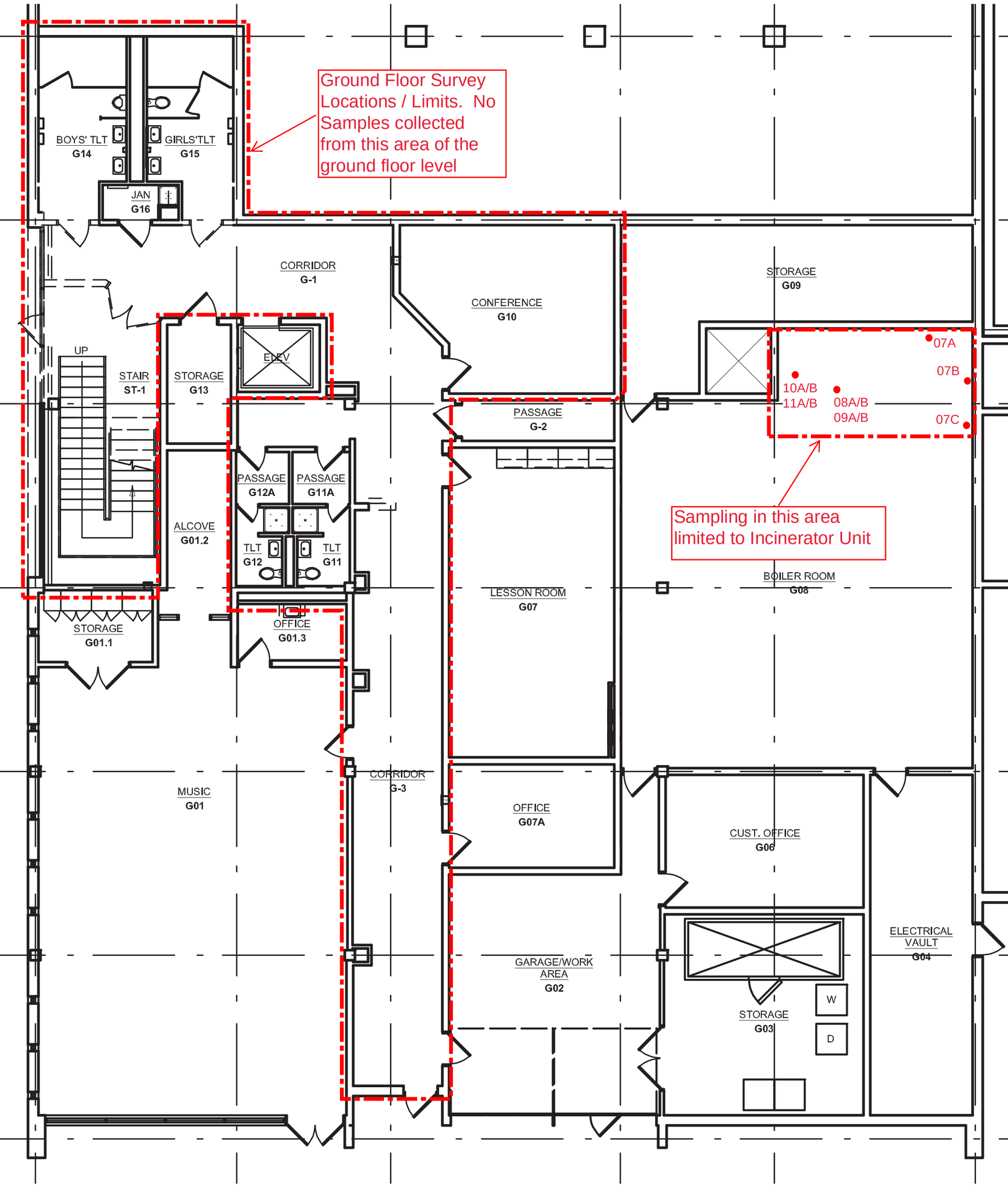
Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

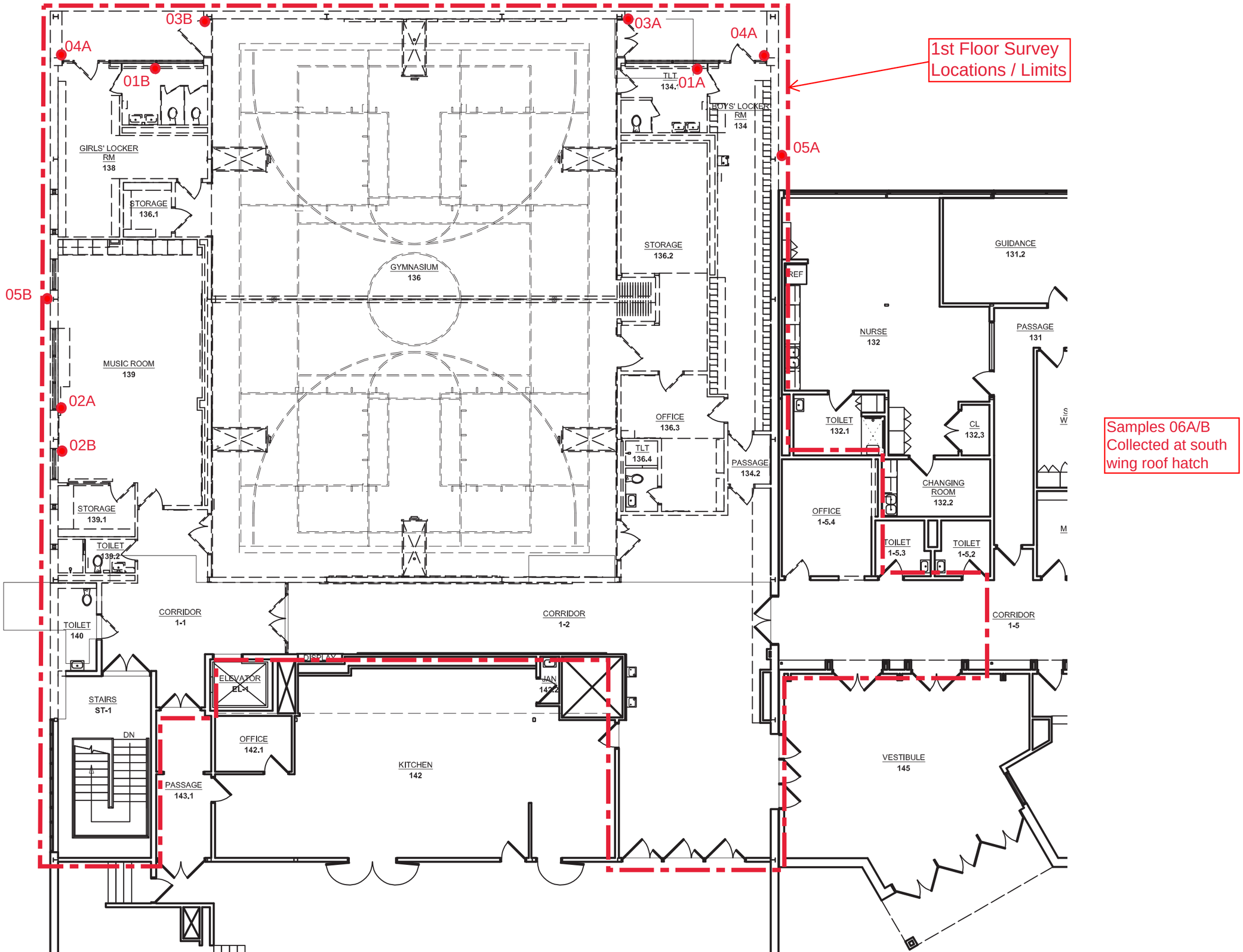
ENGINEERS, ARCHITECTS, & SURVEYORS

860 Hooper Road
Endwell, NY 13760
Tel: 607.231.6600
Fax: 607.231.6650
www.delta-eas.com

APPENDIX E

Bulk Sample Location
and
Survey Locations / Limits Drawings


Ground Floor Survey Locations / Limits. No Samples collected from this area of the ground floor level
BOYS' TLT
G14
GIRLS'TLT
G15
JAN
G16
CORRIDOR
G-1
CONFERENCE
G10
STORAGE
G09
UP
STAIR
ST-1
STORAGE
G13
ELEV
PASSAGE
G-2
07A
07B
10A/B
11A/B
08A/B
09A/B
07C
PASSAGE
G12A
PASSAGE
G11A
ALCOVE
G01.2
TLT
G12
TLT
G11
Sampling in this area limited to Incinerator Unit
BOILER ROOM
G08
LESSON ROOM
G07
STORAGE
G01.1
OFFICE
G01.3
CORRIDOR
G-3
MUSIC
G01
OFFICE
G07A
CUST. OFFICE
G06
ELECTRICAL VAULT
G04
GARAGE/WORK AREA
G02
STORAGE
G03
W
D


1st Floor Survey Locations / Limits
Samples 06A/B Collected at south wing roof hatch
03B
03A
04A
04A
01B
01A
05A
05B
02A
02B
GIRLS' LOCKER RM 138
STORAGE 136.1
GYMNASIUM 136
STORAGE 136.2
BOYS' LOCKER RM 134
TLT 134.1
MUSIC ROOM 139
STORAGE 139.1
TOILET 139.2
TOILET 140
OFFICE 136.3
TLT 136.4
PASSAGE 134.2
GUIDANCE 131.2
NURSE 132
PASSAGE 131
TOILET 132.1
CL 132.3
CHANGING ROOM 132.2
OFFICE 1-5.4
TOILET 1-5.3
TOILET 1-5.2
CORRIDOR 1-1
CORRIDOR 1-2
CORRIDOR 1-5
DISPLAY
ELEVATOR EL-1
JAN 142.2
STAIRS ST-1
DN
OFFICE 142.1
KITCHEN 142
PASSAGE 143.1
VESTIBULE 145

Exterior Building Caulks PCB Sampling Report

Performed at

Maine-Endwell Central School District
Homer Brink Elementary School

3618 Briar Lane, Endwell, New York 13760

For the

Maine-Endwell CSD 2022 CIP - Phase 5 Homer Brink
SED PROJECT NO. - TBD

Prepared for:

Mr. Jeff L'Amoreaux, Assistant Superintendent for Business & Personnel
Maine-Endwell Central School District
712 Farm to Market Road
Endwell, NY 13760

Prepared by:

DELTA
ENGINEERS, ARCHITECTS, & SURVEYORS
860 Hooper Road, Endwell, NY 13760
Tel: 607-231-6600 Fax: 607-231-6640
www.delta-eas.com
Delta Project No. 2016.424.017

Field work performed by: Greg Umbra & Stephen Prislupsky, April 24th, 2025

Report prepared by: Stephen Prislupsky

Report reviewed by: William Johnson

ENGINEERS, ARCHITECTS, & SURVEYORS

860 Hooper Road
Endwell, NY 13760
Tel: 607.231.6600
Fax: 607.231.6650
www.delta-eas.com

EXECUTIVE SUMMARY:

Delta Engineers, Architects, & Surveyors (Delta) was contracted by the Maine-Endwell Central School District to perform sampling of exterior building caulks for PCB content at the Homer Brink Elementary School located at 3618 Briar Lane in Endwell, New York. The sampling is being performed in support of the upcoming Maine-Endwell CSD 2022 CIP - Phase 5 Homer Brink Project and addressed exterior building caulks with the potential to be impacted by the proposed Phase 5 Renovation Scope, as delineated by King & King Architects.

A total of three (3) caulk samples were collected from the exterior of the building and submitted to York Analytical Laboratories, Inc. for analysis. The caulks sampled, along with the reported Analytical Results for each, are as follows:

Sample Number	Location / Description	Result
PCB-01	Storefront-Window Exterior Frame Caulk	None Detected
PCB-02	Building Exterior Expansion Joint Caulk	None Detected
PCB-03	Door Exterior Frame Caulk	None Detected

York Analytical Laboratories, Inc. analyzed the samples utilizing the SW846-3550B/8082A Methodology and reported the results in mg/kg (ppm). Results for all samples were reported as “None Detected” for PCB. Industry standard as well as EPA regulations, consider solid materials with concentrations under 50 ppm or 50 mg/Kg to be a Non-PCB Product. It should be noted that EPA protocol includes the **total** or cumulative PCB content for each sample (i.e. the total PCB count for all tested matrices) should be used in determining the regulated level (i.e. “PCB Free”, “non-PCB”, “PCB-contaminated” or “PCB”).

Results and particulars from York Analytical Laboratories, Inc. are included in Appendix A.

ENGINEERS, ARCHITECTS, & SURVEYORS

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Endwell, NY 13760
Tel: 607.231.6600
Fax: 607.231.6650
www.delta-eas.com

APPENDIX A

York Analytical Laboratories, Inc. Analysis Report

Technical Report

prepared for:

Delta Engineers
860 Hooper Road
Endwell NY, 13760
Attention: Stephen Prislupsky

Report Date: 05/02/2025
lient Project ID: 2016.424.071-Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary Scho
York Project (SDG) No.: 25D1636

Stratford, CT Laboratory IDs:
NY:10854, NJ: CT005, PA: 68-0440, CT: PH-0723

Richmond Hill, NY Laboratory IDs:
NY:12058, NJ: NY037, CT: PH-0721, NH: 2097,
EPA: NY01600

120 RESEARCH DRIVE STRATFORD, CT 06615 ■ 132-02 89th AVENUE RICHMOND HILL, NY 11418
www.YORKLAB.com (203) 325-1371 FAX (203) 357-0166 ClientServices@yorklab.com

Report Date: 05/02/2025
Client Project ID: 2016.424.071-Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary School
York Project (SDG) No.: 25D1636

Delta Engineers
860 Hooper Road
Endwell NY, 13760
Attention: Stephen Prislupsky

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on April 25, 2025 and listed below. The project was identified as your project: **2016.424.071-Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary School**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

York Sample ID	Client Sample ID	Matrix	Date Collected	Date Received
25D1636-01	PCB-01 Exterior Storefront-Window Frame Caulk	Caulk	04/24/2025	04/25/2025
25D1636-02	PCB-02 Exterior Building Expansion Joint Caulk	Caulk	04/24/2025	04/25/2025
25D1636-03	PCB-03 Exterior Door Frame Caulk	Caulk	04/24/2025	04/25/2025

General Notes for York Project (SDG) No.: 25D1636

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.
8. Analyses conducted at York Analytical Laboratories, Inc. Stratford, CT are indicated by NY Cert. No. 10854, NJ Cert No. CT005, PA Cert No. 68-04440, CT Cert No. PH-0723; those conducted at York Analytical Laboratories, Inc., Richmond Hill, NY are indicated by NY Cert. No. 12058, NJ Cert No. NY037, CT Cert No. PH-0721, NH Cert No. 2097, EPA Cert No. NY01600.

Approved By: Cassie L. Mosher

Cassie L. Mosher
Laboratory Manager

Date: 05/02/2025

Sample Information

Client Sample ID: **PCB-01 Exterior Storefront-Window Frame Caulk** **York Sample ID:** **25D1636-01**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
25D1636	24.071-Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary	Caulk	April 24, 2025 3:00 pm	04/25/2025

PCBs 8082 **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
12674-11-2	Aroclor 1016	ND		mg/kg	0.459	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:26	NF
11104-28-2	Aroclor 1221	ND		mg/kg	0.459	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:26	NF
11141-16-5	Aroclor 1232	ND		mg/kg	0.459	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:26	NF
53469-21-9	Aroclor 1242	ND		mg/kg	0.459	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:26	NF
12672-29-6	Aroclor 1248	ND		mg/kg	0.459	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:26	NF
11097-69-1	Aroclor 1254	ND		mg/kg	0.459	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:26	NF
11096-82-5	Aroclor 1260	ND		mg/kg	0.459	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:26	NF
1336-36-3	* Total PCBs	ND		mg/kg	0.459	1	EPA 8082A Certifications:	05/01/2025 08:48	05/01/2025 14:26	NF

	Surrogate Recoveries	Result	Acceptance Range
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*61.5 %*	*30-120*
2051-24-3	*Surrogate: Decachlorobiphenyl*	*62.5 %*	*30-120*

Sample Information

Client Sample ID: **PCB-02 Exterior Building Expansion Joint Caulk** **York Sample ID:** **25D1636-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
25D1636	24.071-Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary	Caulk	April 24, 2025 3:00 pm	04/25/2025

PCBs 8082 **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
12674-11-2	Aroclor 1016	ND		mg/kg	0.305	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:39	NF
11104-28-2	Aroclor 1221	ND		mg/kg	0.305	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:39	NF
11141-16-5	Aroclor 1232	ND		mg/kg	0.305	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:39	NF

Sample Information

Client Sample ID: **PCB-02 Exterior Building Expansion Joint Caulk** **York Sample ID:** **25D1636-02**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
25D1636	24.071-Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary	Caulk	April 24, 2025 3:00 pm	04/25/2025

PCBs 8082 **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
53469-21-9	Aroclor 1242	ND		mg/kg	0.305	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:39	NF
12672-29-6	Aroclor 1248	ND		mg/kg	0.305	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:39	NF
11097-69-1	Aroclor 1254	ND		mg/kg	0.305	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:39	NF
11096-82-5	Aroclor 1260	ND		mg/kg	0.305	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:39	NF
1336-36-3	* Total PCBs	ND		mg/kg	0.305	1	EPA 8082A Certifications:	05/01/2025 08:48	05/01/2025 14:39	NF

	Surrogate Recoveries	Result	Acceptance Range
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*51.5 %*	*30-120*
2051-24-3	*Surrogate: Decachlorobiphenyl*	*57.0 %*	*30-120*

Sample Information

Client Sample ID: **PCB-03 Exterior Door Frame Caulk** **York Sample ID:** **25D1636-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
25D1636	24.071-Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary	Caulk	April 24, 2025 3:00 pm	04/25/2025

PCBs 8082 **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
12674-11-2	Aroclor 1016	ND		mg/kg	0.273	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:53	NF
11104-28-2	Aroclor 1221	ND		mg/kg	0.273	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:53	NF
11141-16-5	Aroclor 1232	ND		mg/kg	0.273	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:53	NF
53469-21-9	Aroclor 1242	ND		mg/kg	0.273	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:53	NF
12672-29-6	Aroclor 1248	ND		mg/kg	0.273	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:53	NF
11097-69-1	Aroclor 1254	ND		mg/kg	0.273	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:53	NF
11096-82-5	Aroclor 1260	ND		mg/kg	0.273	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH-PH-0723,NJDEP-CT005	05/01/2025 08:48	05/01/2025 14:53	NF

Sample Information

Client Sample ID: **PCB-03 Exterior Door Frame Caulk** **York Sample ID:** **25D1636-03**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
25D1636	24.071-Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary	Caulk	April 24, 2025 3:00 pm	04/25/2025

PCBs 8082 **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1336-36-3	* Total PCBs	ND		mg/kg	0.273	1	EPA 8082A Certifications:	05/01/2025 08:48	05/01/2025 14:53	NF

	Surrogate Recoveries	Result	Acceptance Range
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*61.0 %*	*30-120*
2051-24-3	*Surrogate: Decachlorobiphenyl*	*58.0 %*	*30-120*

Sample and Data Qualifiers Relating to This Work Order

Definitions and Other Explanations

*	Analyte is not certified or the state of the samples origination does not offer certification for the Analyte.
ND	NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL)
RL	REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve.
LOQ	LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon current NELAC/TNI Standards and applies to all analyses.
LOD	LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846.
MDL	METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods.
Reported to	This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only.
NR	Not reported
RPD	Relative Percent Difference
Wet	The data has been reported on an as-received (wet weight) basis
Low Bias	Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
High Bias	High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
Non-Dir.	Non-dir. flag (Non-Directional Bias) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons.

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two. For this reason, York reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

For analyses by EPA SW-846-8270D, the Limit of Quantitation (LOQ) reported for benzidine is based upon the lowest standard used for calibration and is not a verified LOQ due to this compound's propensity for oxidative losses during extraction/concentration procedures and non-reproducible chromatographic performance.

YORK
ANALYTICAL LABORATORIES, INC.

120 RESEARCH DR. STRATFORD, CT 06615
(203) 325-1371 FAX (203) 357-0166

Field Chain-of-Custody Record

NOTE: York's Std. Terms & Conditions are listed on the back side of this document.
This document serves as your written authorization to York to proceed with the analyses requested and your signature binds you to York's Std. Terms & Conditions unless superseded by written contract.

5/1/25 Page ___ of ___
25D1636

York Project No. ~~25D1630~~

Client Information		Report to:		Invoice To:		Client Project ID	Turn-Around Time		Report Type/Deliverables	
Company:	Delta Engineers	SAME	X	SAME	X	2016.424.071 - Maine Endwell CSD 2022 CIP Phase 5 Homer Brink Elementary School	Same Day		Summary	X
Address:	860 Hooper Road	Name:		Name:	Accounts Payable		Next Day		QA/QC Summary	
Endwell, NY 13760		Company:		Company:	Delta Engineers		Two Day		RCP Pkg	
Phone no.:	607-231-6674	Address:		Address:	860 Hooper Road	Purchase Order no.	Three Day		ASP A	
Contact Person	Stephen Prislupsky			Endwell, NY 13760			Five Day		ASP B	
E-mail Addr.:	sprislupsky@delta-e	E-mail:		E-mail			Standard (5-7 days)	X	Excel	
FAX No.:	607-231-6640	Fax No.:		Fax No.:	607-231-6640		OTHER		EDD	

Print Clearly and Legibly. All Information must be complete. Samples will NOT be logged in and the turn-around time clock will not begin until any questions by York are resolved.

Samples Collected/Authorized By (Signature)

Stephen Prislupsky
Name (printed)

Matrix Codes	
S -	soil
Other - specify(soil, etc.)	
WW -	wastewater
GW -	groundwater
DW -	drinking water
Air-A -	ambient air
Air-SV -	soil vapor

Volatiles		Semi-Vols.	Pest/PCB/Herb	Metals	Misc. Org.	Full Lists	Miscellaneous Parameters			Special Instructions
8260 full	TICs	8270 or 625	8082PCB	RCRA8	TPH GRO	Pri.Poll.	Corrosivity	Nitrate	Color	Field Filtered ☐
624	Site Spec.	STARS	8081Pest	PP13	TPH DRO	TCL Organics	Reactivity	Nitrite	Phenols	Lab to Filter ☐
STARS	SPLP or TCLP	BN Only	8151Herb	TAL	CT ETPH	TAL Met/CN	Ignitability	TKN	Cyanide-T	
BTEX	Benzene	Acids Only	CT RCP	CT15	NY 310-13	Full TCLP	Flash Point	Tot. Nitrogen	Cyanide-A	
MTBE	Nassau Co.	PAH	App. IX	Total	TPH 418.1	Full App. IX	Sieve Anal.	Ammonia-N	BOD5	
TCL list	Suffolk Co.	TAGM	Site Spec.	Dissolved	Air TO14A	Part 360-Routine	Heterotrophs	Chloride	CBOD5	
TAGM	Ketones	CT RCP	SPLP or TCLP	SPLP or TCLP	Air TO15	Part 360-Baseline	TOX	Phosphate	BOD28	
CT RCP	Oxygenates	TCL list	TCLP Pest	Indiv. Metals	Air STARS	Part 360-Expanded Soil Disposal Form	BTU/lb.	Tot. Phos.	COD	
Arom.	TCLP list	TICs	TCLP Herb	Hg, Pb, As, Cd	Air VPH	Part 360-Expanded Full Co.	Aquatic Tox.	Oil&Grease	TSS	
Halog.	524.2	App. IX	Chlordane	Cr, Ni, Be, Fe	Air TICs	NYCDEP Sewer	TOC	F.O.G.	Total Solids	
App.IX	502.2	SPLP or TCLP	608 Pest	Se, Tl, Sb, Cu	Methane	NYSDEC Sewer	Asbestos	pH	TDS	
8021B list	5035	TCLP BNA	608 PCB	Na, Mn, Ag, etc	Helium	TAGM	Silica	MBAS	TPH-IR	

Choose Analyses Needed from the Menu Above and Enter Below

Sample Identification	Date Sampled	Sample Matrix								Container Description(s)
PCB-01 Exterior Storefront / Window Frame Caulk	4/24/2025	Caulk							Total PCB's EPA Method 8082	Bag
PCB-02 Exterior Building Expansion Joint Caulk	4/24/2025	Caulk							Total PCB's EPA Method 8082	Bag
PCB-03 Exterior Door Frame Caulk	4/24/2025	Caulk							Total PCB's EPA Method 8082	Bag

Comments

Standard 5-7 Day Turnaround Requested. Please Email Results to sprislupsky@delta-eas.com.

Preservation "X" those applicable

4°C ___ Frozen ___ HCl ___ MeOH ___	4°C ___	4°C ___	HNO_3 ___ 4°C	4°C ___ H_2SO_4 ___	4°C ___ Other	4°C ___ ZnAc	H_2SO_4 ___ Ascorbic	NaOH ___ Other

Samples Relinquished By — Date/Time: 04/24/25-1500

Samples Relinquished By — Date/Time

Samples Received By — Date/Time: 4/25/25 1205

Samples Received in LAB by — Date/Time

Temperature on Receipt 21.5 °C

ENGINEERS, ARCHITECTS, & SURVEYORS

860 Hooper Road
Endwell, NY 13760
Tel: 607.231.6600
Fax: 607.231.6650
www.delta-eas.com

APPENDIX B

Laboratory Certifications

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2026
Issued April 01, 2025

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. CATHERINE L. MOSHER
YORK ANALYTICAL LABORATORIES INC
120 RESEARCH DRIVE
STRATFORD, CT 06615

NY Lab Id No: 10854

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Organophosphate Pesticides

Parathion ethyl	EPA 8270D
	EPA 8270E

Petroleum Hydrocarbons

Diesel Range Organics	EPA 8015D
Gasoline Range Organics	EPA 8015D

Phthalate Esters

Benzyl butyl phthalate	EPA 625.1
	EPA 8270D
	EPA 8270E
Bis(2-ethylhexyl) phthalate	EPA 625.1
	EPA 8270D
	EPA 8270E
Diethyl phthalate	EPA 625.1
	EPA 8270D
	EPA 8270E
Dimethyl phthalate	EPA 625.1
	EPA 8270D
	EPA 8270E
Di-n-butyl phthalate	EPA 625.1
	EPA 8270D
	EPA 8270E
Di-n-octyl phthalate	EPA 625.1
	EPA 8270D
	EPA 8270E

Polychlorinated Biphenyls

Aroclor 1016 (PCB-1016)	EPA 8082A

Serial No.: 70284

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2026
Issued April 01, 2025

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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

MS. CATHERINE L. MOSHER
YORK ANALYTICAL LABORATORIES INC
120 RESEARCH DRIVE
STRATFORD, CT 06615

NY Lab Id No: 10854

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Polychlorinated Biphenyls

Aroclor 1016 (PCB-1016)	EPA 608.3
Aroclor 1221 (PCB-1221)	EPA 8082A
	EPA 608.3
Aroclor 1232 (PCB-1232)	EPA 8082A
	EPA 608.3
Aroclor 1242 (PCB-1242)	EPA 8082A
	EPA 608.3
Aroclor 1248 (PCB-1248)	EPA 8082A
	EPA 608.3
Aroclor 1254 (PCB-1254)	EPA 8082A
	EPA 608.3
Aroclor 1260 (PCB-1260)	EPA 8082A
	EPA 608.3
Aroclor 1262 (PCB-1262)	EPA 8082A
Aroclor 1268 (PCB-1268)	EPA 8082A

Polynuclear Aromatics

Acenaphthene	EPA 625.1
	EPA 8270D
	EPA 8270E
Acenaphthylene	EPA 625.1
	EPA 8270D
	EPA 8270E
Anthracene	EPA 625.1
	EPA 8270D
	EPA 8270E
Benzo(a)anthracene	EPA 625.1
	EPA 8270D

Serial No.: 70284

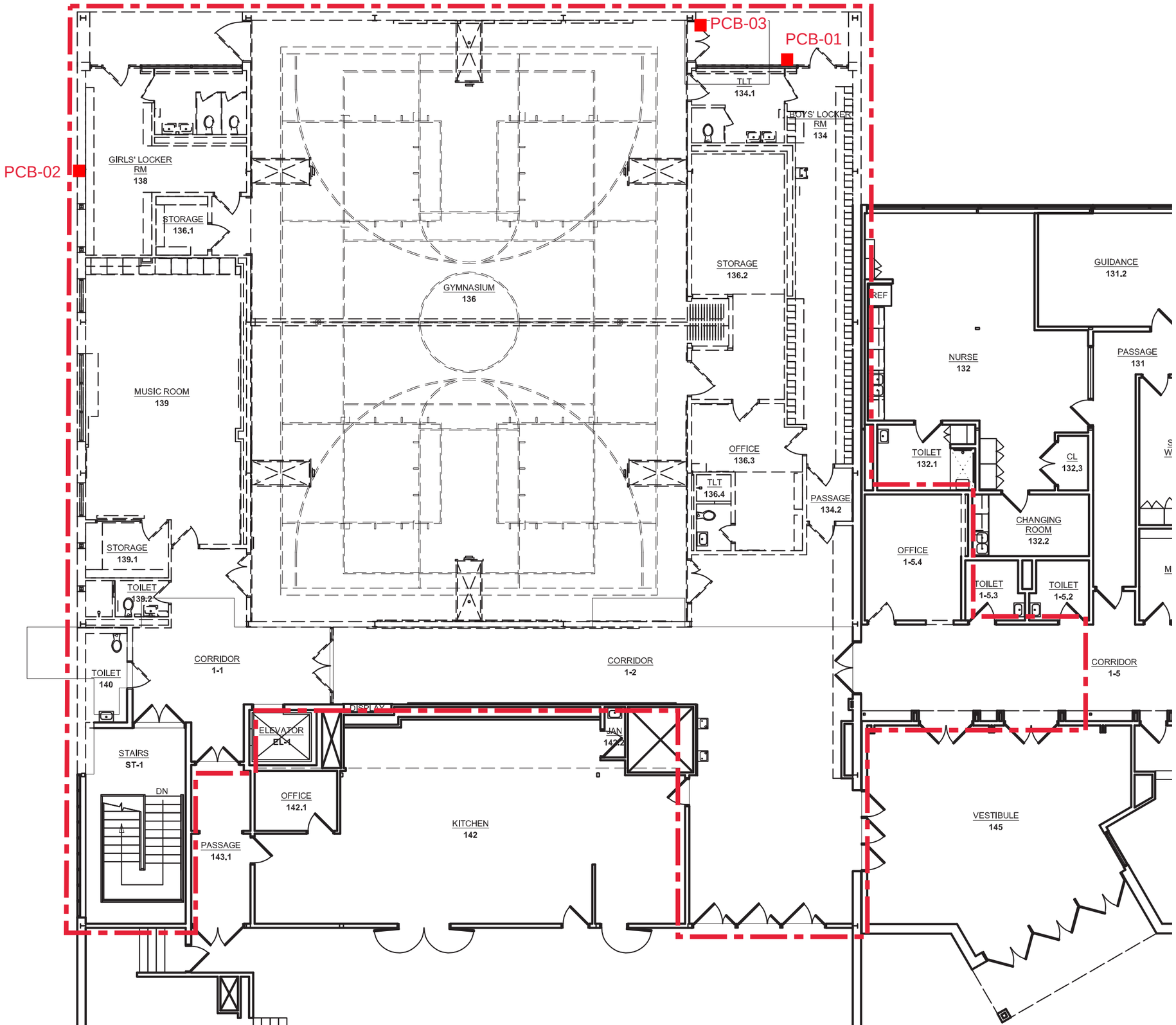
Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/applinks/wc/elappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

ENGINEERS, ARCHITECTS, & SURVEYORS

860 Hooper Road
Endwell, NY 13760
Tel: 607.231.6600
Fax: 607.231.6650
www.delta-eas.com

APPENDIX C

Sample Location Drawings


PCB-03
PCB-01
PCB-02
TLT
134.1
BOYS' LOCKER
RM
134
GIRLS' LOCKER
RM
138
STORAGE
136.1
STORAGE
136.2
GYMNASIUM
136
GUIDANCE
131.2
REF
NURSE
132
PASSAGE
131
MUSIC ROOM
139
OFFICE
136.3
TOILET
132.1
CL
132.3
TLT
136.4
PASSAGE
134.2
CHANGING
ROOM
132.2
OFFICE
1-5.4
STORAGE
139.1
TOILET
139.2
TOILET
1-5.3
TOILET
1-5.2
CORRIDOR
1-1
CORRIDOR
1-2
CORRIDOR
1-5
TOILET
140
ELEVATOR
EL-1
JAN
142.2
STAIRS
ST-1
DN
OFFICE
142.1
KITCHEN
142
VESTIBULE
145
PASSAGE
143.1

Limited Lead-Based Paint Survey Report

Performed at

Maine-Endwell Central School District
Homer Brink Elementary School
3618 Briar Lane, Endwell, New York 13760

For the

Maine-Endwell CSD 2022 CIP - Phase 5 Homer Brink
SED PROJECT NO. - TBD

Prepared for:
Mr. Jeff L'Amoreaux, Assistant Superintendent for Business & Personnel
Maine-Endwell Central School District
712 Farm to Market Road
Endwell, NY 13760

Prepared by:

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Delta Project No. 2016.424.017

Field work performed by: Michael J. Staudt; April 24th, 2025

Report prepared by: Michael J. Staudt

Report reviewed by: Stephen Prislupsky

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EXECUTIVE SUMMARY

Delta Engineers, Architects, & Surveyors (Delta) was contracted by the Maine-Endwell Central School District to perform a "limited" lead based paint survey at the Homer Brink Elementary School located at 3618 Briar Lane in Endwell, New York. The survey is being performed in support of the upcoming Maine-Endwell CSD 2022 CIP - Phase 5 Homer Brink Project.

Delta EPA/NYS Certified Lead Paint Inspector, Michael Staudt, conducted a limited XRF Lead Based Paint Survey at the Homer Brink Elementary School Building. The survey was performed on April 24th, 2025 and addressed accessible interior and exterior painted surfaces in accessible rooms/areas with the potential to be impacted by the proposed Phase 5 Renovation Scope, as delineated by King & King Architects. Representative XRF sampling following modified HUD Protocol was performed on interior/exterior walls and did not address miscellaneous components or equipment mounted on the affected walls (i.e. white boards, stored furniture, file cabinets, moveable items, etc.).

Delta took three hundred fifty-six (356) assays (including 6 "pre" and 6 "post" calibration assays) of observed painted surfaces and components utilizing the XRF analyzer to determine the presence of lead-based paint. It should be noted that Delta's survey and visual inspection was limited to only accessible rooms / spaces within the proposed renovation areas.

APPLICABLE STANDARDS/GUIDELINES:

The standards used to identify lead-based paint for this survey were taken from the OSHA 1926.62 (Lead) Standard, modification of the guidelines established by the U.S. Department of Housing and Urban Development (HUD) as well as New York State regulations.

Occupational Safety and Health Administration (OSHA)

On May 4, 1993, OSHA promulgated the Lead Exposure in Construction Rule and codified the regulation in Title 29, CFR, Part 1926.62. This particular regulation applies to all construction activities involving potential lead exposures. This regulation defines construction work as "work for construction, alteration, and/or repair including painting and decorating". It further states "the standard for the construction industry applies to all occupational exposure to lead in all construction work in which lead, in any **amount,** is present in an occupationally related context where the source of the lead is employment related, all exposure to lead is covered by the standard."

U.S. Department of Housing and Urban Development (HUD)

The U.S. Department of Housing and Urban Development (HUD) defines the action level for lead-based paint as a lead content equal to or greater than 1.0 milligrams of lead per square centimeter of painted surface ($\geq$ 1.0 mg Pb/cm^2) when measured with an XRF analyzer, or 0.5 percent by weight when chemically tested. This definition is described in the HUD "Lead-Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing, September 1990."

New York State

The State of New York's definition of the action level for lead-based paint is consistent with the level established by HUD. The State is in the process of adopting LBP regulations which are based on the HUD guidelines and currently enforces only licensing/certification requirements.

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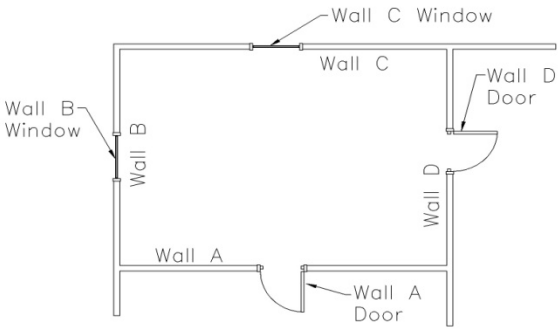
SAMPLING METHODS/PROCEDURES:

Delta performed sampling utilizing a HEURESIS Pb200i XRF Lead Paint Analyzer. The Lead Paint Analyzer is a state-of-the-art XRF spectrum analyzing system for the quantitative measurement of lead in paint on any surface. The HEURESIS Pb200i XRF Lead Paint Analyzer uses a Co-57 radioactive source and an advanced, solid-state, room temperature, radiation detector to generate and detect the x-ray fluorescence spectrum of a painted surface. The x-ray fluorescence properties are determined through calibration process and are used for automatic substrate correction and calculation of the lead content of a painted surface. The HEURESIS Pb200i XRF Lead Paint Analyzer is operated with guidance from the Performance Characteristic Sheet[1] developed by *QuanTech, Inc.* under a contract from the U.S. Department of Housing and Urban Development (HUD). The instrument has an action level of 1.0 mg/cm^2 with results at or above this value classified as Lead-Based Paint as per the applicable HUD and NYS regulations referenced above. *Results reported as greater than 0.0 mg/cm^2 are considered Lead-Containing Paint as per the OSHA standards.*

RESULTS

Delta took 344 individual assays of interior/exterior painted surfaces and components present in the Maine Endwell Central School District Homer Brink Elementary School Building located at 3618 Briar Lane, in Endwell, NY; of which **twelve (12)** were positive for the presence of lead as per the NYS and HUD >/= 1.0 mg/cm^2 Criteria referenced above for Lead Based Paint. The remaining **three hundred and thirty-two (332)** assays were reported as being less than 1.0 mg/cm^2. As defined by Industry guidelines, for purposes of identifying/locating the various surfaces and components included in this survey, the wall in which one enters a room is referenced as “Wall A”, with Wall B immediately to the left of “A” and Walls C and D continuing clockwise around the room.



Appendix A includes the Overall XRF Lead Paint Report Form listing all individual assay results, sampling locations and details. Appendix B includes the XRF Lead Paint Report Form listing all individual assay results reported as falling within the NYS/HUD Lead-Based Paint Criteria. Appendix C includes Company and Personnel license and certification paperwork. Appendix D includes Drawings for the Building. Appendix E includes the Heuresis Pb200i Performance Characteristic Sheet.

1-HUD has determined that the PCS information is acceptable when used in conjunction with Chapter 7, Lead Based Paint Inspection of HUD’s *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*.

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APPENDIX A

Homer Brink Elementary School
3618 Briar Lane Endwell, NY 13760

Overall XRF Lead Paint Report Form

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Project: Maine Endwell CSD 2022 CIP - Phase 5 Homer Brink Elementary School Limited Pre-Renovation XRF Lead Paint Survey	**Date Sampling Performed:** 04/24/2025	**Inspector(s):** Michael J. Staudt
	Date of Report: 05/06/2025	**Number of XRF Readings:** 356

Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
1	04-24-2025				Calibration			0.1
2	04-24-2025				Calibration			0.0
3	04-24-2025				Calibration			0.1
4	04-24-2025				Calibration			1.0
5	04-24-2025				Calibration			1.0
6	04-24-2025				Calibration			0.9
7	Homer Brink Elementary School	Corridor G-1	GR	A	Wall	White	CMU	0.3
8	Homer Brink Elementary School	Corridor G-1	GR	A	Heater	White	Metal	0.2
9	Homer Brink Elementary School	Corridor G-1	GR	A	Window	Gray	Metal	0.3
10	Homer Brink Elementary School	Corridor G-1	GR	B	Wall	White	CMU	0.1
11	Homer Brink Elementary School	Corridor G-1	GR	B	Wall	White	Concrete	0.2
12	Homer Brink Elementary School	Corridor G-1	GR	B	Door	Stain	Wood	0.1
13	Homer Brink Elementary School	Corridor G-1	GR	B	Door Frame	Red	Metal	0.1
14	Homer Brink Elementary School	Corridor G-1	GR	B	Door Frame	Blue	Metal	0.2

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
15	Homer Brink Elementary School	Corridor G-1	GR	C	Wall	White	CMU	0.1
16	Homer Brink Elementary School	Corridor G-1	GR	C	Cabinet	White	Metal	0.1
17	Homer Brink Elementary School	Corridor G-1	GR	D	Wall	White	CMU	0.0
18	Homer Brink Elementary School	Corridor G-1	GR	D	Door	Red	Metal	0.2
19	Homer Brink Elementary School	Corridor G-1	GR	D	Door Frame	Red	Metal	0.1
20	Homer Brink Elementary School	Corridor G-1	GR	D	Elevator Door	Brown	Metal	0.1
21	Homer Brink Elementary School	Corridor G-1	GR	D	Elevator Door Frame	Brown	Metal	0.2
22	Homer Brink Elementary School	Corridor G-1	GR		Ceiling Grid	White	Metal	0.1
23	Homer Brink Elementary School	Corridor G-3	GR	A	Wall	White	CMU	0.1
24	Homer Brink Elementary School	Corridor G-3	GR	A	Access Panel	White	Metal	0.0
25	Homer Brink Elementary School	Corridor G-3	GR	A	Column	White	Concrete	0.2
26	Homer Brink Elementary School	Corridor G-3	GR	A	Door	Stain	Wood	0.4
27	Homer Brink Elementary School	Corridor G-3	GR	A	Door Frame	Red	Metal	0.2
28	Homer Brink Elementary School	Corridor G-3	GR	B	Wall	White	CMU	0.1

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
29	Homer Brink Elementary School	Corridor G-3	GR	C	Wall	White	CMU	0.1
30	Homer Brink Elementary School	Corridor G-3	GR	C	Wall	White	Sheetrock	0.2
31	Homer Brink Elementary School	Corridor G-3	GR	C	Door	Stain	Wood	0.1
32	Homer Brink Elementary School	Corridor G-3	GR	C	Door Frame	Red	Metal	0.1
33	Homer Brink Elementary School	Corridor G-3	GR	D	Wall	White	CMU	0.0
34	Homer Brink Elementary School	Corridor G-3	GR	D	Door	Gray	Metal	0.1
35	Homer Brink Elementary School	Corridor G-3	GR	D	Door Frame	Gray	Metal	0.0
36	Homer Brink Elementary School	Corridor G-3	GR		Ceiling Grid	White	Metal	0.2
37	Homer Brink Elementary School	Room G-10	GR	A	Wall	Tan	CMU	0.1
38	Homer Brink Elementary School	Room G-10	GR	A	Door	Stain	Wood	0.1
39	Homer Brink Elementary School	Room G-10	GR	A	Door Frame	Red	Metal	0.2
40	Homer Brink Elementary School	Room G-10	GR	B	Wall	Tan	CMU	0.2
41	Homer Brink Elementary School	Room G-10	GR	C	Wall	Tan	CMU	0.3
42	Homer Brink Elementary School	Room G-10	GR	D	Wall	Tan	CMU	0.1

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
43	Homer Brink Elementary School	Room G-10	GR		Ceiling Grid	White	Metal	0.2
44	Homer Brink Elementary School	Room G-11	GR	A	Wall	Gray	Ceramic	0.1
45	Homer Brink Elementary School	Room G-11	GR	B	Wall	Gray	Ceramic	0.1
46	Homer Brink Elementary School	Room G-11	GR	B	Door Frame	Red	Metal	0.2
47	Homer Brink Elementary School	Room G-11	GR	C	Wall	White	CMU	0.1
48	Homer Brink Elementary School	Room G-11	GR	D	Wall	White	CMU	0.1
49	Homer Brink Elementary School	Room G-11	GR	D	Wall	White	Concrete	0.0
50	Homer Brink Elementary School	Room G-11	GR		Ceiling	White	Plaster	0.2
51	Homer Brink Elementary School	Room G-11	GR		Floor	Red	Ceramic	0.1
52	Homer Brink Elementary School	Room G-11A	GR	A	Wall	White	CMU	0.1
53	Homer Brink Elementary School	Room G-11A	GR	B	Wall	White	CMU	0.2
54	Homer Brink Elementary School	Room G-11A	GR	B	Door	Stain	Wood	0.1
55	Homer Brink Elementary School	Room G-11A	GR	B	Door Frame	Red	Metal	0.1
56	Homer Brink Elementary School	Room G-11A	GR	B	Vent	White	Metal	0.0

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Overall XRF Lead-Based Paint Sample Report Form

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57	Homer Brink Elementary School	Room G-11A	GR	C	Wall	White	CMU	0.2
58	Homer Brink Elementary School	Room G-11A	GR	D	Wall	White	CMU	0.4
59	Homer Brink Elementary School	Room G-11A	GR		Floor	Red	Ceramic	0.2
60	Homer Brink Elementary School	Room G-12	GR	A	Wall	Tan	CMU	0.1
61	Homer Brink Elementary School	Room G-12	GR	B	Wall	Tan	CMU	0.1
62	Homer Brink Elementary School	Room G-12	GR	B	Wall	Gray	Ceramic	0.2
63	Homer Brink Elementary School	Room G-12	GR	B	Door	Stain	Wood	0.1
64	Homer Brink Elementary School	Room G-12	GR	B	Door Frame	Red	Metal	0.1
65	Homer Brink Elementary School	Room G-12	GR	B	Vent	Red	Metal	0.0
66	Homer Brink Elementary School	Room G-12	GR	C	Wall	Gray	Ceramic	0.1
67	Homer Brink Elementary School	Room G-12	GR	D	Wall	Tan	CMU	0.0
68	Homer Brink Elementary School	Room G-12	GR		Ceiling	White	Plaster	0.2
69	Homer Brink Elementary School	Room G-12	GR		Floor	Red	Ceramic	0.1
70	Homer Brink Elementary School	Room G-12	GR		Floor	Green	Ceramic	0.1

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
71	Homer Brink Elementary School	Room G-12A	GR	A	Wall	Tan	CMU	0.2
72	Homer Brink Elementary School	Room G-12A	GR	B	Wall	Tan	CMU	0.1
73	Homer Brink Elementary School	Room G-12A	GR	B	Door Frame	Red	Metal	0.1
74	Homer Brink Elementary School	Room G-12A	GR	B	Vent	Red	Metal	0.0
75	Homer Brink Elementary School	Room G-12A	GR	C	Wall	Red	Metal	0.2
76	Homer Brink Elementary School	Room G-12A	GR	D	Wall	Black	Metal	0.2
77	Homer Brink Elementary School	Room G-12A	GR	D	Door Frame	Red	Metal	0.3
78	Homer Brink Elementary School	Room G-12A	GR		Floor	Red	Ceramic	0.1
79	Homer Brink Elementary School	Boys Room G-14	GR	A	Wall	White	Concrete	0.2
80	Homer Brink Elementary School	Boys Room G-14	GR	A	Wall	Gray	Ceramic	0.1
81	Homer Brink Elementary School	Boys Room G-14	GR	A	Wall	Blue	Ceramic	0.1
82	Homer Brink Elementary School	Boys Room G-14	GR	A	Wall	Yellow	Ceramic	0.2
83	Homer Brink Elementary School	Boys Room G-14	GR	B	Wall	White	Concrete	0.1
84	Homer Brink Elementary School	Boys Room G-14	GR	B	Wall	Gray	Ceramic	0.1

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Overall XRF Lead-Based Paint Sample Report Form

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85	Homer Brink Elementary School	Boys Room G-14	GR	B	Wall	Blue	Ceramic	0.0
86	Homer Brink Elementary School	Boys Room G-14	GR	B	Wall	Yellow	Ceramic	0.2
87	Homer Brink Elementary School	Boys Room G-14	GR	C	Wall	White	Concrete	0.1
88	Homer Brink Elementary School	Boys Room G-14	GR	C	Wall	Gray	Ceramic	0.1
89	Homer Brink Elementary School	Boys Room G-14	GR	C	Wall	Blue	Ceramic	0.2
90	Homer Brink Elementary School	Boys Room G-14	GR	C	Wall	Yellow	Ceramic	0.1
91	Homer Brink Elementary School	Boys Room G-14	GR	D	Wall	White	Concrete	0.1
92	Homer Brink Elementary School	Boys Room G-14	GR	D	Wall	Gray	Ceramic	0.0
93	Homer Brink Elementary School	Boys Room G-14	GR	D	Wall	Blue	Ceramic	0.2
94	Homer Brink Elementary School	Boys Room G-14	GR	D	Wall	Yellow	Ceramic	0.4
95	Homer Brink Elementary School	Boys Room G-14	GR	D	Door	Stain	Wood	0.2
96	Homer Brink Elementary School	Boys Room G-14	GR	D	Door Frame	Blue	Metal	0.1
97	Homer Brink Elementary School	Boys Room G-14	GR		Ceiling Grid	Silver	Metal	0.1
98	Homer Brink Elementary School	Boys Room G-14	GR		Floor	Gray	Ceramic	0.2

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
99	Homer Brink Elementary School	Boys Room G-14	GR		Floor	Yellow	Ceramic	0.1
100	Homer Brink Elementary School	Boys Room G-14	GR		Floor	Blue	Ceramic	0.1
101	Homer Brink Elementary School	Girls Room G-15	GR	A	Wall	White	Concrete	0.0
102	Homer Brink Elementary School	Girls Room G-15	GR	A	Wall	Gray	Ceramic	0.1
103	Homer Brink Elementary School	Girls Room G-15	GR	A	Wall	Blue	Ceramic	0.0
104	Homer Brink Elementary School	Girls Room G-15	GR	A	Wall	Yellow	Ceramic	0.2
105	Homer Brink Elementary School	Girls Room G-15	GR	B	Wall	White	Concrete	0.1
106	Homer Brink Elementary School	Girls Room G-15	GR	B	Wall	Gray	Ceramic	0.1
107	Homer Brink Elementary School	Girls Room G-15	GR	B	Wall	Blue	Ceramic	0.2
108	Homer Brink Elementary School	Girls Room G-15	GR	B	Wall	Yellow	Ceramic	0.1
109	Homer Brink Elementary School	Girls Room G-15	GR	C	Wall	White	Concrete	0.1
110	Homer Brink Elementary School	Girls Room G-15	GR	C	Wall	Gray	Ceramic	0.0
111	Homer Brink Elementary School	Girls Room G-15	GR	C	Wall	Blue	Ceramic	0.2
112	Homer Brink Elementary School	Girls Room G-15	GR	C	Wall	Yellow	Ceramic	0.1

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
113	Homer Brink Elementary School	Girls Room G-15	GR	D	Wall	White	Concrete	0.2
114	Homer Brink Elementary School	Girls Room G-15	GR	D	Wall	Gray	Ceramic	0.1
115	Homer Brink Elementary School	Girls Room G-15	GR	D	Wall	Blue	Ceramic	0.1
116	Homer Brink Elementary School	Girls Room G-15	GR	D	Wall	Yellow	Ceramic	0.0
117	Homer Brink Elementary School	Girls Room G-15	GR	D	Door	Stain	Wood	0.2
118	Homer Brink Elementary School	Girls Room G-15	GR	D	Door Frame	Blue	Metal	0.3
119	Homer Brink Elementary School	Girls Room G-15	GR		Ceiling Grid	Silver	Metal	0.1
120	Homer Brink Elementary School	Girls Room G-15	GR		Floor	Gray	Ceramic	0.1
121	Homer Brink Elementary School	Girls Room G-15	GR		Floor	Yellow	Ceramic	0.2
122	Homer Brink Elementary School	Girls Room G-15	GR		Floor	Blue	Ceramic	0.3
123	Homer Brink Elementary School	Room G-15	GR	B	Wall	Gray	CMU	0.1
124	Homer Brink Elementary School	Room G-15	GR	C	Wall	Gray	CMU	0.0
125	Homer Brink Elementary School	Room G-15	GR	D	Wall	Gray	CMU	0.2
126	Homer Brink Elementary School	Room G-15	GR	D	Door	Stain	Wood	0.3

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Project: Maine Endwell CSD 2022 CIP - Phase 5 Homer Brink Elementary School Limited Pre-Renovation XRF Lead Paint Survey	**Date Sampling Performed:** 04/24/2025	**Inspector(s):** Michael J. Staudt
	Date of Report: 05/06/2025	**Number of XRF Readings:** 356

Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
127	Homer Brink Elementary School	Room G-15	GR	D	Door Frame	Blue	Metal	0.1
128	Homer Brink Elementary School	Stair St-1	GR	A	Window Panel	Blue	Metal	0.0
129	Homer Brink Elementary School	Stair St-1	GR	A	Window	Gray	Metal	0.2
130	Homer Brink Elementary School	Stair St-1	GR	A	Door	Gray	Metal	0.1
131	Homer Brink Elementary School	Stair St-1	GR	A	Door Frame	Gray	Metal	0.1
132	Homer Brink Elementary School	Stair St-1	GR	A	Heater	White	Metal	0.2
133	Homer Brink Elementary School	Stair St-1	GR	B	Wall	White	CMU	0.1
134	Homer Brink Elementary School	Stair St-1	GR	B	Door Frame	Blue	Metal	0.1
135	Homer Brink Elementary School	Stair St-1	GR	C	Wall	White	CMU	0.2
136	Homer Brink Elementary School	Stair St-1	GR	D	Wall	White	CMU	0.1
137	Homer Brink Elementary School	Stair St-1	GR		Stair Stringer	Blue	Metal	0.1
138	Homer Brink Elementary School	Stair St-1	GR		Stair Riser	Blue	Metal	0.0
139	Homer Brink Elementary School	Stair St-1	GR		Stair Handrail	Blue	Metal	0.2
140	Homer Brink Elementary School	Stair St-1	GR		Stair Baluster	Blue	Metal	0.1

Standards
OSHA 1926.62 - > 0.0 mg/cm^2
NYS/HUD - >/= 1.0 mg/cm^2

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
141	Homer Brink Elementary School	Stair St-1	GR		Stair Underside	White	Metal	0.1
142	Homer Brink Elementary School	Corridor 1-1	1	A	Wall	White	CMU	0.2
143	Homer Brink Elementary School	Corridor 1-1	1	A	Door	Blue	Metal	0.1
144	Homer Brink Elementary School	Corridor 1-1	1	A	Door Frame	Blue	Metal	0.1
145	Homer Brink Elementary School	Corridor 1-1	1	A	Panel Box	Gray	Metal	0.0
146	Homer Brink Elementary School	Corridor 1-1	1	A	Fire Cabinet	White	Metal	0.2
147	Homer Brink Elementary School	Corridor 1-1	1	B	Wall	White	CMU	0.4
148	Homer Brink Elementary School	Corridor 1-1	1	B	Door	Blue	Metal	0.2
149	Homer Brink Elementary School	Corridor 1-1	1	B	Door Frame	Blue	Metal	0.1
150	**Homer Brink Elementary School**	**Corridor 1-1**	**1**	**B**	**Column**	**Blue**	**Metal**	**6.5**
151	Homer Brink Elementary School	Corridor 1-1	1	C	Wall	White	CMU	0.2
152	Homer Brink Elementary School	Corridor 1-1	1	D	Wall	White	CMU	0.1
153	Homer Brink Elementary School	Corridor 1-1	1	D	Door	Blue	Metal	0.1
154	Homer Brink Elementary School	Corridor 1-1	1	D	Door Frame	Blue	Metal	0.0

Standards
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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
155	Homer Brink Elementary School	Corridor 1-1	1	D	Elevator Door	Brown	Metal	0.1
156	Homer Brink Elementary School	Corridor 1-1	1	D	Elevator Door Frame	Brown	Metal	0.0
157	Homer Brink Elementary School	Corridor 1-1	1		Ceiling Grid	White	Metal	0.2
158	Homer Brink Elementary School	Corridor 1-2	1	A	Wall	White	CMU	0.1
159	Homer Brink Elementary School	Corridor 1-2	1	A	Wall	White	Sheetrock	0.1
160	Homer Brink Elementary School	Corridor 1-2	1	B	Wall	White	CMU	0.2
161	Homer Brink Elementary School	Corridor 1-2	1	B	Door	Stain	Wood	0.0
162	Homer Brink Elementary School	Corridor 1-2	1	B	Door Frame	Red	Metal	0.1
163	Homer Brink Elementary School	Corridor 1-2	1	C	Wall	White	Sheetrock	0.0
164	Homer Brink Elementary School	Corridor 1-2	1	C	Door	Stain	Wood	0.2
165	Homer Brink Elementary School	Corridor 1-2	1	C	Door Frame	Blue	Metal	0.1
166	**Homer Brink Elementary School**	**Corridor 1-2**	**1**	**C**	**Column**	**Blue**	**Metal**	**6.2**
167	Homer Brink Elementary School	Corridor 1-2	1	D	Wall	White	CMU	0.2
168	Homer Brink Elementary School	Corridor 1-2	1	D	Wall	White	Sheetrock	0.3

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
169	Homer Brink Elementary School	Corridor 1-2	1		Ceiling Grid	White	Metal	0.1
170	Homer Brink Elementary School	Corridor 1-5	1	A	Door	Stain	Wood	0.0
171	Homer Brink Elementary School	Corridor 1-5	1	A	Door Frame	Blue	Metal	0.2
172	Homer Brink Elementary School	Corridor 1-5	1	B	Wall	White	CMU	0.1
173	Homer Brink Elementary School	Corridor 1-5	1	B	Door	Stain	Wood	0.0
174	Homer Brink Elementary School	Corridor 1-5	1	B	Door Frame	Blue	Metal	0.2
175	Homer Brink Elementary School	Corridor 1-5	1	B	Cabinet	Tan	Metal	0.1
176	Homer Brink Elementary School	Corridor 1-5	1	D	Wall	Blue	Sheetrock	0.2
177	Homer Brink Elementary School	Corridor 1-5	1	D	Wall	White	Sheetrock	0.1
178	Homer Brink Elementary School	Corridor 1-5	1	D	Door	Stain	Wood	0.1
179	Homer Brink Elementary School	Corridor 1-5	1	D	Door Frame	Blue	Metal	0.2
180	**Homer Brink Elementary School**	**Corridor 1-5**	**1**	**D**	**Column**	**Blue**	**Metal**	**5.6**
181	Homer Brink Elementary School	Corridor 1-5	1		Ceiling Grid	White	Metal	0.1
182	Homer Brink Elementary School	Room 1-5.4	1	A	Wall	White	CMU	0.0

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
183	Homer Brink Elementary School	Room 1-5.4	1	B	Wall	White	CMU	0.2
184	Homer Brink Elementary School	Room 1-5.4	1	C	Wall	White	CMU	0.1
185	Homer Brink Elementary School	Room 1-5.4	1	D	Wall	White	CMU	0.1
186	Homer Brink Elementary School	Room 1-5.4	1	D	Door	Stain	Wood	0.2
187	Homer Brink Elementary School	Room 1-5.4	1	D	Door Frame	Blue	Metal	0.1
188	Homer Brink Elementary School	Room 1-5.4	1	D	Ceiling Grid	White	Metal	0.1
189	Homer Brink Elementary School	Room 134	1	A	Wall	White	Ceramic	0.0
190	Homer Brink Elementary School	Room 134	1	A	Wall	White	CMU	0.2
191	Homer Brink Elementary School	Room 134	1	A	Wall	White	Plaster	0.4
192	Homer Brink Elementary School	Room 134	1	B	Door	Gray	Metal	0.2
193	Homer Brink Elementary School	Room 134	1	B	Door Frame	Gray	Metal	0.1
194	Homer Brink Elementary School	Room 134	1	C	Wall	White	CMU	0.1
195	**Homer Brink Elementary School**	**Room 134**	**1**	**C**	**Vertical I-Beam**	**White**	**Metal**	**5.2**
196	Homer Brink Elementary School	Room 134	1	D	Wall	White	CMU	0.1

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
197	Homer Brink Elementary School	Room 134	1	D	Door	Stain	Wood	0.1
198	Homer Brink Elementary School	Room 134	1	D	Door Frame	Blue	Metal	0.0
199	Homer Brink Elementary School	Room 134	1		Ceiling	White	Plaster	0.1
200	Homer Brink Elementary School	Room 134	1		Floor	Red	Ceramic	0.0
201	Homer Brink Elementary School	Room 134	1		Access Panel	White	Metal	0.2
202	Homer Brink Elementary School	Room 134	1		Vent	White	Metal	0.1
203	Homer Brink Elementary School	Room 134.1	1	A	Wall	Blue	Metal	0.1
204	Homer Brink Elementary School	Room 134.1	1	A	Door	Stain	Wood	0.2
205	Homer Brink Elementary School	Room 134.1	1	A	Door Frame	Blue	Metal	0.1
206	Homer Brink Elementary School	Room 134.1	1	B	Wall	Blue	Metal	0.1
207	Homer Brink Elementary School	Room 134.1	1	B	Heater	Gray	Metal	0.0
208	Homer Brink Elementary School	Room 134.1	1	C	Wall	White	CMU	0.2
209	Homer Brink Elementary School	Room 134.1	1	D	Wall	White	Sheetrock	0.1
210	Homer Brink Elementary School	Room 134.1	1	D	Wall	White	CMU	0.2

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
211	Homer Brink Elementary School	Room 134.1	1	D	Wall	Gray	Ceramic	0.1
212	Homer Brink Elementary School	Room 134.1	1	D	Wall	Yellow	Ceramic	0.1
213	Homer Brink Elementary School	Room 134.1	1	D	Wall	Blue	Ceramic	0.0
214	Homer Brink Elementary School	Room 134.1	1		Ceiling	White	Plaster	0.2
215	Homer Brink Elementary School	Room 134.1	1		Floor	Gray	Ceramic	0.4
216	Homer Brink Elementary School	Room 134.2	1	A	Wall	White	CMU	0.2
217	Homer Brink Elementary School	Room 134.2	1	B	Wall	White	CMU	0.1
218	Homer Brink Elementary School	Room 134.2	1	C	Wall	White	CMU	0.1
219	Homer Brink Elementary School	Room 134.2	1	D	Wall	White	CMU	0.2
220	Homer Brink Elementary School	Room 134.2	1	D	Door	Stain	Wood	0.1
221	Homer Brink Elementary School	Room 134.2	1	D	Door Frame	Blue	Metal	0.1
222	Homer Brink Elementary School	Room 136	1	A	Wall	White	CMU	0.0
223	Homer Brink Elementary School	Room 136	1	A	Wall	Blue	CMU	0.1
224	Homer Brink Elementary School	Room 136	1	A	Door	Stain	Wood	0.0

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
225	Homer Brink Elementary School	Room 136	1	A	Door Frame	Blue	Metal	0.2
226	Homer Brink Elementary School	Room 136	1	A	Baseboard	Blue	Wood	0.1
227	Homer Brink Elementary School	Room 136	1	A	Door	Gray	Metal	0.1
228	Homer Brink Elementary School	Room 136	1	A	Door Frame	Gray	Metal	0.2
229	**Homer Brink Elementary School**	**Room 136**	**1**	**A**	**Vertical Column**	**White**	**Metal**	**6.1**
230	**Homer Brink Elementary School**	**Room 136**	**1**	**B**	**Vertical Column**	**Brown**	**Metal**	**5.9**
231	Homer Brink Elementary School	Room 136	1	B	Baseboard	Blue	Wood	0.0
232	Homer Brink Elementary School	Room 136	1	C	Wall	White	CMU	0.2
233	Homer Brink Elementary School	Room 136	1	C	Wall	Blue	CMU	0.1
234	Homer Brink Elementary School	Room 136	1	C	Door	Gray	Metal	0.0
235	Homer Brink Elementary School	Room 136	1	C	Door Frame	Gray	Metal	0.1
236	Homer Brink Elementary School	Room 136	1	C	Door	Brown	Metal	0.1
237	Homer Brink Elementary School	Room 136	1	C	Door Frame	Brown	Metal	0.2
238	Homer Brink Elementary School	Room 136	1	C	Door	Stain	Wood	0.1

Standards
OSHA 1926.62 - > 0.0 mg/cm^2
NYS/HUD - >/= 1.0 mg/cm^2

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
239	Homer Brink Elementary School	Room 136	1	C	Door Frame	Blue	Metal	0.1
240	**Homer Brink Elementary School**	**Room 136**	**1**	**C**	**Vertical Column**	**Blue**	**Metal**	**4.3**
241	Homer Brink Elementary School	Room 136	1	C	Baseboard	Blue	Wood	0.1
242	**Homer Brink Elementary School**	**Room 136**	**1**	**D**	**Vertical Column**	**Brown**	**Metal**	**6.9**
243	Homer Brink Elementary School	Room 136	1	D	Baseboard	Blue	Wood	0.0
244	Homer Brink Elementary School	Room 136	1		Partition Wall	White	Wood	0.2
245	Homer Brink Elementary School	Room 136.1	1	A	Wall	Yellow	CMU	0.1
246	Homer Brink Elementary School	Room 136.1	1	B	Wall	Yellow	CMU	0.1
247	Homer Brink Elementary School	Room 136.1	1	C	Wall	Yellow	CMU	0.2
248	Homer Brink Elementary School	Room 136.1	1	C	Door	Gray	Metal	0.1
249	Homer Brink Elementary School	Room 136.1	1	C	Door Frame	Yellow	Metal	0.1
250	Homer Brink Elementary School	Room 136.1	1	D	Wall	Yellow	CMU	0.0
251	Homer Brink Elementary School	Room 136.1	1		Ceiling Grid	White	Metal	0.2
252	Homer Brink Elementary School	Room 136.2	1	A	Wall	Gray	Ceramic	0.4

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
253	Homer Brink Elementary School	Room 136.2	1	A	Door	Gray	Metal	0.2
254	Homer Brink Elementary School	Room 136.2	1	A	Door Frame	Gray	Metal	0.1
255	Homer Brink Elementary School	Room 136.2	1	B	Wall	Gray	Ceramic	0.1
256	Homer Brink Elementary School	Room 136.2	1	C	Wall	Gray	Ceramic	0.2
257	Homer Brink Elementary School	Room 136.2	1	C	Wall	Blue	Plaster	0.1
258	Homer Brink Elementary School	Room 136.2	1	D	Wall	White	Sheetrock	0.1
259	Homer Brink Elementary School	Room 136.2	1		Ceiling	White	Plaster	0.0
260	Homer Brink Elementary School	Room 136.2	1		Floor	Gray	Ceramic	0.1
261	Homer Brink Elementary School	Room 136.2	1		Floor	Red	Ceramic	0.0
262	Homer Brink Elementary School	Room 136.3	1	A	Wall	White	CMU	0.2
263	Homer Brink Elementary School	Room 136.3	1	A	Wall	White	Ceramic	0.1
264	Homer Brink Elementary School	Room 136.3	1	B	Wall	White	Sheetrock	0.1
265	Homer Brink Elementary School	Room 136.3	1	C	Wall	White	CMU	0.2
266	Homer Brink Elementary School	Room 136.3	1	C	Wall	White	Ceramic	0.1

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
267	Homer Brink Elementary School	Room 136.3	1	C	Door	Stain	Wood	0.1
268	Homer Brink Elementary School	Room 136.3	1	C	Door Frame	Stain	Wood	0.0
269	Homer Brink Elementary School	Room 136.3	1	D	Wall	White	CMU	0.2
270	Homer Brink Elementary School	Room 136.3	1	D	Wall	White	Ceramic	0.2
271	Homer Brink Elementary School	Room 136.3	1		Ceiling Grid	White	Metal	0.1
272	Homer Brink Elementary School	Room 136.4	1	A	Wall	Gray	Ceramic	0.1
273	Homer Brink Elementary School	Room 136.4	1	B	Wall	Gray	Ceramic	0.1
274	Homer Brink Elementary School	Room 136.4	1	B	Wall	Gray	CMU	0.0
275	Homer Brink Elementary School	Room 136.4	1	C	Wall	Gray	Ceramic	0.2
276	Homer Brink Elementary School	Room 136.4	1	C	Wall	Gray	CMU	0.1
277	Homer Brink Elementary School	Room 136.4	1	C	Door	Stain	Wood	0.2
278	Homer Brink Elementary School	Room 136.4	1	C	Door Frame	Stain	Wood	0.1
279	Homer Brink Elementary School	Room 136.4	1	D	Wall	Gray	Ceramic	0.1
280	Homer Brink Elementary School	Room 136.4	1		Floor	Green	Ceramic	0.2

Standards
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NYS/HUD - >/= 1.0 mg/cm^2

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Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
281	Homer Brink Elementary School	Room 138	1	A	Wall	White	CMU	0.1
282	**Homer Brink Elementary School**	**Room 138**	**1**	**A**	**Vertical Column**	**White**	**Metal**	**4.7**
283	Homer Brink Elementary School	Room 138	1	A	Window Stop	White	Wood	0.0
284	Homer Brink Elementary School	Room 138	1	B	Wall	White	CMU	0.2
285	Homer Brink Elementary School	Room 138	1	B	Wall	Blue	Metal	0.1
286	Homer Brink Elementary School	Room 138	1	B	Door	Gray	Metal	0.1
287	Homer Brink Elementary School	Room 138	1	B	Door Frame	Gray	Metal	0.2
288	Homer Brink Elementary School	Room 138	1	C	Wall	White	CMU	0.1
289	**Homer Brink Elementary School**	**Room 138**	**1**	**C**	**Vertical Column**	**White**	**Metal**	**4.3**
290	Homer Brink Elementary School	Room 138	1	D	Wall	White	CMU	0.0
291	Homer Brink Elementary School	Room 138	1	D	Door	Gray	Metal	0.2
292	Homer Brink Elementary School	Room 138	1	D	Door Frame	Blue	Metal	0.4
293	Homer Brink Elementary School	Room 138	1		Ceiling	White	Plaster	0.2
294	Homer Brink Elementary School	Room 138	1		Access Panel	White	Metal	0.1

Standards
OSHA 1926.62 - > 0.0 mg/cm^2
NYS/HUD - >/= 1.0 mg/cm^2

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ENGINEERS, ARCHITECTS, & SURVEYORS

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www.delta-eas.com

Client: Maine Endwell CSD	**SED Project No.:** TBD	**Delta Proj. No.:** 2016.424.017
Project: Maine Endwell CSD 2022 CIP - Phase 5 Homer Brink Elementary School Limited Pre-Renovation XRF Lead Paint Survey	**Date Sampling Performed:** 04/24/2025	**Inspector(s):** Michael J. Staudt
	Date of Report: 05/06/2025	**Number of XRF Readings:** 356

Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
295	Homer Brink Elementary School	Room 138	1		Floor	Red	Ceramic	0.1
296	Homer Brink Elementary School	Room 139	1	A	Wall	White	Sheetrock	0.2
297	Homer Brink Elementary School	Room 139	1	A	Window	Gray	Metal	0.1
298	Homer Brink Elementary School	Room 139	1	A	Window Trim	Gray	Metal	0.1
299	Homer Brink Elementary School	Room 139	1	A	Heater	Gray	Metal	0.0
300	Homer Brink Elementary School	Room 139	1	A	Cabinet	White	Wood	0.1
301	Homer Brink Elementary School	Room 139	1	B	Wall	White	Sheetrock	0.0
302	Homer Brink Elementary School	Room 139	1	C	Wall	White	Sheetrock	0.2
303	Homer Brink Elementary School	Room 139	1	D	Wall	White	Sheetrock	0.1
304	Homer Brink Elementary School	Room 139	1	D	Door	Blue	Metal	0.1
305	Homer Brink Elementary School	Room 139	1	D	Door Frame	Blue	Metal	0.2
306	Homer Brink Elementary School	Room 139	1		Ceiling Grid	White	Metal	0.1
307	Homer Brink Elementary School	Room 139.1	1	A	Wall	White	CMU	0.1
308	Homer Brink Elementary School	Room 139.1	1	B	Wall	White	CMU	0.0

Standards
OSHA 1926.62 - > 0.0 mg/cm^2
NYS/HUD - >/= 1.0 mg/cm^2

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	Date of Report: 05/06/2025	**Number of XRF Readings:** 356

Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
309	Homer Brink Elementary School	Room 139.1	1	B	Door	Stain	Wood	0.2
310	Homer Brink Elementary School	Room 139.1	1	B	Door Frame	Stain	Wood	0.2
311	Homer Brink Elementary School	Room 139.1	1	C	Wall	White	CMU	0.3
312	Homer Brink Elementary School	Room 139.1	1	D	Wall	White	CMU	0.1
313	Homer Brink Elementary School	Room 139.2	1	A	Wall	White	CMU	0.0
314	Homer Brink Elementary School	Room 139.2	1	A	Wall	Brown	Ceramic	0.1
315	Homer Brink Elementary School	Room 139.2	1	B	Wall	White	CMU	0.1
316	Homer Brink Elementary School	Room 139.2	1	B	Wall	Brown	Ceramic	0.1
317	Homer Brink Elementary School	Room 139.2	1	C	Wall	White	CMU	0.2
318	Homer Brink Elementary School	Room 139.2	1	C	Door	Blue	Metal	0.1
319	Homer Brink Elementary School	Room 139.2	1	C	Door Frame	Blue	Metal	0.1
320	Homer Brink Elementary School	Room 139.2	1	D	Wall	Brown	Ceramic	0.0
321	Homer Brink Elementary School	Room 139.2	1		Ceiling Grid	Gray	Metal	0.2
322	Homer Brink Elementary School	Room 139.2	1		Floor	Green	Ceramic	0.3

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	Date of Report: 05/06/2025	**Number of XRF Readings:** 356

Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
323	Homer Brink Elementary School	Room 140	1	A	Window Panel	White	Metal	0.1
324	Homer Brink Elementary School	Room 140	1	A	Heater	White	Metal	0.0
325	Homer Brink Elementary School	Room 140	1	B	Wall	White	CMU	0.2
326	Homer Brink Elementary School	Room 140	1	C	Wall	White	CMU	0.1
327	Homer Brink Elementary School	Room 140	1	C	Door	Stain	Wood	0.6
328	Homer Brink Elementary School	Room 140	1	C	Door Frame	Blue	Metal	0.1
329	Homer Brink Elementary School	Room 140	1	D	Wall	White	CMU	0.0
330	Homer Brink Elementary School	Room 140	1	D	Shelf	Blue	Wood	0.3
331	Homer Brink Elementary School	Room 140	1		Ceiling Grid	White	Metal	0.1
332	Homer Brink Elementary School	Stairs ST 1	1	A	Heater	Gray	Metal	0.2
333	Homer Brink Elementary School	Stairs ST 1	1	A	Vertical Column	White	Metal	0.1
334	Homer Brink Elementary School	Stairs ST 1	1	A	Window Panel	White	Metal	0.1
335	Homer Brink Elementary School	Stairs ST 1	1	B	Wall	White	CMU	0.2
336	Homer Brink Elementary School	Stairs ST 1	1	B	Door Frame	Blue	CMU	0.1

Standards
OSHA 1926.62 - > 0.0 mg/cm^2
NYS/HUD - >/= 1.0 mg/cm^2

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	Date of Report: 05/06/2025	**Number of XRF Readings:** 356

Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
337	Homer Brink Elementary School	Stairs ST 1	1	C	Wall	White	CMU	0.1
338	Homer Brink Elementary School	Stairs ST 1	1	D	Wall	White	CMU	0.0
339	Homer Brink Elementary School	Stairs ST 1	1		Ceiling Grid	White	Metal	0.2
340	Homer Brink Elementary School	Stairs ST 1	1		Stair Stringer	Blue	Metal	0.1
341	Homer Brink Elementary School	Stairs ST 1	1		Stair Handrail	Blue	Metal	0.1
342	Homer Brink Elementary School	Stairs ST 1	1		Stair Baluster	Blue	Metal	0.2
343	Homer Brink Elementary School	Stairs ST 1	1		Stair Rim Joist	Blue	Metal	0.1
344	Homer Brink Elementary School	Building Exterior	Ext.	A	Window Wall Panel	Blue	Metal	0.1
345	Homer Brink Elementary School	Building Exterior	1	A	Window Wall Panel	Yellow	Metal	0.0
346	**Homer Brink Elementary School**	**Building Exterior**	**1**	**A**	**Window Wall Lintel**	**Tan**	**Wood**	**1.8**
347	Homer Brink Elementary School	Building Exterior	1	B	Window Wall Panel	Blue	Metal	0.4
348	Homer Brink Elementary School	Building Exterior	1	B	Door	Gray	Metal	0.2
349	Homer Brink Elementary School	Building Exterior	1	B	Door Frame	Gray	Metal	0.1
350	**Homer Brink Elementary School**	**Building Exterior**	**1**	**B**	**Canopy Ceiling**	**Tan**	**Wood**	**2.2**

Standards
OSHA 1926.62 - > 0.0 mg/cm^2
NYS/HUD - >/= 1.0 mg/cm^2

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Client: Maine Endwell CSD	**SED Project No.:** TBD	**Delta Proj. No.:** 2016.424.017
Project: Maine Endwell CSD 2022 CIP - Phase 5 Homer Brink Elementary School Limited Pre-Renovation XRF Lead Paint Survey	**Date Sampling Performed:** 04/24/2025	**Inspector(s):** Michael J. Staudt
	Date of Report: 05/06/2025	**Number of XRF Readings:** 356

Overall XRF Lead-Based Paint Sample Report Form

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
351	04-24-2025				Calibration			0.1
352	04-24-2025				Calibration			0.0
353	04-24-2025				Calibration			0.0
354	04-24-2025				Calibration			1.1
355	04-24-2025				Calibration			1.0
356	04-24-2025				Calibration			1.0

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APPENDIX B

Homer Brink Elementary School
3618 Briar Lane Endwell, NY 13760

Lead-Based Paint Report Form
As per NYS/HUD >/= 1.0 mg/cm^2 Criteria

Of the total 344 individual assays collected from interior/exterior painted surfaces present in the Homer Brink Elementary School Building structure, **twelve (12)** were positive for the presence of lead as per the NYS and HUD (>/= 1.0 mg/cm^2) criteria.

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Client: Maine Endwell CSD	**SED Project No.:** TBD	**Delta Proj. No.:** 2016.424.017
Project: Maine Endwell CSD 2022 CIP - Phase 5 Homer Brink Elementary School Limited Pre-Renovation XRF Lead Paint Survey	**Date Sampling Performed:** 04/24/2025	**Inspector(s):** Michael J. Staudt
	Date of Report: 05/06/2025	**Number of >/= 1.0 XRF Readings:** 12

Surfaces and Components coated with Lead-Based Paint as per NYS/HUD >/= 1.0 mg/cm^2 Criteria

Sample ID No.	Building	Room	Floor	Wall	Test Location	Color	Substrate	XRF Reading
150	Homer Brink Elementary School	Corridor 1-1	1	B	Column	Blue	Metal	6.5
166	Homer Brink Elementary School	Corridor 1-2	1	C	Column	Blue	Metal	6.2
180	Homer Brink Elementary School	Corridor 1-5	1	D	Column	Blue	Metal	5.6
195	Homer Brink Elementary School	Room 134	1	C	Vertical I-Beam	White	Metal	5.2
229	Homer Brink Elementary School	Room 136	1	A	Vertical Column	White	Metal	6.1
230	Homer Brink Elementary School	Room 136	1	B	Vertical Column	Brown	Metal	5.9
240	Homer Brink Elementary School	Room 136	1	C	Vertical Column	Blue	Metal	4.3
242	Homer Brink Elementary School	Room 136	1	D	Vertical Column	Brown	Metal	6.9
282	Homer Brink Elementary School	Room 138	1	A	Vertical Column	White	Metal	4.7
289	Homer Brink Elementary School	Room 138	1	C	Vertical Column	White	Metal	4.3
346	Homer Brink Elementary School	Building Exterior	1	A	Window Wall Lintel	Tan	Wood	1.8
350	Homer Brink Elementary School	Building Exterior	1	B	Canopy Ceiling	Tan	Wood	2.2

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APPENDIX C

Homer Brink Elementary School
3618 Briar Lane Endwell, NY 13760

License and Certification Paperwork

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

June 21, 2022

William Johnson
Delta Engineers, Architects & Land Surveyors, P.C.
860 Hooper Road
Endwell, NY 13760

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

Dear William Johnson:

Thank you for applying to the U.S. Environmental Protection Agency (EPA) for certification to conduct Lead-based Paint Activities in target housing and child-occupied facilities. I am pleased to inform you that, pursuant to 40 CFR Part 745, Subpart L, your lead-based paint activities firm is certified. Your certificate is enclosed.

This certification **expires on August 10, 2025 and is valid in All EPA Administered States, Tribes, and Territories**. However, if a State in which you are certified obtains program authorization during the term of this certification, the scope of your certification will be diminished to exclude the affected area.

Your EPA firm certification is subject to the following restrictions:

1) Individual states and Indian tribes, whether authorized or not, are not required to accept EPA certification and may accept or reject it under its own authority. Please be aware that your EPA certification does not relieve you of any obligations you may have to any State or Indian tribe regarding lead-based paint activities.

2) EPA certification is specific and limited as described above. If you wish to obtain certification in other lead-based paint disciplines, you must apply separately.

3) In advertising the EPA certification, firms must indicate clearly that the firm is certified only for purposes of Section 402 of TSCA. Failure to accurately state EPA certification conditions could result in EPA suspending or withdrawing certification.

4) EPA may conduct audits and/or inspections to ensure continued compliance with regulatory standards, and may revoke or suspend its certification if subsequent alterations or deviations result with the firm no longer meeting the standards found at 40 CFR Part 745, Subpart L.

If you have questions about the lead-based paint activities rule or need assistance, please contact the Regional Lead Coordinator, Tracy Truesdale, of the EPA Region 2 staff at 732-906-6855. If you have any questions about your firm certification, please contact the National Lead Information Center at 1-800-424-LEAD and refer to **Application ID number A806350**. Congratulations, and thank you for your interest in being a certified abatement firm.

Sincerely,

Michelle Price

Michelle Price, Chief
Lead, Heavy Metals, and Inorganics Branch

Enclosures

United States Environmental Protection Agency

This is to certify that

Delta Engineers, Architects & Land Surveyors, P. C.

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

This certification is valid from the date of issuance and expires August 10, 2025

LBP-68796-3

Certification #

June 16, 2022

Issued On

Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch

United States Environmental Protection Agency

This is to certify that

Michael John Staudt

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226 as:

Risk Assessor

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

This certification is valid from the date of issuance and expires September 18, 2025

LBP-R-17652-3

Certification #

August 19, 2022

Issued On

Ben Conetta, Chief

Chemicals and Multimedia Programs Branch

ENGINEERS, ARCHITECTS, & SURVEYORS

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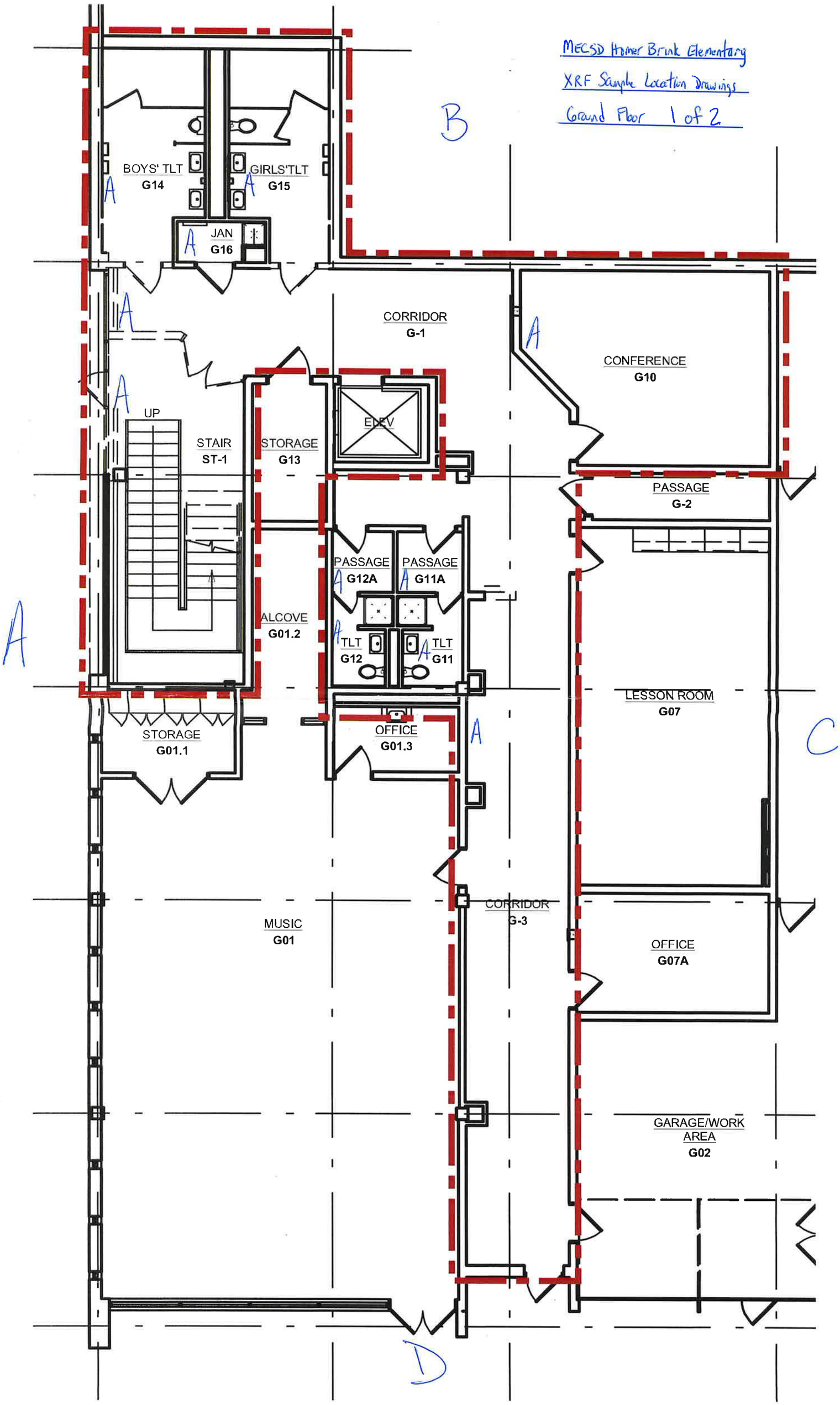
APPENDIX D

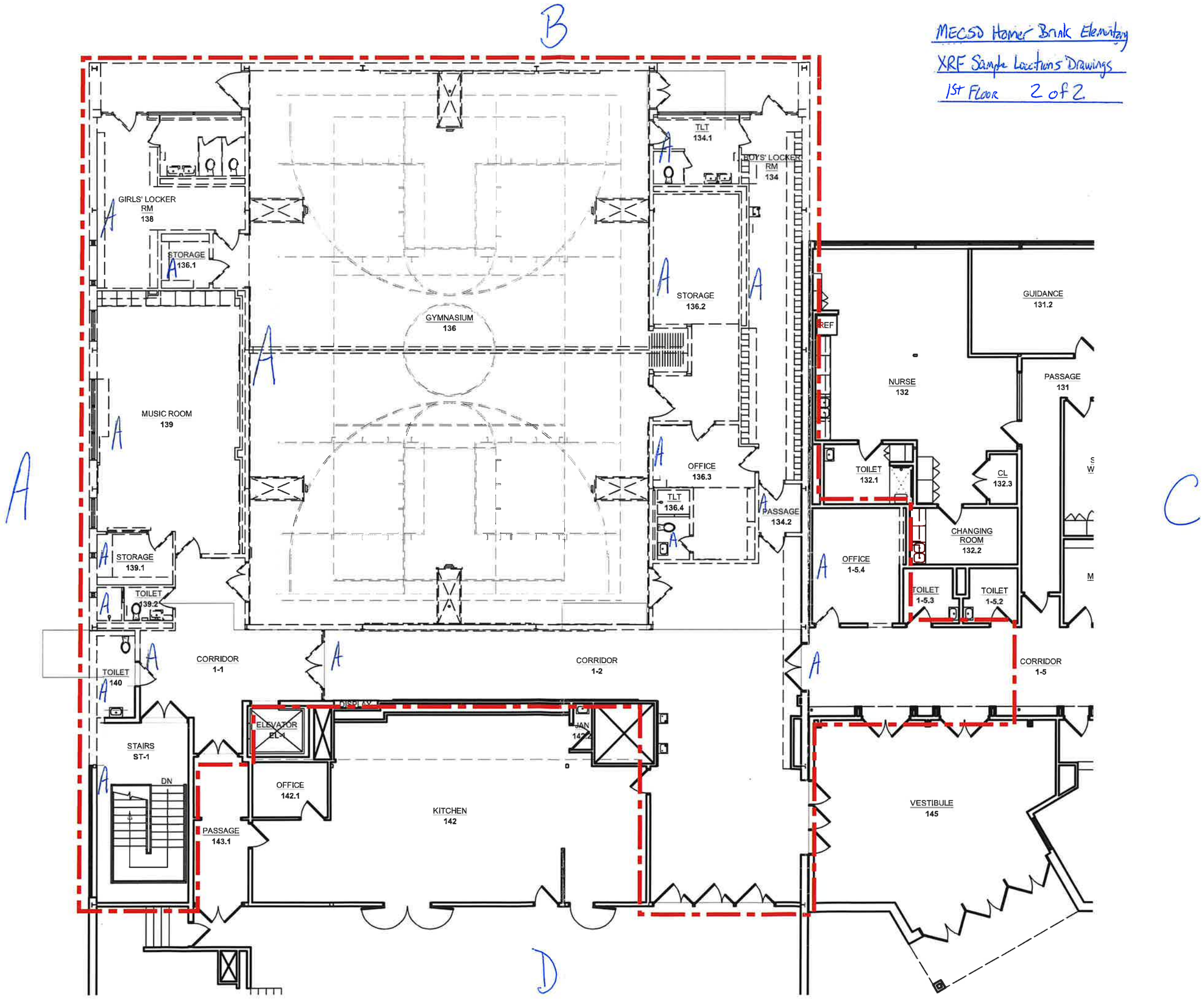
Homer Brink Elementary School
3618 Briar Lane Endwell, NY 13760

Drawings

MECSD Homer Brink Elementary
XRF Sample Location Drawings
Ground Floor 1 of 2



MECSD Homer Brink Elementary
XRF Sample Locations Drawings
1st Floor 2 of 2



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APPENDIX E

Homer Brink Elementary School
3618 Briar Lane Endwell, NY 13760

Heuresis Pb200i Performance Characteristic Sheet

Performance Characteristic Sheet

EFFECTIVE DATE: **December 1, 2015**

MANUFACTURER AND MODEL:

Make: ***Heuresis***
Models: ***Model Pb200i***
Source: ***^{57}Co, 5 mCi (nominal – new source)***

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Action Level mode

XRF CALIBRATION CHECK LIMITS:

0.8 to 1.2 mg/cm^2 (inclusive)

SUBSTRATE CORRECTION:

Not applicable

INCONCLUSIVE RANGE OR THRESHOLD:

ACTION LEVEL MODE READING DESCRIPTION	SUBSTRATE	THRESHOLD (mg/cm^2)
Results not corrected for substrate bias on any substrate	Brick Concrete Drywall Metal Plaster Wood	1.0 1.0 1.0 1.0 1.0 1.0

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("HUD Guidelines"). Performance parameters shown on this sheet are calculated using test results on building components in the HUD archive. Testing was conducted on 146 test samples in November 2015, with two separate instruments running software version 2.1-2 in Action Level test mode. The actual source strength of each instrument on the day of testing was approximately 2.0 mCi; source ages were approximately one year.

OPERATING PARAMETERS

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

XRF CALIBRATION CHECK:

The calibration of the XRF instrument should be checked using the paint film nearest 1.0 mg/cm^2 in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm^2 film).

If the average (rounded to 1 decimal place) of three readings is outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instrument into control before XRF testing proceeds.

SUBSTRATE CORRECTION VALUE COMPUTATION:

Chapter 7 of the HUD Guidelines provides guidance on correcting XRF results for substrate bias. Supplemental guidance for using the paint film nearest 1.0 mg/cm^2 for substrate correction is provided:

XRF results are corrected for substrate bias by subtracting from each XRF result a correction value determined separately in each house for single-family housing or in each development for multifamily housing, for each substrate. The correction value is an average of XRF readings taken over the NIST SRM paint film nearest to 1.0 mg/cm^2 at test locations that have been scraped bare of their paint covering. Compute the correction values as follows:

> Using the same XRF instrument, take three readings on a bare substrate area covered with the NIST SRM paint film nearest 1 mg/cm^2. Repeat this procedure by taking three more readings on a second bare substrate area of the same substrate covered with the NIST SRM.
>
> Compute the correction value for each substrate type where XRF readings indicate substrate correction is needed by computing the average of all six readings as shown below.
>
> <u>For each substrate type</u> (the 1.02 mg/cm^2 NIST SRM is shown in this example; use the actual lead loading of the NIST SRM used for substrate correction):
>
> Correction value = (1st + 2nd + 3rd + 4th + 5th + 6th *Reading*)/6 - 1.02 mg/cm^2
>
> Repeat this procedure for each substrate requiring substrate correction in the house or housing development.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing.

Conduct XRF re-testing at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below. Compute the Retest Tolerance Limit by the following steps:

Determine XRF results for the original and retest XRF readings. Do not correct the original or retest results for substrate bias. In single-family and multi-family housing, a result is defined as a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.

Calculate the average of the original XRF result and the retest XRF result for each testing combination.

Square the average for each testing combination.

Add the ten squared averages together. Call this quantity C.

Multiply the number C by 0.0072. Call this quantity D.

Add the number 0.032 to D. Call this quantity E.

Take the square root of E. Call this quantity F.

Multiply F by 1.645. The result is the Retest Tolerance Limit.

Compute the average of all ten original XRF readings.

Compute the average of all ten re-test XRF readings.

Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to or greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

In the Action Level paint test mode, the instrument takes the longest time to complete readings close to the Federal standard of 1.0 mg/cm^2. The table below shows the mean and standard deviation of actual reading times by reading level for paint samples during the November 2015 archive testing. The tested instruments reported readings to one decimal place. No significant differences in reading times by substrate were observed. These times apply only to instruments with the same source strength as those tested (2.0 mCi). Instruments with stronger sources will have shorter reading times and those with weaker sources, longer reading times, than those in the table.

Mean and Standard Deviation of Reading Times in Action Level Mode by Reading Level

Reading (mg/cm^2)	Mean Reading Time (seconds)	Standard Deviation (seconds)
< 0.7	3.48	0.47
0.7	7.29	1.92
0.8	13.95	1.78
0.9 – 1.2	15.25	0.66
1.3 – 1.4	6.08	2.50
≥ 1.5	3.32	0.05

CLASSIFICATION OF RESULTS:

XRF results are classified as **positive** if they are **greater than or equal** to the stated threshold for the instrument (1.0 mg/cm^2), and *negative* if they are *less than* the threshold.

DOCUMENTATION:

A report titled *Methodology for XRF Performance Characteristic Sheets* (EPA 747-R-95-008) provides an explanation of the statistical methodology used to construct the data in the sheets, and provides empirical results from using the recommended inconclusive ranges or thresholds for specific XRF instruments. The report may be downloaded at http://www2.epa.gov/lead/methodology-xrf-performance-characteristic-sheets-epa-747-r-95-008-september-1997.

This XRF Performance Characteristic Sheet (PCS) was developed by QuanTech, Inc., under a contract with the XRF manufacturer.

SECTION 010000 – LABOR RATES

PART 1 - GENERAL

1.1 WAGE RATE SCHEDULES

A. The following New York State, Broome County schedule of prevailing wage rates and supplements have been provided by the New York State Department of Labor.

B. This prevailing wage rate schedule is listed on the New York State Department of Labor's web site (https://apps.labor.ny.gov/wpp/showFindProject.do?method=showIt) using PRC #2025015241

1. It is each Contractor's responsibility to determine and pay the current wage rates and supplements, at the time of payment, throughout the term of the project.

PART 2 - PART 2 – PRODUCTS (Not Applicable)

PART 3 - PART 3 – EXECUTION (Not Applicable)

END OF SECTION 010000

SECTION 011000 – SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: 2022 Capital Improvement Project – Phase 5
1. Homer Brink: SED # 03-11-01-06-0-001-023

B. Owner: Maine Endwell Central School District
1. Owner's Representatives: Joe McLaughlin (Assistant Superintendent)

C. Architect: King & King, Architects LLP, 358 West Jefferson Street, Syracuse, New York 13202.

D. Architect's Consultants: Architect has retained the following design professionals who have prepared designated portions of the Contract Documents:
a. Environmental: Delta Engineers, Architects & Land Surveyor 860 Hooper Road, Endwell, NY 13760
b) M/E/P: IBC Engineering PC 3445 Winton Place, Suite 219, Rochester, NY 14623
c) Civil: Appel Osborne Landscape Architecture, 102W Division ST Ste 100, Syracuse, NY 13204

D. Construction Manager: LeChase, 31 Lewis Street, Suite 303 | Binghamton NY 13901

E. The work of this Project is for FOUR (4) Prime Contracts.

F. The Prime Contract for this project are listed as follows:

1. 01 10 10 General Contractor (GC)
a. The General Contractor shall furnish all labor, Equipment, Subcontractors, Supervision, Management and Administration required for the total performance of work on this contract as listed in the following specification sections and as shown on the following drawings including, but not limited to: All work required to complete demolition and reconstruction as shown on Drawings B G0.01, B G0.02, B G0.03, B L0.01, B L0.02, B L0.03, B L1.01, B L1.02, B L9.01, B ST0.01, B ST0.02, B ST1.01, B ST1.02, B ST1.03, B ST1.04, B ST9.01, B ST9.02, B ST9.03, B X0.00, B X0.01, B X0.02, B X0.03, B A0.00, B A0.01, B A0.02, B A0.03, B A1.01, B A1.02, B A1.03, B A1.04, B A2.01, B A2.02, B A3.01, B A3.02, B A3.03, B A4.01, B A4.02, B A4.03, B A4.04, B A4.05, B A4.06, B A4.07, B A5.01, B A5.02, B A6.01, B A6.02, B A6.03 & B A9.01 and the All Temporary Panelized Chain Link Fencing, Temporary Sidewalks and LOGISTICS AREA shown in Section 01 51 00 TEMPORARY FACILITIES – Attachment A, the General Contractor shall hire a licensed Structural Engineers to provide Stamped Engineered Drawings for the Shoring and Demolition Procedure to demolish the existing Gymnasium Structure (Including side rooms).

b. Specifications Sections are Division 01 General Requirements, Division 02 Existing Conditions, Division 3 Concrete, Division 4 Masonry, Division 5 Metals, Division 6 Wood and Plastics and Composites, Division 7 Thermal and Moisture Protection, Division 8 Openings, Division 9 Finishes, Division 10 Specialties, Division 11 Equipment, Division 12 Furnishings, Division 31 Earthwork (except what is shown on Drawings B E3.01 & B E3.02,) and Division 32 Exterior Improvements (except what is shown on Drawings B E3.01 & B E3.02).

c. The General Contractor shall be responsible for the weather tightness for the surrounding areas to remain during the reconstruction period.

d. The General Contractor shall be responsible for all temporary heating systems required for Cast-in-Place concrete assemblies, Masonry and Roofing during winter months or periods below ambient temperatures to install structural and building envelope components.

e. The General Contractor is responsible to provide safe means of emergency egress at all times for students and staff through construction areas..

f. The General Contractor is responsible for preparing roofing, installation of support steel, installing Mechanical Contractor (MC) provided HVAC curb and portals, cutting of steel decking and flashing roofing upon completion. Temporary roof cover of open curb until HVAC equipment is set is to be provided by the General Contractor (GC).

g. The General Contractor is responsible to hold the schedule during winter months which may include installing a temporary roof over the new gym.

h. The General Contractor is responsible for Winter Conditions, including temporary heat as described in 011000-1.2-F- 1-d & g as well as snow removal in the Logistics Area and all Contractor Lay Down Areas as shown on Temporary Facilities – Attachment A Site Protection Plan.

i. The General Contractor is responsible to maintain interior environmental conditions to install the Wood Athletic Floor (096466) including, but not limited to, ambient temperatures, humidity levels and moisture conditions.

2. 01 10 00 Mechanical Contractor (MC)

a. The Mechanical Contractor shall furnish all labor, Equipment, Subcontractors, Crane & Rigging, Supervision, Management and Administration required for the total performance of work on this contract as listed in the following specification sections and as shown on the following drawings including, but not limited to: Removal of existing mechanical systems shown to removed and the installation of new mechanical equipment in the Boiler Room (addition to the existing chilled plant), provide new mechanical equipment as specified and all components for the distribution shown in Drawings B H0.00, B H0.01, B H0.02, B H0.03, B H0.11, B H0.12, B H1.01, B H1.02, B H1.03, B H1.11, B H1.12, B H15.01, B H5.02, B H5.03, B H9.01 & B H9.02.

b. Specifications Sections are Division 01 General Requirements and Division 23 Heating, Ventilation and Air Conditioning.

c. The Mechanical Contractor (MC) is responsible to provide the equipment and the coordination of electrical components to be implemented with the mechanical equipment.

d. The Mechanical Contractor is responsible for any penetrations (and supports) through any existing walls for their work.

3. 01 10 00 Electrical Contractor (EC)

a. The Electrical Contractor shall furnish all labor, Equipment, Subcontractors, Crane & Rigging, EXCAVATION & BACKFILL, Supervision, Management and Administration required for the total performance of work on this contract as listed in the following specification sections and as shown on the following drawings, included, but not limited to Removal of existing electrical components shown to be removed and the installation of new electrical components as shown on Drawings B E0.00, B E0.01, B E0.02, B E0.03, B E0.04, B E1.01, B E1.02, B E1.03, B E1.04, B E1.05, B E3.01, B E3.02, B E4.01, B E4.02, B E5.01, B E5.02, B E6.01, B E6.02, B E9.01 & B E9.02.

b. Specifications Sections are all Division 01 General Requirements, Division 25 Electrical, Division 27 Communications, Division 28 Electronic Safety & Security and Related sections of Divisions 31 Earthwork and 32 Exterior Improvements that apply to Drawings B E3.01 & B E3.02.

c. The Electrical Contractor is responsible for any penetrations (and supports) through any existing walls for their work.

4. Plumbing Contractor (PC)

a. The Plumbing Contractor shall furnish all labor, Equipment, Subcontractors, Supervision, Management and Administration required for the total performance of work on this contract as listed in the following specification sections and as shown on the following drawings, included, but not limited to Removal of existing plumbing components shown to be removed and the installation of new plumbing components as shown on Drawings B P0.00, B P0.01, B P0.02, B P1.01 & B P1.02.

b. Specification Sections are all Division 01 General Requirements and Division 22 Plumbing.

c. The Plumbing Contractor is responsible for any penetrations (and supports) through any existing walls for their work.

G. The work described within this Bid Package takes place at the following locations:

Homer Brink Elementary School
3618 Briar Lane
Endwell, New York 13790

It is encouraged that all Prime Contractors apply for Labor Dispensation with NYS DOL prior to man-powering the site.

1.3 INTENT OF DOCUMENTS

A. Plans and Specifications supplement each other and require the contractor to provide in their bid:

1. All labor, material, tools, equipment, supervision, layout, delivery, shop drawings, submittals, appurtenances, transportation, related items, safety monitoring, etc., necessary to complete the work described in the trade contract summary of work for each Contract.
2. All systems complete and left in good and/or specified operating condition.

3. Any apparatus, appliance, material or work not shown on Drawings but mentioned in Specifications, or vice versa.
4. Any accessories, reasonably inferable from Drawings and Specifications and as may be required by the manufacturer of such materials or equipment necessary to make the work complete.
5. Any item, labeled in one location but not another, is typical, reasonably inferable from Drawings and specifications and as may be required.

B. All sections of these Specifications as outlined in the trade contract summary of work shall apply in full to the contractor and their respective subcontractors.

C. Notes or instructions shown on anyone Drawing apply where applicable, to all other Drawings.

D. Install all work in compliance with Plans and Specifications in excess of requirements of codes and regulations and not contrary to it.

E. The Contract Documents contemplate a finished piece of work of such character and quality as is reasonably inferable from them. The contractor shall provide full cooperation in coordinating the installation of its work with the work of others and to make its work complete and operational and in compliance with good practice. The contractor further acknowledges that inadvertent minor discrepancies or omissions or the failure to show details or to repeat on any part of the contract documents the figures or notes given on another shall not be the cause for additional charges or claims. In the event of such conflict between and among the parts of the Contract Documents, the more expensive way of doing the work, the better the quality or the greater the quantity of material shall govern.

F. The Drawings are schematic in nature and are not intended to show every offset and detail. The Contractor shall make adequate provisions in their bid to accommodate the actual conditions without additional cost to the Owner.

1.4 GENERAL REQUIREMENTS

A. The Prime Contractors is responsible for all work under their contract no matter what drawing on which that work appears, including drawings of other trade disciplines.

B. All Prime Contractors are responsible to provide complete all Permits and Inspections, including any associated fees, which may be required by any local and state code agency relative to the work of their contract.

C. All work must conform to any applicable codes including but not limited to OSHA, Federal, State, Local, Governmental Agencies having jurisdiction and / or Owner requirements.

D. Contractor shall comply with all applicable federal, state, county and municipal laws concerning pollution of surrounding public waters. All work shall be performed in such a manner that objectionable conditions will not be created in public waters through or adjacent to the project areas.

E. Local custom and trade union jurisdictional settlements do not control the scope of work included in each prime contract. When a potential jurisdictional dispute or similar interruption of work is first identified or threatened, the affected prime contracts shall promptly negotiate a reasonable settlement to avoid or minimize the pending interruption and delays. Prime Contractors affected by such disputes shall be responsible for any related schedule and / or cost impact.

F. Union business shall not be conducted on site. Any Union Representative that visits 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 onsite without prior consent of the Construction Manager. No photographs shall be taken without the Construction Manager's prior approval.

G. Indoor Air Quality as a result of construction activity must be controlled. The transmission, movement or infiltration of construction dust, odors, vapors and/or other particulates is prohibited. Each Contractor is responsible for this and must take appropriate measures to control all dust, odors, vapors and/or other particulates cause by that contractor's activity through the use of fans, negative air machines and/or off shift work. Any degradation of IAQ in spaces will necessitate the shutdown of such operations until the IAQ in the spaces can be rectified. Failure to control the IAQ due to construction activities shall require the completion of the work during off hours.

   1. Construction operations such as demolition, sanding, painting, the use of mastics, and other construction operations, which may produce an odor or a dust condition, shall be scheduled with the Construction Manager 72 hours in advance of when such operation might occur. The Construction Manager and the Owner will review the request to proceed with said construction operation and decide if the operation can be done at that time, have to be rescheduled, or if additional precautions need to be implemented by the Contractor to carry out the operation that may produce an odor or a dust condition. Any rescheduling or additional precautions required by the Construction Manager, or the Owner shall be conducted by the Contractor at no additional cost to the project. Refer to NYS Standards of School Construction Specification 01 60 00.

H. 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. A "Request for Information" form will be provided by the Construction Manager to the contractor. This form is to be filled out completely by the Contractor and sent to the Construction Manager for further processing. Verbal request for information will not be acted upon. Any verbal responses are not binding.

I. Repair for any damage to existing or new structure, finishes, ceilings, walls, flooring, equipment, fixtures etc. caused by defective or ill-timed work shall be borne by the responsible Contractor.

J. Provide complete all surface preparation, prime and seal substrates in accordance with the Manufacturer's recommendations for the type of substrate involved. Apply sizing to all gypsum drywall prior to installation of wall covering. Each Contractor shall verify compatibility of substrates as supplied by others. Starting of work shall constitute acceptance of substrates. Do not proceed with surface preparation or painting application until conditions are suitable.

K. The Construction Manager is responsible for assigning the work to the various Prime Contracts.

L. Each Contractor is responsible for providing material to the jobsite in a manner consistent with the Milestone Construction Schedule and Sequencing Plans.

M. Equipment furnished by all Contractors shall be factory painted and field protected until acceptance by the Owner. If proper protection has not been provided or maintained, the material will be refinished, repaired, or replaced at the discretion of the Construction Manager at no cost to the Owner.

N. Contractor's personnel will not be permitted to use Owner's Food Service Facilities or sanitation facilities.

1.5 WORK SEQUENCE

A. The Work will be conducted to provide the least possible interference to the activities of the Owner's operation.

B. Work is to be performed as follows: SUMMER HOURS - weekdays (Monday through Saturday) from 7:00 AM to 3:30 PM unless otherwise noted. SCHOOL YEAR - weekdays (Monday through Friday) FOR WORK WITHIN THE EXISTING BUILDING is to be from 4:00 PM to 12:30 AM unless otherwise noted. SCHOOL YEAR WORK INCLUDING SITE WORK AND RECONSTRUCTION OF THE GYM BEYOND THE BARRIER WALL is to be from 7:00am to 3:30pm unless otherwise noted. Work cannot be performed in occupied spaces and shall be scheduled during off-hours, vacations and weekends for occupied spaces as coordinated and approved with the Construction Manager/Owner. Prime Contractor Supervision shall be on site at all times that work is being performed and Construction manager will be available as required. If a Contractor fails to maintain the progress as indicated by the milestone schedule by no other fault but its own and requires overtime to complete the work; the Contractor shall make arrangements with the Construction Manager 48 hours in advance and pay for a Construction Manager's superintendent and an Owner's representative on an overtime rate. In the event that the cause for delay is multi-contract, then the costs shall be distributed proportionately across affected Contracts.

C. The intention of the work is to follow a logical sequence; however, the Contractor may be required by Construction Manager to temporarily omit or leave out any section of his work or perform his work out of sequence. All such out of sequence work and returning to these areas shall be at no additional cost to the Owner.

D. Coordination of any utility and/or power interruption must be done with the Construction Manager and shall be scheduled 72 hours in advance. Shutdowns must occur during off hours and non-occupied days only. Each Contractor shall provide complete all terminations, removals and tie-ins as required by their Contract. Shift work must be approved in advance by the Construction Manager.

E. Any and all shutdowns are to be coordinated with the Construction Manager and Owner and shall be scheduled 72 hours in advance of any proposed shut down. Obtain permits and pay all fees associated with required shutdowns, disconnections, or relocations. All existing life safety type systems are to remain operational during installation of new system. All temporary work required to keep existing systems operational is the responsibility of the Contractor installing the work.

F. Any Prime Contractors who install their work out of sequence according to the Milestone Schedule shall protect their work from fireproofing overspray. No work shall be performed that prohibits fireproofing from being professionally installed.

1.6 MANPOWER / SUPERVISION

A. Contractor understands that time is of the essence and will adequately man the job to successfully complete the Contract Work in accordance with the Construction Manager's Milestone Schedule. The option to work extended hours and weekends at the Contractor's expense under prior agreement with the Construction Manager may be made available.

B. In the event a Contractor falls behind scheduling the Construction Manager shall have the authority to direct the contractors and subcontractors to work overtime including weekends to maintain the schedule at no additional cost to the Owner. Contractors warrant that the work shall be physically complete, including punch list, startup and commissioning, within the early start and late finish schedule milestones.

C. The Contractor shall provide multiple crews to maintain the project schedule. Each crew is to be furnished with its own supervision, cranes, scaffold and other means necessary to maintain the Project Schedule.

D. The General Contractor shall provide full time, non-working, onsite supervision from project commencement until such time as determined by the Construction Manager. This is to include supervision for all Subcontractors. 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 and continues to assume all responsibilities for the appointed individual and the work of this Contract. The contractor's on-site superintendent shall be on a Full-Time basis in a managerial capacity to continuously expedite, direct, supervise and coordinate the work and shall not engage in performing actual work. A working Forman shall not be designated by the contractor as a superintendent.

    1. All other Contractors are required to provide a working Supervisor for the duration of the project. This working Supervisor will be required to perform all duties of an on-site Supervisor per the Contract including but not limited to responsible for safety, attend meetings, coordinate and expedite the work and work of subcontractors.

E. The proposed Contractors' Project Manager and Field Superintendent for the project are to have sufficient experience and be successful in the proposed position. Each successful bidder shall submit resumes to the Construction Manager for the proposed Project Manager and Field Superintendent for the project. This information will be reviewed with the Owner, Architect and Construction Manager for approval. Should the Project Manager and/or Superintendent prove unqualified for the position at any point in the project, the Construction Manager shall issue a letter stating that the person is to be removed from involvement in the project. Contractor shall replace with a qualified individual promptly. Such full time Field Superintendent shall be required on site until such time as all Contract Work, including punch list work, is completed and accepted.

F. Each Contractor shall employ the appropriate trades people for their work as required. These people shall be experienced in their trades. A shortage of labor in the industry shall not be accepted as an excuse for not properly staffing each project.

1.7 SITE LOGISTICS / ACCESS

A. Each Contractor shall limit their operations, including storage of materials and prefabrication to areas designated by the Construction Manager. Contractor shall move at their own expense any stored products under Contractor's control, including excavated material, which interfere with operations of the Owner or other Contractors.

B. The Construction Manager will determine when a construction operation can be conducted in Owner occupied areas. The Construction Manager's decision of when the work can take place shall not constitute that the Contractor is entitled to additional compensation.

C. All Contractors shall try to minimize their presence in areas that are occupied by the Owner. Construction work in these areas will generally be performed when the public is not present.

D. The Construction Manager shall indicate to the Contractors entry points to the construction areas and routes through Owner occupied areas. The Contractor will ensure that their employees use only these entry points and routes through Owner occupied areas. A specific stairwell should be assigned for construction worker use during work hours. In general, workers may not use corridors or stairs designated for the Owner.

E. There will be no contact between the Contractor or their personnel and the Owner. The Contractor is not to take direction from anyone but the Construction Manager.

F. No visitors, sales representative or non-working personnel shall be permitted onsite without prior consent of the Construction Manager.

G. GC Contractor must plan, provide and maintain access, ramping, and egress as required into and out of the site, staging of trailers, materials machinery, and equipment in agreement with the Construction Manager's Superintendent. Each Contractor shall provide complete all planking and protection for walks, pavements, and curbs, etc. which are to be crossed by equipment. Trucking and delivery operation should be coordinated with Construction Manager's Superintendent and all other trades.

1.8 COORDINATION

A. Each Prime Contractor shall coordinate scheduling and installation of work with the work of other Contractors, sub-contractors and other trades. Each Contractor is also required to coordinate all work of their Contract with Owner-supplied materials, direct contacts and normal building operations.

B. Each Prime Contractor shall supply and coordinate exact locations of embedded items in concrete or masonry work with the General Construction Contractor. Each Prime Contractor shall monitor such items throughout concrete/masonry activities to ensure proper placement.

C. Each Contractor shall take special care in verifying that his equipment matches the characteristic of the power being supplied. All Contractors shall coordinate with the Electrical Contractor and provide them with a copy of the approved submittal for all equipment that require electrical power.

1.9 TEMPORARY FACILITIES

A. Refer to Specification Section 01 50 00 for detailed information related to Temporary Facilities.

1.10 SURVEY & LAYOUT

A. The Contractor shall work from the Benchmark identified in the Contract Documents and verified by a licensed surveyor employed by the General Construction Contractor.

1. The General Contractor shall furnish and erect all necessary batter boards, establish all lines and levels and connection therewith, and run all subsequent lines and levels as the work progresses in order to assure careful and accurate work true to the proper lines in accordance with the Contract Documents. Any batter boards, monuments, or marks of reference, which may for any reason become disturbed or destroyed, whether such displacement or destruction is caused by carelessness, accident, or by the elements, shall at all times, be promptly and accurately re-established by the General Contractor and reimbursed by the party who damaged the "benchmarks"..
2. The General Construction Contractor shall establish finished floor elevations and finished grade lines for the building for all trades when requested to do so; and shall establish center lines of all interior partitions on floor forms before concrete is placed in order that HVAC & Electrical Contractors will be able to place sleeves, etc., in proper locations.

B. The General Contractor shall provide services of a licensed surveyor for site layout, elevation and as-built foundation location.

1.11 CUTTING AND PATCHING

A. Refer to Specification Section 01 73 10 for detailed information related to Cutting and Patching.

B. General Contractor is responsible to cut the new roof areas for the HVAC and Electrical contractors for their respective penetrations and ensure the roof is watertight at all times. Each contractor shall lay out their penetrations and coordinate with the General Contractor to cut and patch in a manner to maintain existing roofing manufacturer's warranty. (See 1.15,K,5). Cuts through existing decking are to be performed by the contractor requiring the penetration.

1.12 CLEAN UP REQUIREMENTS

A. Refer to Specification Section 01 74 00 for detailed information related to Clean Up Requirements.

B. All Contractors are responsible for daily clean-up of all debris caused by their work. Contractors will provide sufficient cleanup personnel and sweeping compound as directed by the Construction Manager. Any Contractor not providing personnel will be charged for labor provided by the Owner.

1.13 TESTING & LABORATORY SERVICES

A. Refer to Specification Section 01 45 33 for detailed information related to Testing Laboratory Services.

1.14 PRIME CONTRACTOR RESPONSIBILTIES

A. Each prime contractor shall be responsible for de-watering all excavations pertaining to their scope of work for the duration that the excavations must remain open and to maintain the project schedule.

B. Unless specifically indicated in the Contract Documents that a ceiling system is being removed, re-installed or replaced, the GC Contractor shall be responsible for the removal and re-installation of all existing ceilings systems. Any damage to these existing ceiling systems due to the removal and re-installation process shall be each Contractor's responsibility to repair or replace the ceiling as directed by the Construction Manager at no additional cost to the Owner.

C. Each Prime Contractor is to survey existing work and submit to the Construction Manager a list of damaged areas (i.e. ceiling tiles, concrete sidewalks… etc.) prior to commencing work. Any damaged areas not identified prior to the work shall be the responsibility of the contractor(s) working in that area.

D. Each Prime Contractor is to provide sufficient protection of their work throughout the construction period by use of Kraft paper, plastic, plywood or other means acceptable to Construction Manager.

E. Roof work is defined as follows:

1. Each Contractor shall provide all temporary weather protection and safety coverings associated with the equipment openings required under their scope of work.

1.15 PROJECT CORRESPONDENCE / REPORTING REQUIREMENTS

A. Each Contractor shall provide its management personnel assigned to this Project with access to personal computers and access to the Internet on a daily basis.

B. Each Contractor shall conduct Project controls, outlined by the Construction Manager, utilizing a designated FTP site. Access to this FTP will be provided by the Architect or as a minimum via email.

C. Each Contractor shall report on a daily basis, and as necessary to be kept fully appraised of Project developments, for correspondence, assigned tasks and other matters that transpire on the site. These may include but are not limited to: RFI's, action items, meeting minutes, discussion threads, revisions to contract drawings and or specifications, submittals, punch list items, and daily reports. Minimum requirement is via email on a daily basis.

END OF SECTION

SECTION 012100 - ALLOWANCES

1.0 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.

B. Attention is directed to Paragraph 3.8 (as amended in the SGC) of the General Conditions for further description.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing allowances.

1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

B. Types of allowances include the following:

1. Contingency allowances.

C. Related Sections include the following:

1. Division 01 Section "Unit Prices" for procedures for using unit prices.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.

1.4 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by the Architect to the Construction Manager for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

1. All overhead and profit associated with the contingency allowance shall be included in the base bid. The contingency allowance shall be used for construction cost only (See Item B).

B. Contractor's related costs for products and equipment ordered by Owner under the contingency allowance are as follows:

1. Cost of Product(s) to Contractor less any trade discounts.
2. Cost of delivery to site, on-site handling, unloading, uncrating, and storage.
3. Cost of applicable taxes.
4. Protection from the elements or from damage.
5. Labor costs for installation, finishing, and testing; except where labor is specified not to be included in the allowance.
6. Subcontractor’s overhead and profit (only) at the stipulated rate of 15%. Prime contractors are entitled to one markup per subcontractor per change event. Subcontractors that contract out work are not entitled to additional overhead and profit beyond that noted above.

C. Change Orders or Change Directives authorizing use of funds from the contingency allowance will include only Contractor's related costs as described above.

D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.7 UNUSED MATERIALS

A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

1. If requested by Architect, prepare unused material for storage by Owner when it is not economically practical to return the material for credit. If directed by Architect, deliver unused material to Owner's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

2.0 PART 2 - PRODUCTS (Not Used)

3.0 PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. General Construction Work

1. Allowance No. GC-01 (Contingency Cash Allowance): Include a lump sum allowance of $225,000 for use upon the Owner's instructions. This allowance is to be included in the General Construction Contractor's Base Bid sum.

B. Electrical Work

1. Allowance No. EC-01 (Contingency Cash Allowance): Include a lump sum allowance of $30,000 for use upon the Owner's instructions. This allowance is to be included in the Electrical Contractor's Base Bid sum.

C. HVAC Work

1. Allowance No. MC-01 (Contingency Cash Allowance): Include a lump sum allowance of $70,000 for use upon the Owner's instructions. This allowance is to be included in the HVAC Contractor's Base Bid sum.

D. Plumbing Work

1. Allowance No. PC-01 (Contingency Cash Allowance): Include a lump sum allowance of $15,000 for use upon the Owner's instructions. This allowance is to be included in the Plumbing Contractor's Base Bid sum.

END OF SECTION 012100

SECTION 012200 – UNIT PRICES

1.0 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. This Section includes administrative and procedural requirements for unit prices.

B. Related Sections include the following:

1. Division 01 Section "Allowances" for procedures for using unit prices to adjust quantity allowances.

1.3 DEFINITIONS

A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit prices include all necessary materials, plus costs for delivery, installation, and taxes (when applicable).

B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A list of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

2.0 PART 2 – PRODUCTS (Not Used)

3.0 PART 3 – EXECUTION

3.1 LIST OF UNIT PRICES

A. General Construction Work (GC):

1. UNIT PRICE NO. GC-01: UNDERCUTTING

   a. Description: Undercutting where unsatisfactory soils are discovered. This includes excavation, removal and haul away of unsuitable material, backfill and compaction with imported granular material as specified in Section 311201. Note: 25 cubic yards to be included in Base Bid.

   b. Unit of Measurement: Cubic yard, installed.

2. UNIT PRICE NO. GC-02: SOIL STABILIZATION FABRIC:

   a. Description: Woven soil stabilization fabric furnished and installed as described in Section 321201.

   b. Unit of Measurement: Square yard, installed.

3. UNIT PRICE NO. GC-03: ROCK REMOVAL:

   a. Description: Rock removal where rock is discovered. This includes excavation, removal and haul away of rock, backfill and compaction with imported granular material as specified in Section 31 12 01. Note: 10 cubic yards to be included in Base Bid.

   b. Unit of Measurement: Cubic yard, installed.

4. UNIT PRICE NO. GC-04: HEAVY DUTY ASPHALT

   a. Description: Heavy duty asphalt, stabilization fabric and stone subbase as described in Section 321201. This includes excavation and removals for placement of heavy duty asphalt.

   b. Unit of Measurement: Square yard, installed.

5. UNIT PRICE NO. GC-05: STANDARD CONCRETE SIDEWALK/PADS

   a. Description: Standard concrete sidewalk(s)/pads as described in Section 321301 and as detailed. This includes excavation and removals to sub-grade for placement of standard concrete walks.

   b. Unit of Measurement: Square foot, installed.

6. UNIT PRICE NO. GC-06 SODDED LAWN:

   a. Description: Sodded lawn as described in Section 329201. This includes fine grading, sodding, and maintenance.

   b. Unit of Measurement: Square yard, installed.

7. UNIT PRICE NO. GC-07: 4" STORM WATER MANAGEMENT TRENCH (SMT):

   a. 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.

   b. Unit of Measurement: Linear foot, installed.

END OF SECTION 012200

SECTION 012300 - ALTERNATES

1.0 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 for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.

2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

2.0 PART 2 - PRODUCTS (Not Used)

3.0 PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. General Construction Contract:

1. ALTERNATE NO. GC-01 – BUS LOOP LIGHTING

a. The Bidder shall state the amount to be ADDED to the Base Bid for all site construction work associated with the installation of lighting at the Bus Loop.

2. ALTERNATE NO. GC-02 – PLAYGROUND & UPPER PARKING LOT LIGHTING

a. The Bidder shall state the amount to be ADDED to the Base Bid for all site construction work associated with the installation of lighting at the Playground and Upper Parking Lot.

3. ALTERNATE NO. GC-03 – TEMPORARY SLOPE REGRADING AT THE EAST PARKING LOT

a. The Bidder shall state the amount to be ADDED to the Base Bid for all site construction work associated with the temporary regrading and support of the hill adjacent to the East Parking Lot along with restoration of the site back to its original condition upon the completion of the project.

4. ALTERNATE NO. GC-04 – STAIR ST-1 – STAIR TREAD AND LANDING REPLACEMENT

a. The Bidder shall state the amount to be ADDED to the Base Bid for all general construction work associated with the replacement of the terrazzo stair treads and landings in Stair ST-1 as described in the drawings and specifications.

5. ALTERNATE NO. GC-05 – STAIR ST-2 – STAIR TREAD AND LANDING REPLACEMENT

a. The Bidder shall state the amount to be ADDED to the Base Bid for all general construction work associated with the replacement of the terrazzo stair treads and landings in Stair ST-2 as described in the drawings and specifications.

B. Mechanical Construction Contract: None.

C. Plumbing Construction Contract: None.

D. Electrical Construction Contract:

1. ALTERNATE NO. EC-01 – BUS LOOP LIGHTING

a. The Bidder shall state the amount to be ADDED to the Base Bid for all electrical construction work associated with the installation of lighting at

the Bus Loop.

2. ALTERNATE NO. EC-02 – PLAYGROUND & UPPER PARKING LOT LIGHTING

a. The Bidder shall state the amount to be ADDED to the Base Bid for all electrical construction work associated with the installation of lighting at the Playground and Upper Parking Lot.

END OF SECTION 012300

SECTION 012500 – EQUIVALENCY

1.0 PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. “APPROVED EQUIVALENTS” refers to manufacturers, materials, products, systems or equipment approved by the Architect for use in place of those specified, prior to contract award.

B. "APPROVED SUBSTITUTIONS" refer to manufacturers, materials, products, systems or equipment approved by the Architect for use in place of those specified, after contract award.

C. Standard of Quality: Specified materials, products and equipment establish the standard of function, dimension, appearance and quality.

D. Burden of Proof of equivalency rests with the entity submitting the proposed equivalent.

E. Acceptance: The Owner and the Architect shall determine a product's acceptability.

1.3 RELATED SECTIONS

A. Instructions to Bidders.

B. Supplementary Instructions to Bidders.

C. Supplementary General Conditions.

D. Division 01 Section “Submittals.”

1.4 PRODUCT OPTIONS

A. Where products are specified by reference standards or by description only; select any product meeting those standards or description.

B. Where products are specified by “or equal”, or by naming one or more products or manufacturers:

1. Select one of the products or manufacturers named which complies with the requirements of the Specifications; or

2. Submit an equivalent product that has been approved by addenda. Bidders shall follow procedures as described in Article "EQUIVALENTS PROPOSED OR CONSIDERED DURING THE BIDDING PHASE".

3. Submit a product which, in the Bidder's opinion, is equal in all respects, which product shall be subject to post award approval by the Architect. Bidder shall follow procedures for approval of substitutions as described in Article "SUBSTITUTIONS PROPOSED AS "OR EQUALS" AFTER CONTRACT AWARD".

1.5 CONTRACTOR'S CERTIFICATION

A. The Contractor shall provide certification as follows for all proposed equivalents and substitutions made under any of the procedures specified herein.

1. The Contractor has investigated the proposed product and determined that it is equal to or superior in all respects to the product specified, and that it will perform adequately in the application indicated.

2. The Contractor will provide the same warranties or bonds for the equivalent/substitute as for the product specified.

3. For equivalents, the Contractor certifies that it waives all claims for additional costs related to the substitution which subsequently become apparent, or become necessary because of the failure of the substitution to perform adequately.

4. For substitutions, the Contractor certifies that the cost data presented is complete and includes all related costs under this Contract except the Architect's redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent, or become necessary because of the failure of the substitution to performance adequately.

5. The Contractor will coordinate the installation of an accepted substitution in the work, and make such other changes in the work as may be required for installation to make the work complete in all respects, at no additional cost to the Owner.

6. The Contractor agrees to reimburse the Owner for additional costs from claims by other Prime Contractors resulting from incorporation of requested equivalents and substitutions.

7. The Contractor agrees to reimburse the Owner for all additional costs billed by the Architect or his consultants for the review of the substitution request(s), any redesign of the Work of this Contractor or associated Contractors, additional site visits related to the substitution request and for the work to prepare Change Directives or Change Orders."

1.6 EQUIVALENTS PROPOSED OR CONSIDERED DURING THE BIDDING PHASE

A. If a Bidder desires to obtain pre-bid approval of a product it deems equivalent to a specified product rather than bidding "at risk", the Bidder may do so during the bidding process by the procedure described herein by the procedure as follows:

1. Form of Request: Use enclosed "Equivalency Request" form.

2. Request Submitted To: Architect.

3. Request Made By: **Prime** Contract Bidders of Record **only**; in writing.

4. Deadline: Requests received fourteen (14) days prior to date of receipt of Bids.

5. Notification of Approved Products: By Addendum.

6. Specifics: Incomplete information will be rejected and not reviewed. The burden of proof is on the submitter. Provide complete information.

7. Separate Requests: Use separate request form for each product request.

B. Product Equivalency: Answers to the following questions, prefaced by "(How) does (the use of) the proposed equivalent product or its manufacturer," shall be addressed by the submitter:

1. Serve the same function?

2. Affect other products and the Project as a whole? If so, what?

3. Have the same dimensions?

4. Have the same appearance?

5. Comply with the same codes and conform to the same standards?

6. Have same life expectancy?

7. How long has the product been produced as currently manufactured?

8. Where has the product been used locally? List Projects and Architects.

9. Have a history of past problems, and if so what was the remedy?

10. Affect other aspects of the construction?

11. Affect any details? What needs to be changed?

12. Require license fee or royalties.

13. Affect construction time?

14. Have a product warranty equal to the specified warranty?

15. Have a track record of standing behind the product and the warranty?

16. Vary or differ from specified product?

17. Benefit the Owner?

C. Any "equivalent" not approved by addendum (which action shall be at the contractor's risk) must be submitted to the Architect no later than 48 hours after receipt of bids.

1. The Bidder shall use the Equivalency Request form and shall respond in writing to all the concerns noted above.

2. After the 48 hour limit described above, similar submittals shall be deemed to be substitution requests.

1.7 SUBSTITUTIONS PROPOSED AS "OR EQUALS" AFTER CONTRACT AWARD

A. The following procedures apply after contract award.

B. For a period **not to exceed fourteen (14) calendar days** following the date of Contract Award, the Architect will consider written requests from the Prime Contractor (**only**) for product substitutions. The date of Contract Award shall establish the start of the fourteen (14) day period.

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

D. Submit separate request for substitution on the "Substitution Request" form for each product which is proposed, supported with complete data, drawings and/or samples as appropriate, including written responses to the following concerns:

1. Justification of need for substitution.

2. Complete data substantiating compliance of proposed substitution with Contract Documents (five copies).

3. Comparison of the qualities of the proposed substitution with that specified, including size, weight, durability, performance and visual effect.

4. Changes and coordination required in other elements of work because of the substitution.

5. Effect on the construction schedule, including other Contracts.

6. Cost data comparing the proposed substitution with the product specified.

7. Any required license fees or royalties.

8. Availability of maintenance service and source of replacement materials.

9. Samples when requested.

10. Statement explaining how use of product is beneficial to Owner.

E. Provide Contractor's Certification as specified above.

F. The Architect will review requests for substitutions with reasonable promptness, and notify the Contractor, in writing, of the decision to accept or reject the requested substitution.

1. When substitution is not accepted, provide specified product.

1.8 PRODUCT LIST

A. After the substitution period has ended and the Architect has reviewed requests and responded in writing, the Contractor shall develop the Approved Product List.

1.9 SUBSTITUTIONS PROPOSED DURING THE CONSTRUCTION PHASE

A. The following procedures apply beyond fourteen (14) calendar days after Contract Award.

B. Requests for substitutions made during the construction period shall be considered only if needed to replace unavailable products.

C. Substitutions not properly approved and not authorized shall be considered defective and shall be replaced by specified products.

D. All costs for review, research and modification of details on the part of the Architect or any consultants shall be borne by the Contractor.

E. If substitute products are used, any and all associated costs shall be paid by the Contractor, including additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate Prime Contractors, and similar considerations.

F. Submittal process described in this Section of the Specifications shall be followed. Submit the following:

1. Substitution Request Form. See the form included at the end of this section.

2. Written response to Architect’s questions / concerns.

3. All data requested.

4. Samples requested.

1.10 ARCHITECT’S REVIEW

A. Conditions: The Architect will receive and consider the Contractor's equivalent/substitution request when all or most of the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.

2. Proposed changes are in keeping with the general intent of Contract Documents.

3. The request is timely, fully documented and properly submitted.

4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.

5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.

6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

7. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.

8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.

9. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.

10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.

11. Where a proposed substitution involves more than one prime Contractor, each Contractor shall cooperate with the other Contractors involved to coordinate the Work, provide uniformity and consistency, and to assure compatibility of products.

B. Architect's Action: After receipt of the request for equivalent/substitution, the Architect will request additional information or documentation if necessary for evaluation of the request. Within two weeks of receipt of the request, or one week of receipt of the additional information or documentation, which ever is later, the Architect will notify the Contractor of acceptance or rejection of the proposed substitution.

1. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name.

2. If a substitution changes the cost and/or schedule of the project, acceptance will be in the form of a Change Order.

2.0 PART 2 – PRODUCTS (Not Applicable).

3.0 PART 3 – EXECUTION (Not Applicable).

END OF SECTION 012500

☐ **Equivalency Request** ☐ **Substitutions Request** ***(check one)***

TO: _____

PROJECT: _____

SPECIFIED ITEM:

Section Page Paragraph Description

The undersigned requests consideration of the following:

PROPOSED EQUIVALENT/SUBSTITUTION: _____

_____

_____

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified. Attach data in compliance with Division 01 Section "Equivalency."

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

The undersigned certifies that the following paragraphs, unless modified by attachments, are correct:

The proposed equivalent/substitution does not affect dimensions shown on Drawings.

The undersigned will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested equivalent/substitution.

The proposed equivalent/substitution will have no adverse affect on other trades, the construction schedule, or specified warranty requirements.

Maintenance and service parts will be locally available for the proposed equivalent/substitution.

The undersigned further states that the function, appearance, and quality of the proposed equivalent/substitution are equal or superior to the specified item.

Submitted by:

Signature: _____

Firm: _____

Address: _____

_____

Date: _____

Telephone: _____

For use by the A/E

O Approved O Approved as noted

O Not Approved O Received too late

By: _____

Date: _____

Remarks: _____

Attachments

SECTION 012900 -PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Do not permit submittals marked "Revise and Resubmit" to be used at the Project site, or elsewhere where work is in progress.

1.2 SUMMARY

A. This section covers the requirements and procedures for the schedule of values and applications for payment.

1.3 DESCRIPTION

A. Submit the Schedule of Values to the Construction Manager, within ten (10) day of Award of Contract for review and approval.

B. The Schedule of Values shall be the basis of Contractor's Application for Payment.

1.4 FORM OF SUBMITTAL

A. Submit typewritten Schedule of Values on AIA Documents G702/CMa and G703.

B. Provide dollar values for labor and material for each category of work, broken out by each location, per building and SED number, addition and renovation, wing, area, floor, etc

C. Provide separate line items for each delivery of equipment and/or major material.

D. Refer to Example found in Section 00 85 20 – Project Forms and Documents.

1.5 PREPARING SCHEDULE OF VALUES

A. Itemize separate line item cost for each of following general cost items.

1. Performance and Payment Bonds
2. Project Insurance
3. Mobilization (Total cost not to exceed 0.005% of total contract value)
4. Demobilization
5. Field Supervision (Total cost paid equally on a monthly basis based on duration of project)
6. Surveys and Layout
7. Temporary Facilities
8. Project Meetings
9. Project Safety
10. Cleaning-Up (Daily) (Total cost paid equally on a monthly basis based on duration of project)
11. Mock Ups and Samples
12. Coordination Drawings

13. Submittals and Shop Drawings
14. Operations and Maintenance Manual (including construction record drawings)
15. As-Built Drawings
16. Testing & Commissioning
17. Training
18. Project Close-Out. An amount of at least one percent (1%) of the Contract value shall be carried for this line item, but not less than $25,000 nor more than $50,000.
19. Warranties
20. Punchlist
21. Each Allowance associated with the Contract
22. Each Alternate accepted
23. Each Change Order as it is issued

B. Each line item total shall include a proportionate part of overhead and profit.

1.6 REVIEW AND RESUBMITTAL

A. After review by Construction Manager, revise and resubmit Schedule of Values, as needed.

B. First Application for Payment will not be approved until Construction Manager and/or Architect approves Schedule of Values.

1.7 REQUIREMENTS AND SUBMITTAL PROCEDURE

A. Labor Rate Breakdown

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 in section 00 85 20 " Project Forms and Documents". Prime Contractors shall also secure and submit an hourly labor rate breakdown for each of the Subcontractor's classifications contracted with the Prime Contractor.
2. Furnish separate pages for each time period for which labor rates are effective.
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 changes for approved time and material Work is charged.

B. Submit Preliminary (Pencil) Applications for Payment to the Construction Manager by the last day of each month.

1. If off-site material storage is included, the pencil pay app must include vendor invoice, photographs and a certificate of property insurance coverage for the address at which the materials are stored. The certificate must include the owner, architect and Construction Manager as additional insureds.
2. Pencil pay apps will be reviewed the first week of the following month.

C. Upon receipt of reviewed pencil pay app, the Contractor prepares and submits a formal pay app to the Construction Manager.

1. Must be notarized and include SED project number.

2. Must include Waiver of Lien for Prime Contractor; Lien Waivers for subcontractors and/or vendors must be included if requested by Construction Manager.
3. Must include Certified Payroll from the Prime and all subs for the billing period. Certified Payroll to conform to DOL requirements.
4.

D. Billing for change work will only be authorized once the work is complete and an Allowance Authorization documents has been issued or a Change Order has been fully executed by all parties.

1.8 FORMAT AND DATA REQUIRED

A. All amounts shall be rounded to WHOLE DOLLARS on the Application form.

B. All substantiating data and attachments required by the Contract Documents shall accompany each Application for Payment upon submission in the form required by the Construction Manager.

C. When the Construction Manager requires additional substantiating data, Contractors shall promptly submit suitable information with a cover letter.

D. Payments will not be allowed on work items without approved Submittals.

E. All payment applications and required documentation are to be in the form of PDF files and delivered via email to the Construction Manager.

1.9 FINAL APPLICATION FOR PAYMENT

A. Completion of all Work includes completion of all items noted on all Punch Lists, which have been forwarded to the Contractors.

B. Upon final completion of all work, Contractors shall submit an Application for Final Payment, which shall include:

1. Executed "Final Release" (Final Waiver of Claims and Liens and Release of Rights).
2. Contractor’s Affidavit Of payment Of Debt And Claims, AIA Document G706.
3. Contractor’s Affidavit Of Release Of Liens, AIA Document G706A.
4. Executed "Final Release of Lien" from each Subcontractor and Supplier written on the form in section 00 85 20.
5. Executed "Consent of Surety Company to Final Payment"(AIA Document G707), if applicable.

C. Full and Final Payment will not be made until the following have been supplied, approved and accepted by the Owner, Construction Manager and the Architect.

1. One (1) year written warranty.
2. Current certificate of insurance as outlined in Article 11, General Conditions A232, to coincide with the warranty period.
3. The required number of copies of all written guarantees, warranties, operating and maintenance manuals, and test results.
4. Documentation that all verbal and written instructions and instruction sessions required by the Contract have been completed.

5. The required number of copies of all Project Record Documents including "As-built" drawings, approved Shop Drawings and Product Data.
6. All materials and equipment required as stock.
7. Any other requirement of the Contract Documents which is outstanding.

1.10 REQUISITIONING INSTRUCTIONS

A. Any payment application submitted using other forms than those specified will be returned. Submission of all required forms is a condition precedent to payment.

B. The Partial Waiver of Lien is to be for the current requisition. The Final Waiver of Lien is to accompany the final requisition.

C. All insurance certificates and bonds must be submitted and approved in accordance with the contract requirements prior to submitting or processing of requisitions. NO PAYMENTS WILL BE MADE UNTIL SATISFACTORY INSURANCE CERTIFICATES AND BONDS ARE RECEIVED..

D. Time and Material work is handled by the issuance of standard Change Orders to the contract or Field Orders authorizing use of an Allowance.

E. All Time and Material work must be verified by Daily Field tickets signed by the Construction Manager Superintendent. Contractor must obtain the written approval of the Superintendent for all field tickets. Field tickets without the Superintendent's approval will not be processed.

F. Invoices for completed work, with copies of signed field tickets, are to be submitted to the Construction Manager for issuance of a Change Order or Field Order.

END OF SECTION 012900

SECTION 013100 - PROJECT COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Each Contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific trade contractor.

1.3 GENERAL PROJECT COORDINATION

A. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections that depend on each other prime contractors for proper installation, connection, and operation.

1. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
2. Make provisions to accommodate items scheduled for later installation.
3. Each Prime Contractor shall provide a layout drawing of all wall, floor, ceiling and roof penetrations that they require to the General Construction Contractor and Construction Manager. The General Construction Contractor will be responsible to provide layout and wall penetrations based on the penetration drawing provided by Each Prime Contractor requiring a penetration.
4. Each Prime Contractor is responsible for providing fire caulk or sound caulk from their penetrating device to the adjacent construction.
5. If is there is a required sleeve for the penetration, it is the Prime Contractors' responsibility requiring the penetration to provide the sleeve as well as the fire caulk or sound caulk of the sleeve to the penetrating device.
6. Schedule work and cooperate with others to avoid delays, interferences, and unnecessary work, conforming to the construction schedule.

B. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work.

D. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

E. Coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.

F. In the event that penetration drawings are not received prior to wall, floor, ceiling, or roof construction, the Prime Contractor requiring the penetration will bear all responsibility for layout, sleeves, cutting, patching, and fire / sound caulking the required penetration.

1.4 SURVEY AND RECORDS

A. General: Working from lines and levels established from existing conditions and by the property survey, the General Construction or Sitework Contractor shall establish and maintain benchmarks and other dependable markers. These benchmarks and markers are established to set lines and levels for Work at each story of construction and elsewhere as needed to properly locate each element for Project. Each Prime Contactor shall calculate and measure required dimensions, and locate its Work in coordination with such benchmarks. Drawings shall not be scaled to determine dimensions.

B. Procedure: Before proceeding with the layout of actual Work, each Prime Contractor shall verify the layout information indicated, in relation to the property survey, existing benchmarks, and existing conditions. As work proceeds, check every major element for line, level and plumb. Record deviations for required lines and levels and upon detection, promptly advise the Construction Manager of deviations exceeding indicated or recognized tolerances. Each Prime Contractor shall record deviations on the Project Record Drawing.

1.5 COORDINATION DRAWINGS

A. Coordination Drawings: Prepare Coordination Drawings <u>for all areas</u>, by building, floor, area and/or phase, of the project. Close attention should be implemented where limited space availability necessitates maximum utilization of space for efficient installation of different components; in the following manner:

1. Mechanical, Electrical and Plumbing Prime Contractors are responsible to prepare coordination drawings to a Scale of 1/4” = 1’-0” or larger; detailing major elements, components, and systems of mechanical and electrical equipment and materials in relationship with other systems, installations, and building components. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are of importance to the efficient flow of the Work, including but not limited to the following:

    a. Proposed locations of ductwork, piping, conduit, equipment, and materials.
    b. Clearances for installing and maintaining insulation.
    c. Clearances for servicing and maintaining equipment, including tube removal, filter removal, and space for equipment disassembly required for periodic maintenance.
    d. Equipment connection and support details.
    e. Exterior wall and foundation penetrations.
    f. Fire rated wall, floor, ceiling, and roof penetrations.

g. Sizes and location of required concrete pads and bases.
h. Valve stem movement.
i. Sleeves.

2. Prepare floor plans, elevations, and details to indicate penetrations in floors, walls, and ceilings and their relationship to other penetrations and installations. Clearly define relationships between sleeves, piping, ductwork, conduit, ceiling grid, lighting, fire sprinkler, HVAC equipment and other mechanical, plumbing, and electrical equipment with other components of the building such as beams, columns, ceilings, and walls.

3. Prepare reflected ceiling plans to coordinate and integrate installations of air outlets and inlets, light fixtures, communication systems components, sprinkler, and other ceiling mounted items.

4. Resolve conflicts between trades, prepare composite coordination drawings and obtain signatures from all affected Prime Contractors on original composite drawings. Submit coordination drawings to the Architect/Engineer and Construction Manager.

5. Mechanical, Electrical and Plumbing Prime Contractors are to first submit their respective shop drawings for approval, to the Architect / Engineer, in order to make any necessary changes prior to going through the coordination process.

6. Coordination drawings to be signed off by affected Contractors <u>within 45 days of Notice to Proceed</u>. A Coordination drawing timeline schedule shall be developed and tracked.

7. The coordination drawings shall be coordinated with the construction & phasing schedule.

8. **The routing process will begin with the HVAC Contractor who shall take the lead in the coordination of their work with all affected trades.**

9. **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 (Scale: 1/4" = 1'-0" or larger). These drawings shall be completed by a qualified HVAC draftsperson. All Architectural features shall be accounted for in preparation of this drawing; i.e., permanent, casework, interior columns, partitions, finish ceiling and height, lighting and roof elevations, etc. The HVAC Contractor will provide a black line drawing showing all of the approved ductwork. HVAC Contractor is to locate all piping with orange lines. Forward drawings to the Plumbing Contractor.**

10. **The Plumbing Contractor is to locate the plumbing lines with blue lines, and resolve all conflicts and determine locations and elevations, and forward drawing to the Fire Protection or Electrical Contractor.**

11. **The Electrical Contractor to indicate all lighting fixtures, panels with associated clearances, duct banks, bus duct, conduit racks and all individual conduits 1 1/2" and larger in with green lines, and resolve all conflicts and determine locations and elevations and forward to the General Construction Contractor.**

12. **The General Construction will have the last coordination review. Provide overlaid coordination drawings for all General Construction work and resolve all conflicts. All Architectural features shall be detailed clearly, i.e. permanent casework, interior columns, partitions, finish ceiling and roof elevations, etc. Provide a ceiling lay out detailed coordination drawing showing ceilings, lights, diffusers, etc.**

13. Contractors to provide underground coordination drawings for all underground utilities; show exact location of piping stub ups, floor drains, etc. as required.

14. All Prime Contractors shall have the option to provide coordination drawings using a computer aided design (CAD) or similar software at no additional cost to the Owner. Prime Contractors shall be responsible for all costs associated with obtaining backgrounds from the Architect/Engineer.

15. All coordination meetings will be held in the Construction Managers field office. As each coordination drawing is completed, Contractors are to meet with the Construction Manager to review and resolve all conflicts on the coordination drawings. Contractors are required to distribute shop drawings, cut sheets & submittals to other Prime Contractors where appropriate. Approved coordination drawings will also be available for reviewing at the Construction Managers field office.

16. All Contractors shall provide a hard copy of the coordination drawings for review by the Architect/Engineer.

17. Once complete and signed off, the HVAC, Plumbing and Electrical Contractors will submit dimensioned wall and slab penetration drawings and housekeeping pad drawings to the appropriate parties.

18. If the coordination drawing process is not complete, Mechanical, Electrical and Plumbing Contractors will provide wall penetration drawings to the General Construction no later than five (5) days prior to wall erection.

19. All Prime Contractors must install the work in accordance with the coordinated drawings at no additional cost to the Owner. No additional compensation will be made for extra ductwork offsets, piping and/or conduit or retrofit work due to improper component location, or lack of Contractor(s) coordination.

20. All Prime Contractors shall take special care in verifying with the Electrical Contractor that the equipment matches the characteristics of the power being supplied. The Electrical Contractor is similarly bound.

21. The Mechanical, Electrical and Plumbing Drawings are schematic in nature and are not intended to show every offset and detail. The Mechanical, Electrical and Plumbing Contractors will make adequate provisions in their bid to accommodate the actual conditions, provide all required ductwork, piping and conduit offsets per the coordination drawings, without additional cost to the Owner.

1.6 LOCATION STREAMERS

A. The Mechanical, Electrical and Plumbing Contractors shall hang streamers from 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 Architect/Engineer's review. In addition, the Contractors 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 / electrical systems requiring that access.

END OF SECTION 013100

SECTION 013120 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Each Contractor shall participate in al project meetings in order to facilitate coordination between trades.

1.3 DESCRIPTION

A. Construction Manager shall schedule and administer project meetings.

B. Architect/Engineer and Owner may attend meetings.

1.4 PRE-CONSTRUCTION MEETING

A. Schedule within fifteen (15) days after notice of award of Contracts.

B. Attendance:
   1. Construction Manager
   2. Architect/Engineer
   3. Contractor and pertinent Subcontractors
   4. Owner's Representative

C. Minimum Agenda:
   1. Introduction and sign in of attendees.
   2. Contractor to submit:
      a. List of major Subcontractors and Suppliers.
      b. Tentative procurement and construction schedule.
      c. Staff names.
      d. Preliminary Submittal Schedule.
      e. Labor Rate Sheet: Provide for each trade classification of Prime Contract workforce on form per Section 00 85 20 “Project Forms and Documents.”
   3. Construction Manager to provide overview of projected construction milestones and schedules.
   4. Designation of responsible personnel for coordination of work between Contractors.
   5. Safety and job rules.
   6. Change Orders: Overhead and profit markups.
   7. Distribution of Contract Documents.
   8. Shop drawing, product data, and samples.
   9. Record Documents.
   10. Use of premises:
      a. Field office and storage area.
      b. Owner's requirements.

c. Identification badges.
d. Working hours.
e. Telephone use.

11. Project Orientation.
12. Project Safety requirements and training.
13. Distribution of Contract Documents.
14. Major equipment deliveries and priorities.
15. Coordination Drawings.
16. Clean-up procedures.
17. Location and time for progress meetings.

1.5 PREINSTALLATION CONFERENCES

A. Construction Manager shall conduct pre-installation conferences at Project site before each construction activity that requires coordination with other construction and as identified in individual specification Sections as follows:

B. Attendees: Prime Contractor, Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Construction Manager shall advise Architect of scheduled meeting dates.

C. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

1. Deliveries.
2. Possible conflicts including compatibility problems.
3. Conformance with Construction Manager's Project construction schedule.
4. Projected weather limitations.
5. Manufacturer's written recommendations.
6. Warranty requirements and manufacturers inspection notification.
7. Acceptability of substrates.
8. Testing and inspecting requirements, if any.

D. Construction Manager: Record significant conference discussions, agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within five (5) days of the meeting.

1. Do not proceed with installation if Conference is not successfully concluded. Construction Manager shall initiate required actions to resolve impediments to performance of Work and reconvene the Conference at the earliest date feasible.

1.6 PROGRESS MEETINGS

A. Schedule for regular weekly Foreman Meetings will be set up at the Pre-Construction Meeting.

B. Schedule for regular weekly / biweekly Project Manager and Architect Meetings will be set up at the Pre-Construction Meeting.

C. Attendance:

1. Construction Manager
2. Contractors' Project Superintendent
3. Contractors' Project Manager
4. Subcontractors pertinent to agenda
5. Architect and Engineer
6. Owner's Representative

D. Minimum Agenda:

1. Review of Safety issues.
2. Review minutes of previous meeting.
3. Review and note field observations, problems, and decisions.
4. Identify present problems and necessary resolutions.
5. Contractors' shall provide two / three week look ahead schedules to be reviewed in conjunction with the project master schedule.
6. Review status of shop drawings and submittals.
7. Product procurement & deliveries.
8. Status of RFI's.
9. Coordinate occupancy arrangements and access requirements with Owner as required.
10. Status of Change Events.
11. Owner issues.
12. Architect & Engineers issues.
13. Open Discussion.
14. Location and time for next meeting.

E. Contractors are required to attend Progress Meetings. Meeting attendees shall have the authority to make decisions on behalf of the firm they represent

1.7 OTHER MEETINGS

A. Pre-demolition Conference.
B. Steel Erection Conference.
C. Coordination Drawing Meetings – Refer to Specification 01 31 00 for additional information.
D. Specified Coordination or Pre-Installation Meetings as specified.

1.8 PERSONNEL

A. Supervision: Each Prime Contractor's project manager and field superintendent throughout project duration shall have five years experience minimum in the proposed position.

1. Two (2) years minimum of the five (5) years experience for position shall be with Prime Contractor's firm.

B. Should in the opinion of the Construction Manager, Architect or Owner, the project manager, superintendent or other Contractor's employees or subcontractor personnel prove unqualified for their position at any point in the project, the Construction manager shall issue a letter stating that the person is to be removed from involvement in the project.

1. Action must be made by Prime Contractor within seven working days of receipt of such letter.

C. Staff Names: At Preconstruction conference each Prime Contractor shall submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities. List business addresses and telephone numbers, including business office, field office, cellular, and facsimile. Each prime contractor shall submit a list of emergency contact names and phone numbers.

1. Post copies in Project meeting room, each temporary field office and at each temporary telephone.

Provide corresponding identification badge number for each staff listed.

END OF SECTION 013120

SECTION 013200 - CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section addresses the requirements of construction schedules.

1.3 DESCRIPTION

A. All Prime Contractors are required to submit a schedule based on the milestone dates in the following schedule to the Construction Manager for review and comments no later than ten (10) days after Notice to Proceed for the Work is issued.

B. Each Prime Contractor shall prepare an Overall Project Schedule for the project. All schedules submitted must be neat, legible, and reproducible. Contractors Overall Project Schedule shall be submitted on a full size print and in electronic format. Schedules are subject to the review and acceptance of Construction Manager.

C. Construction Manager shall approve or request modification of schedule submittals and work with the Contractor to achieve overall project goals. Construction Manager will establish and update a master project schedule based upon approved schedule submittals.

D. Each Prime Contractor is to review the approved schedule throughout the project and attempt to resolve any conflicts. Unresolved conflicts, or any problem that may affect overall project goals, shall be immediately brought to the attention of the Construction Manager.

E. Two / Three-week look ahead schedules shall be prepared weekly / biweekly by each Prime Contractor and shall correlate with the overall Project Schedule. These plans are to be submitted to the Construction Manager two (2) working days prior to the scheduled site progress meetings. Two / Three-week look ahead schedules shall be submitted on contractor's own forms subject to Construction Manager’s review and approval. Construction Manager will review these plans and publish same, as approved, to other Prime Contractors.

F. Contractors shall provide a Recovery Schedule as requested by the Construction Manager and provide all labor force necessary, including overtime, to recover any lost time in the Schedule.

1.4 PROJECT SCHEDULE DESCRIPTIONS

A. Each Prime Contractor's initial Overall Project Schedule shall be based upon and respond to overall project objectives and information available to the Contractor through direct observation, research and examination of project documents, and discussions with Construction Manager. This initial schedule shall be submitted within ten (10) days of Notice to Proceed. Each Prime Contractor shall indicate significant events such as submittals, shop drawings, material ordering, fabrication, delivery, coordination precedents, installation, testing, and turnover by area or system as agreed with Construction Manager. Points of interface between Subcontractors

and other Prime Contractors, prerequisite work, durations, milestones and overall project objectives shall be detailed. Once approved by Construction Manager, the schedule shall be considered the Master Project Schedule, signed off by all trades, and will be updated bi-weekly by the Construction Manager.

B. Construction Manager's Master Project Schedule will be based upon project objectives and each Prime Contractors' approved schedules as described above. Weekly reviews of the Master Schedule will be held with the Prime Contractor's throughout the duration of the project. Each Prime Contractor shall participate in developing, implementing, updating and maintaining the master schedule. In addition each Prime Contractor is to review the approved Project Schedule and attempt to identify conflicts with other trades. Conflicts, or any problem that may affect overall project goals, shall be immediately brought to the attention of Construction Manager.

C. Integrate delivery dates of critical items of materials and equipment into the schedule. Each Prime Contractor shall keep the Construction Manager apprised of the status of shipping dates, shipments and deliveries throughout the project. Each Prime Contractor shall communicate with suppliers as necessary to assure compliance and shall be responsible for notifying the Construction Manager of changes in delivery dates, which affect the progress of the project. Contractors must take all steps to ensure that materials are delivered to the project when required by the schedule. All costs associated with material delays shall be borne by the Contractor responsible for the delay.

D. All Contractors shall cooperate with each other in the installation and construction of each Contractor's work and in such manner as the Owner or Construction Manager may direct. All Contractors shall control and coordinate the work of their subcontractors. The Owner or Construction Manager may request the modification of the work schedules of individual contractors so the whole project progresses as one unit. The award of more than one Contract for the Project requires sequential or otherwise interrelated contractor operations, and may involve delays in the progress of any individual Contractor's work. Accordingly, the Owner and/or the Construction Manager cannot guarantee the unimpeded operations of any Contractor. Each Contractor acknowledges these conditions caused by the presence or operations of other Contractors engaged upon the Project.

E. Contractor understands that time is of the essence and will provide sufficient manpower to successfully complete the contract work in accordance with the Project Schedule. A shortage of labor in the industry shall not be accepted as an excuse for not properly manning the project.

F. The Milestone Schedule that follows is to be used as the baseline for developing the Prime Contractors Schedule as noted in item "A" above.

END OF SECTION 013200

Maine Endwell CIP – Phase 5 Homer Brink Gym Addition

Attachment "A" to Section 01 32 00 Construction Schedule

MILESTONE SCHEDULE

Any utility distribution to occupied spaces cannot be interrupted prior to July 1st, 2027.

No site work is allowed in the Bus Loop and the Upper Playground (drawings B E3.01 & B E3.02) prior to July 1st, 2027 and is to be completed no later than September 3rd, 2027.

Mass Demolition (any structural or building envelope component above 4'-0" of finished floor elevation) cannot start until July 1st, 2027 and must be substantially completed by September 3rd, 2027.

The Domestic Water distribution system to occupied areas must be operational by August 20th, 2027.

The Temporary Partition (fully assembled with 1 hour fire rating) must be complete by August 20th, 2027.

The existing Heating Hot Water distribution system to occupied areas must be operational by September 30th, 2027.

Completion of the entire project (work on site) is to be completed prior to August 31st, 2028.

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the requirements for the submittals procedures.

1.3 SUBMITTAL REQUIREMENTS

A. Each Prime Contractor shall provide a Submittal log indicating submittals required for each section of the Specifications that are applicable to their contract.

B. One (1) copy of the Submittal log shall be provided to the Construction Manager with submittal date column filled in, indicating anticipated dates for submission of each submittal. Establish anticipated submittal dates after coordinating delivery lead times with the current Project Master Schedule. This log shall be completed and submitted before first Application for Payment will be approved. This log is required within fifteen (15) days of contract award.

C. Schedule all submittals to be completed within sixty (60) days after Contract execution unless otherwise specified. Indicate items requiring more than sixty (60) days with an explanation for the additional time and on what dates they will be submitted. The dates indicated for each submittal shall take into account the lead-time required for ordering and fabricating of the various items. It is the Contractor's responsibility to expedite submittals / product data as required to maintain the Construction Master Schedule.

1.4 PROCUREMENT LOG REQUIREMENTS

A. All Prime Contractors shall submit to the Construction Manager an "Equipment / Fixture Procurement Report" two (2) weeks after the Contractor is notified of award. The Contractor shall list all equipment items, which are being purchased, drawing submittals, samples, etc., for a complete composite report.

B. 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.

1.5 SHOP DRAWINGS

A. Original drawings, prepared by Contractor, Subcontractor, manufacturer or distributor, which illustrate some portion of the work illustrating 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 X 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.
4. Submittals traced or copied from Contract Drawings are not acceptable and will be returned without review.

1.6 PRODUCT DATA

A. Manufacturers catalog sheets, brochures, diagrams, schedules, performance charts and other standard descriptive data.

1. Modify product data to delete information that is not applicable to project.
2. Supplement standard to provide additional information applicable to project.
3. Clearly mark each copy to identify applicable materials, products or models.
4. Show dimensions and clearances required.
5. Show performance characteristics and capacities.
6. Show wiring or piping diagrams and controls.

1.7 SAMPLES

A. Physical examples to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged.

1. Office samples to be of sufficient size and quantity to clearly illustrate:
   a. Functional characteristics of product or material, with related parts and method of attachment.
   b. Full range of color samples.

B. Field samples and mock-ups:
1. Erect at project site at location acceptable to the Construction Manager and Architect/Engineer.
2. Construct samples or mock-up complete, including work of all trades required in finish work.

1.8 CONTRACTOR RESPONSIBILITIES

A. Do not start, fabricate or install work requiring submittals until submittals meeting Contract Requirements have been reviewed and returned to the Contractor.

B. In the event material and/ or equipment is installed prior to obtaining approval of shop drawings, and in the sole opinion of the Owner's Agent, this material and/ or equipment does not meet the specifications, the Contractor shall be liable for the removal and the replacement at no additional cost to the contract.

C. Review, stamp and sign shop drawings, product data and samples prior to submission to Architect through the Construction Manager.

D. Before release of fabrication or purchase, Contractor must verify:

1. Field measurements.
2. Field construction criteria.
3. Catalog numbers and other data.

E. Coordinate each submittal with requirements of Work and Contract Documents.

F. Contractor's responsibility for mistakes and oversights in submittals is not relieved by the Construction Manager or Architect/Engineer's review of submittals.

G. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Architect/Engineer's review of submittals unless Architect/Engineer gives written acceptance of the specific deviations.

H. Notify the Construction Manager and Architect/Engineer in writing, at time of submission, of deviations in submittals from requirements of Contract Documents.

I. This Project shall utilize an FTP site coupled with email communication.
   1. The process for use of King + King FTP Site shall be as follows:
      i. Prime Contractor shall upload PDF copy of submittal with cover sheet to designated folder for the respective Prime Contractor.
      ii. The Contractor shall send email notification to the Construction Manager and designated Architect / Engineer representatives
      iii. Architect/Engineer shall review and comment on the submittal.
      iv. Once a submittal has been reviewed, the reviewed submittal will be uploaded by the Architect/Engineer to the designated folder for the respective Prime Contractor.
      v. The Architect / Engineer shall send email notifications to the Construction Manager and the Contractor who submitted.

1.9 SUBMISSION REQUIREMENTS

A. Schedule submissions to allow at least fifteen (15) working days for review. Large submissions may take longer.

B. For product data and shop drawings, submit one pdf copy.

C. Submit at least the number of samples specified in each technical section and no less than two (2) each, plus the number that Contractor needs returned.

D. Submittal Cover Sheet:

   2. Submittal cover sheets <u>must</u> be filled out completely and attached to <u>each</u> copy of <u>all</u> submissions. Submissions without the Submittal Cover Sheet will be returned without review.

E. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Coordinate transmittal of different types of submittals for related elements of the work so processing will not be delayed by the need to review submittals concurrently for coordination.

a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

F. Reviewed submittals for field use shall be bound adequately so as to remain in tact during use in jobsite environment, and shall be indexed with labeled dividers if they include more than one product or material.

G. Submissions shall include:

1. Cover sheet provided by Architect; an electronic template will be provided to each contractor.
2. Date and revision dates.
3. Submittal Number; a specific numbering system will be distributed to each contractor. Submittals without correct number will be returned, unreviewed.
4. Relationship to all adjacent structure or materials.
5. Field dimensions, clearly identified as such.
6. Applicable standards.
7. Notification and identification of deviations from Contract Documents via cover letter and clear markings on the submission.
8. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements and compliance with Contract Documents.
9. Submittals without Contractor's stamp will be returned without being reviewed.
10. Additional pertinent data.
11. Work or item represented by submittal.

H. Submittals shall be identified by a specific number as defined by the Construction Manager.

I. All items that require color and/or finish selection shall be submitted as soon as possible. Color and/or finish selections require hard samples; selections will not be made based on brochures or copies. A submittal cover shall be uploaded, properly numbered and detailed, to signify a hard sample is being delivered. The Architects' review and coordination of color selections cannot be completed until all items are submitted.

J. Submissions that are incomplete due to lack of Contractor's approval, lack of proper identification, incorrect number or type of submittal items or similar reasons shall be returned without action for correct submission.

1.10 RESUBMISSION REQUIREMENTS

A. Shop Drawings

1. Revise initial drawings as required and resubmit as specified for initial submittal.
2. Indicate on drawings changes that have been made other than those requested by the Architect/Engineer.

B. Product Data and Samples: Submit new data and samples as required for approval.

1.11 CONTRACTOR'S DISTRIBUTION OF SUBMITTALS

A. Distribute electronic copies of shop drawings and/or product data which carry an Architect/Engineer stamp to:

1. Contractor’s Superintendent
2. Contractor's Subcontractors and Suppliers, as required for coordination.
3. All affected entities

1.12 ARCHITECT/ENGINEER

A. Review by the Architect will be for conformance to design intent, materials, and general dimensions, but shall not relieve any Contractor of their responsibility for furnishing proper equipment or materials nor for undetected errors in the drawings, unless attention to same is noted in writing at the time of submission of Drawings. Review of shop drawings does not relieve Contractor of responsibility for proper fit, not detail design of connections nor for supplying all necessary material or quantities.

B. Review of separate items does not constitute review of an assembly in which item functions.

C. Stamp and initial or sign to indicate review of submittal.

D. Notify Contractor and Construction Manager, via email, when a reviewed submittal has been uploaded to the King + King FTP Site.

E. Do not permit submittals marked "Revise and Resubmit" to be used at the Project site, or elsewhere where work is in progress.

1.13 ADDITIONAL INSTRUCTIONS

A. The Construction Manager may from time-to-time issue additional instructions to the Contractor as may be necessary to amplify, augment, modify or clarify the Contractor Documents. These may be in the form of drawings, Specifications, interpretations, orders and supplemental agreement, Change Order or minor change. Submittals shall be resubmitted and otherwise kept up to date as required by additional instructions.

END OF SECTION 013300

SECTION 013400 - NYSED REQUIREMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. NYSED REGULATIONS / SCHOOL DISTRICT REGULATIONS

1. The occupied portion of any school building shall always comply with minimum requirements necessary to maintain a certificate of occupancy.

2. General safety and security standards for construction projects per NY State Education Department code Rule 155 shall be met by all Contractors.

    a. All construction materials shall be stored in a safe and secure manner.

    b. Fences around construction supplies or debris shall be maintained.

    c. Gates shall always be locked unless a worker is in attendance to prevent unauthorized entry.

    d. During exterior renovation work, overhead protection shall be provided for any sidewalks or areas immediately beneath the work site or such areas shall be fenced off and provided with warning signs to prevent entry.

    e. Workers shall be required to wear photo-identification badges at all times for identification and security purposes while working at occupied sites and submit a current NYS Drivers License to be scanned by the District's T-Pass software.

3. Separation of construction areas from occupied spaces: Construction areas which are under the control of a Contractor and, therefore, not occupied by staff or students shall be separated from occupied areas. Provisions shall be made to prevent the passage of dust and contaminants into occupied parts of the building. Periodic inspection and repairs of the containment barriers must be made to prevent exposure to dust or contaminants. Gypsum board must be used in exit ways or other areas that require fire rated separation. Heavy duty plastic sheeting may be used only for a vapor, fine dust or air infiltration barrier, and shall not be used to separate occupied spaces from construction areas.

    a. A specific stairwell and/or elevator should be assigned for construction worker use during work hours. In general, workers may not use corridors, stairs or elevators designated for students, staff or public.

    b. No material shall be dropped or thrown outside the walls of the building.

    c. All occupied parts of the building affected by renovation activity shall be cleaned at the close of each workday. Buildings occupied during a construction project shall maintain required health, safety and educational capabilities at all times that classes are in session.

4. Prior to beginning construction or demolition, contractors shall submit a plan detailing how exiting required by the applicable building code will be maintained.

5. Prior to beginning construction or demolition, contractors shall submit a plan detailing how adequate ventilation will be maintained during construction.

6. Construction and maintenance operations shall not produce noise in excess of 60 dba in occupied spaces or shall be scheduled for times when the building or affected building spaces are not occupied or acoustical abatement measures shall be taken. Noise level measurements (dba) shall be taken with a type 2 sound level meter in the occupied space in a location closest to the source of the noise.

7. All Contractors 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 occupied portions of the building or air intakes.

8. All Contractors 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. Contractor schedules are to include sufficient time for "off-gassing" of volatile organic compounds introduced during construction before occupancy is allowed, as part of meeting project schedule milestones.

9. All areas to be disturbed by renovation and demolition will be tested for Lead & Asbestos prior to the start of the project.

10. Lead:

    a. Surfaces that will be disturbed by reconstruction must have a determination made as to the presence of lead. Any construction or maintenance operations which will disturb surfaces that contain lead will require abatement of those areas pursuant to protocols detailed in the "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing" (June 1995; U.S. Department of Housing and Urban Development, Washington, D.C. 20410; available at the Office of Facilities Planning, Education Building Annex, Room 1060, State Education Department, Albany, NY 12234). All areas scheduled for construction as well as areas of flaking and peeling paint shall be tested for the presence of lead and abated or encapsulated in accordance with the above noted guidelines.

11. Large and small asbestos abatement projects as defined by 12NYCRR56 shall not be performed while the building is occupied. Whenever air clearance is required for an asbestos project, T.E.M. will be used for final air clearance.

    a. Asbestos: Asbestos abatement protocols. All asbestos abatement projects shall comply with all applicable Federal and State laws including but not limited to the New York State Department of Labor industrial code rule 56 (12 NYCRR 56), and the Federal Asbestos Hazard Emergency Response Act (AHERA), 40 CFR part 763 (Code of Federal Regulations, 1998 Edition, Superintendent of Public Documents, U.S. Government Printing Office, Washington, DC 20402; 1998; available at the Office of Facilities Planning, Education Building Annex, Room 1060, State Education Department, Albany, NY 12234). Minor asbestos projects defined by 12 NYCRR 56 as an asbestos project involving the removal, disturbance, repair, encapsulation, enclosure or handling of 10 square feet or less of asbestos or asbestos material, or 25 linear feet or

less of asbestos or asbestos material may be performed in unoccupied areas of an occupied building in accordance with the above referenced regulations.

i. Asbestos Industrial Code Rule 56: Large and small asbestos abatement projects as defined by 12NYCRR56 shall not be performed while the building is occupied except as determined by AICR56 with proper isolation.
ii. Labor Rule 56 and AHERA both must be followed for asbestos projects in schools. Whenever air clearance is required by Labor Rule 56 or AHERA, TEM must be used for the final air clearance test.
iii. Labor Rule 56 addresses final air clearance for tall asbestos work including minor glove bag projects when there is a breaching containment. AHERA requires that TEM be used for final air clearance for work in schools, but does not speak to minor project air clearance.
iv. NOTE: It is NYS State Education Department's interpretation that the term "building" as referenced in this section, means a wing or major section of a building that can be completely isolated from the rest of the building with a sealed non-combustible construction. The isolated portion of the building must contain exits, which do not pass through the occupied portion, and ventilation systems must be physically separated and sealed at the isolation barrier.

12. Exterior work such as roofing, flashing, siding, or soffit work may be performed on occupied buildings provided proper variances are in place as required, and complete isolation of ventilation systems and at windows is provided. Care must be taken to schedule work so that classes are not disrupted by noise or visual distraction.

13. Use of shipping containers as material storage facilities shall be readily operable from the egress side of the door without the use of a key or special knowledge or effort. Every container shall have a louver incorporated into one side. The louver shall be large enough to aid ventilation according to the materials stored inside.

14. Occupied spaces shall be protected against visual distraction due to construction activities.

15. All holes in floors and walls shall be sealed with a fire-resistive material. All contractors shall provide fire-resistive materials throughout the project in association with the work of their contract. All Contractors shall maintain proper operation of fire extinguishers, fire alarm, and smoke/fire detection systems and all items shall be maintained throughout the project.

16. During construction, daily inspections of occupied areas shall be conducted by each Contractor's Superintendent to assure that construction materials, equipment or debris do not block fire exits or emergency egress windows.

17. All personnel involved with the construction project will be required to wear a Photo Identification Badge, when on the project jobsite. Any person related to the project, who does not have one of these photo identification badges, will not be allowed on site.

18. **All personnel involved with the construction project during school hours will be subjected to the district's T-Pass security screening, this will require all personnel to have a current and legal NYS driver's License.**

END OF SECTION 013400

SECTION 013410 - CONTRACTOR USE OF PREMISES

PART 1 - GENERAL

1.1 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. Contractor shall limit their 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 ensure security for the Owner's property.

G. The contractors shall take all measures necessary to protect the existing landscaping in and around the construction site. No alterations of any kind to trees scheduled to remain will be permitted.

H. In the utilization of ground area, each Contractor shall protect pavement, curbs, walks, structures, and other permanent components that are designated to remain and shall maintain such protection. Any damage to the area used shall be repaired and/or restored to previous condition by the responsible contractor.

I. Each Contractor and their Subcontractors, material suppliers and fabricators shall provide full and free access for the Owner's Representative, Consultants and/or other designated representatives of the Owner to inspect job materials, equipment, fabrication facilities and storage locations, both at and away from the job site.

J. Work in Owner occupied spaces shall be restricted to essential activities. Such activities shall be scheduled in advance with the Construction Manager and Owner.

1.2 AREA AVAILABLE FOR CONTRACTOR'S USE

A. **The Contractor shall confine its 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. A Logistics Area is included in this project**

to be established by the General Contractor, each Prime Contractor is responsible for their own storage and temporary office space within this area.

B. 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 prior to the start of work.

C. Only project managers and field superintendents will be permitted to park within the construction fence.

END OF SECTION 013410

SECTION 013420 - SITE CONDITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the site condition requirements without limiting the generality implied by the Specifications and Drawings. Refer to Section 01 10 00 for summary / scope of work.

1.3 PRE-BID INSPECTION & EXAMINATION

A. The Contractor warrants and represents that prior to submitting his Bid, that they are satisfied as to the location and nature of the work and the quantity, quality, type and nature of both surface and subsurface structures and materials likely to be encountered.

1.4 BORINGS

A. Any data on subsurface conditions that may have been obtained by the Owner prior to the advertisement for bids, through test borings, test pits, seismic explorations, or other means, was obtained by the Owner for its sole use and purpose. Any such data, known or recalled as of the date of Advertisement or Notice for Bids, are shown on separate drawings or in separate schedules and reports which are not any part of the Contract Documents. All such data are made available to Bidders, the Contractor, and other interested parties only as a convenience and without express or implied representation, assurance or other guarantee that any of the information is complete, correct, adequate, or representative of a true or typical picture of subsurface conditions on the site.

B. The Contractor, both during its status as Bidder and after execution of the Contract, shall satisfy themselves as to the nature, character, quality, and quantity of above ground and below ground conditions likely to be encountered. Any reliance on data made available by the Owner shall be at the Contractor's sole risk.

C. No claim whatsoever shall be made by the Contractor against the Owner or Construction Manager for or on account of such data available, or neglected to be made available, by the Owner or Construction Manager.

D. The Contractor at any time, and any holder of Bidding Documents during the period between advertisement for and receipt of bids, will be permitted to make test borings, test pits, soundings or similar subsurface investigations on the Site. Prior to making these investigations the Contractor and/or holder of Bidding Documents must notify the Construction Manager when and where they propose to make such investigations.

E. The locations where test boring samples may be examined, if any, is given in the Subsurface Exploration and Geotechnical Evaluation Report.

1.5 PROTECTION OF EXISTING STRUCTURES

A. The Contractor shall at all times have onsite, suitable and sufficient plant and 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.

B. The Contractor shall, at its own expense, support and sustain in their places and protect from direct or indirect damage all water, gas, steam, air or other mains or pipes, sanitary and storm water sewers and drains, conduits, subways, service connections, buildings, poles, wires, fences, pavements, sidewalks, curbs, railways, trees and other structures and property and appurtenances thereto on or in the vicinity of the site, and shall assume all liability for damage thereto, including damage arising out of settlement or lateral movement of walls of excavations, whether occurring during performance of the work or the 12-month period of guarantee.

C. In the event of damage or danger to any structure or facility, the Contractor shall immediately notify the Construction Manager, and shall promptly repair or protect the structure, at its own expense, as the Construction Manager may direct.

1.6 EXISTING STRUCTURES BELOW GROUND

A. The Contract Drawings show the location and character of certain existing subsurface structures and facilities likely to 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 the Contractor shall satisfy itself as to the accuracy and completeness of such information. The Contractor shall not be relieved from any of its obligations, nor be entitled to claim for damages or additional compensations, sustained or arising out of inadequacy or inaccuracy of the information given.

1.7 ABANDONED STRUCTURES

A. Any structures, facilities or appurtenances therefore which are abandoned or become so by reason of the work, shall, at the Contractor's expense, be broken up and filled with approved material, if directed by the Construction Manager.

1.8 LATENT SUB-SURFACE CONDITIONS

A. In the event that latent sub-surface conditions are found to materially differ from those on which the plans and Specifications are based, the Contractor shall immediately notify the Construction Manager before they are disturbed. After prompt investigation, the Architect/Engineer will determine what changes, if any, should be made in the Plans and Specifications because of the revealed conditions, and shall advise the Construction Manager.

1.9 ADJUSTMENT OR CHANGES OF EXISTING STRUCTURES

A. If an underground pipe or other structure requires realignment or relocation not included in the Plans or Specifications, the Architect will issue a clarification and the Construction Manager will issue a Change Order for such work, and the Contractor shall be compensated. The Contractor shall strip or uncover and support or sustain the structure at its own expense prior to such Change Order, as part of its work under the original Contract, and shall not be entitled to claim for damage or delay due to its presence or discovery.

B. Wherever existing utilities comes within limits of the work; the Contractor shall notify both the Construction Manager and the Utility before in any way disturbing it. Any work of realignment, relocation, removal or extension of the utilities shall be done as mutually agreed by the Utility, the Contractor and the Architect. The Contractor shall maintain satisfactory drainage of the excavation at all times from revelation of the structure until completion of its realignment or readjustment. Interruption of service by utilities shall be kept to a minimum. Prior to interruption, Contractor to notify Owner/Construction Manager of precise condition, and provide a brief event schedule outlining procedures and anticipated times of delays.

C. The Contractor shall not cause nor permit interference with or hindrance to any municipal department, individual, public service corporation, or other company in protecting its structures and facilities, nor in removing, replacing or relocating it.

1.10 NOTIFICATION OF OTHER PARTIES

A. In addition to notices to Utilities and others required elsewhere herein, the Contractor shall give written notice of its proposed construction operations to the owner of all public and private utilities at least seven days in advance of breaking ground in any area in which a utility is located. Copies of each such notice shall be simultaneously sent to the Construction Manager.

END OF SECTION 013420

SECTION 013430 - PROJECT PROCEDURES FOR RENOVATIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

B. Specification Section 01 51 00 – Temporary Facilities

1.2 SUMMARY

A. This Section includes the requirements for the project procedures during renovations and phased construction.

1.3 MAINTENANCE OF BUILDING CIRCULATION AND EXITS

A. Contractor shall maintain circulation corridors, exits and stairs in all building areas occupied by Owner or Public. The existing buildings will remain operational and open to the public during portions of the work.

B. Where temporary emergency egress from Owner occupied areas through construction areas are required; those areas shall be adequately protected to ensure the safety of occupants through the construction areas. This would include but not limited to protective – covered walkway through the construction area. It shall be the responsibility of the General Construction Contractor to provide this protection as directed by the Construction Manager.

C. All construction areas shall be securable by lock and key. If the construction areas are means of emergency egress from the construction area or means of egress from the Owner occupied areas through construction areas; the doors shall swing outward in the direction of egress. These doors shall be provided with “panic” hardware installed in a manner to allow egress outward from the building, but upon closing of the door prevent unauthorized entry into the building. Contractors shall anticipate that these barriers and protective items will need to be modified and adjusted during the course of construction and shall include these changes as part of their Base Bid.

D. All Contractors shall cooperate with the Owner with respect to security of the building and the rules that they have developed to maintain security. This would include but not be limited to keeping doors locked all the times to prevent unauthorized entry into the construction area or into the Owner’s occupied areas. The Contractor shall not admit entrance into the existing facility or the construction area any person not associated with the construction project. All patrons, staff and visitors shall enter the building through designated entrances as established by Owner and/or Construction Manager. All construction personnel shall enter the construction area and/or the existing facility at entrances designated by the Construction Manager.

1.4 TEMPORARY CONTAINMENT PARTITIONS

A. Temporary dust containment partitions will be provided in accordance with Section 01 51 00 – Temporary Facilities to isolate all areas of construction work from occupied portions of existing buildings to prevent the spread of dust, odors and noise.

B. The work areas shall be maintained at a negative pressurization with respect to adjoining occupied areas. For the purpose of dust and contaminant isolation from occupied areas, containment partitions shall be air tight and capable of maintaining the construction areas negatively pressurized with respect to the occupied areas. Non-air tight construction barriers will not constitute acceptable containment partitions.

C. In the event a failure of a containment barrier during the course of work, when directed by the Construction Manager or the Indoor Environmental Consultant, Contractors shall cease work in the potentially affected area until the containment barrier failure is corrected and acceptable pressurization is restored and verified.

PART 2 - PRODUCTS

2.1 REMOVED MATERIALS AND EQUIPMENT

A. General:

1. All materials and equipment to be removed as part of the work shall become the property of the Contractor and be removed from the jobsite at the Contractor's expense unless otherwise shown on the drawings or specified.
2. When debris is transported through occupied areas of the existing building, receptacles shall be sealed and covered to eliminate the spread of dust and debris.

B. Items Retained by Owner:

1. The items that remain the property of the Owner after removal by the Contractor will be listed in each Contract or indicated on the drawings.
2. These items shall be carefully removed by the Contractor without damage and turned over to the Owner.

C. Items Re-Used As Part of the Work:

1. Items indicated to be re-used shall be carefully removed and stored by the Contractor until such time as they may be reinstalled.
2. Items removed by others and indicated to be reinstalled per the Contract Documents are to be coordinated with the Construction Manager for pickup.

END OF SECTION 013430

SECTION 013440 - WORK UNDER SPECIAL CONDITIONS

PART 1 - DESCRIPTION

1.1 WORK AFTER DARK

A. Unless specifically required elsewhere herein, no contractor shall perform exterior work after dark except in emergencies. When time permits, a contractor shall inform the Construction Manager in advance of such work and shall obtain approval. When time does not permit advance notice to the Construction Manager, they shall inform the Construction Manager at the earliest possible moment.

B. The placing of concrete shall be so scheduled as to be started early enough in daylight hours to allow sufficient time for the completion of the section under construction before dark, including the work of finishers.

C. When, in order to minimize interference with existing structures or utilities, or maintain traffic, it may, in the opinion of the Construction Manager, be expedient or necessary to do work after dark, such work shall be performed by the Contractor at no additional cost to the Owner, and the Contractor shall provide adequate lighting.

D. Nothing in this section shall preclude any contractor from working on the interior of the building after dark, as long as sufficient electric lights exist in the area of the work.

E. No mass demolition is to occur weekdays after 4:00pm weekdays, including hydraulic demolition equipment and trucking of debris without the approval of the Construction Manager.

1.2 SATURDAY/OVERTIME/SHIFT WORK

A. Each Contractor shall provide at all times sufficient manpower to maintain the progress of the Work to the satisfaction of the Construction Manager and/or the Owner. The option to work extended hours and weekends with prior agreement with the Construction Manager may be made available to meet the schedule. Costs for premium time shall be borne by each individual Prime Contractor.

B. No Saturday or overtime work shall be scheduled or performed by Contractors without prior approval by the Construction Manager. Proposed work schedule shall be submitted to the Construction Manager a minimum of 24 hours prior to proposed start unless otherwise directed or approved by Construction Manager.

1. Maintain security of the building at the end of the night shift by insuring that all windows and doors are closed and locked.
2. Maintain security in the building by not allowing anyone other than its own work force to enter the building
3. Insure that the work area is usable for its intended purpose for the next days use by the Owner. This includes that all Life/Safety Systems are in place and functioning, that all other systems are functioning properly and usable, the areas can be occupied, and all construction debris, dust, materials and tools are removed.

4. Cooperate and coordinate night shift activities with the Owner's maintenance/custodian staff that is on duty.

1.3 WORK ON SUNDAYS OR HOLIDAYS

A. No Contractor shall work on Sundays, or locally recognized legal Holidays, except in an emergency, and then shall confine its operations to only the work considered necessary to be performed at such time. In the event of an emergency, Contractor shall notify the Construction Manager the same day or as soon as possible.

1.4 LABOR REQUIREMENTS

A. With all of the above items, each Contractor shall secure the necessary or required paperwork and approval of the NYS Department of Labor and applicable Trade Unions prior to commencing work under these conditions. Filing of NYS Department of Labor Dispensation Form is highly encouraged to be executed prior to commencing work.

1.5 WORK IN STORMS

A. If required by the Construction Manager, masonry work, and the mixing and placing of concrete shall be halted during rainstorms, and all fresh work shall be immediately protected with suitable coverings. The Contractor shall keep a sufficient quantity of such coverings at the site at all times.

B. No paving, exterior painting, fine grading, seeding or roofing shall be done during rain or snowstorms.

C. All roof deck shall be watertight at the end of each day. Contractor shall only remove what they can replace that same day.

D. Because this project exists where snow storms can occur, the Construction Manager along with the Owner will work out a system where construction personnel will be notified if the contractors and their personnel are not to report for work because the construction site is closed, the roads to the building are closed, or if it is just too dangerous for construction personnel to report for work. As part of this notification system it will also advise construction personnel when they need to leave the project because of an impending snowstorm. The Contractors and their personnel are to abide by the notifications for their own safety and the safety of others. The contractors will not be due any additional compensation if it is deemed the project is closed due to weather or if they are sent home because of impending weather.

1.6 WORK IN COLD WEATHER

A. Certain Specifications contain provisions prohibiting the performance of certain work in cold weather or outlining the conditions under which such work may be so performed. In the absence of specifics mentioned elsewhere in the Contract Documents, the judgment of the Construction Manager shall govern in any case where temperature may adversely affect or prevent the performance of quality work. Contractor(s) will not be due any additional compensation if the work is stopped due to weather.

END OF SECTION 013440

SECTION 013500 - PROJECT SAFETY AND HEALTH

Project Safety Program

Contractor acknowledges that it has read and understands any and all requirements set forth in the Contract Documents Contractor will comply, and ensure that anyone for whom Contractor is responsible, including, without limitation, vendors, subcontractors, suppliers and material persons of any tier and their respective its employees, workers, laborers or agents, comply, with all project safety requirements. In the event of a conflict between the project safety requirements and the Contract Documents, the more stringent shall take precedence and govern. Contractor acknowledges that this specification is not an all-inclusive listing of all of Contractor's obligations with regard to health and safety and Contractor agrees and warrants that it shall comply with any and all applicable Federal, State and Local laws, rules, regulations and requirements set forth in the Contract Documents.

Contractor's supervisor is responsible for adherence to the Project Safety Program on site. As part of these responsibilities Contractor's supervisor shall:

i. Enforce and maintain at a minimum two employees on site during all working hours
ii. Enforce the safety requirements set forth in their Companies Site Specific Safety Plan (SSSP)
iii. Stop unsafe acts by workers that are not in compliance with the SSSP
iv. Conduct daily coordination meetings
v. Conduct emergency evacuation drills
vi. Ensure all workers and visitors wear proper personal protective equipment (PPE) at all times while on the Project site
vii. Conduct new worker safety orientations
viii. Enforce the smoking & tobacco policy
ix. Enforce the drug and alcohol policy
x. Collect and make available safety data sheets (SDS)
xi. Prepare Job Safety Analysis (JSA) for all safety critical activities
xii. Complete and sign pre-task plans (PtPs) with workers
xiii. Obtain permits to work (PtW) where required
xiv. Conduct weekly tool box talks
xv. Enforce compliance with the project safety requirements

Pursuant to the contract, the Project safety program includes, but is not necessarily limited to, the items listed below:

1. **Project Safety Program Overview:** The objective of this program is to reinforce the belief that people are our most valued assets and their safety shall receive top priority in the day-to-day decision making process. Contractor acknowledges that health and safety is a top priority and that everyone has the right to go home Incident and Injury Free. Accordingly, Contractor must ensure a safe work environment for all workers and the surrounding public.

2. **Drug and Alcohol Policy:** All project sites, offices and trailers are designated as drug & alcohol free. Any worker consuming alcohol or illegal drugs on the Project or found under the influence of alcohol and or such drugs will be removed from the Project.

3. **Contractor's Site Specific Safety Plan (SSSP):**

1. Contractor. General requirements for the SSSP include:
    i. This plan shall be completed and made available to the Owner's Representative for review two weeks following award of the contract but in any event, no later than two weeks prior to the Project kick off meeting or in the case no such meeting occurs, commencement of the Project.
    ii. This plan shall supplement existing Contractor's written safety programs and focus on Site Specific Safety elements associated with the Contractor's Work.
    iii. The plan shall be submitted in both electronic format and print format and signed by Principal of the Contractor.

4. **Pre-Mobilization Kick-off Meeting:** The Contractor's project manager, superintendent(s), and foremen shall attend a pre-mobilization kick-off meeting at the project site a minimum of two (2) weeks prior to mobilization to review the Contractor's SSSP and applicable health and safety policies and procedures. At a minimum, the following items shall be reviewed:
    i. JSA portion of the SSSP for high and medium risk activities.
    ii. Daily/weekly/monthly requirements, meetings and documentation required
    iii. Project schedule
    iv. The Contractor's Fall Prevention Program is in line with the project policies and procedures regarding fall prevention.
    v. Project Fire Prevention Policy and requirements
    vi. Project work hours and delivery requirements
    vii. Project Specific Worker Orientation
    viii. PPE and welfare requirements
    ix. Training record requirements
    x. List of equipment to be utilized

5. **Contractor Supervision / Designated Safety Representative:**
    1. High-risk activities (including demolition, steel, concrete and erection work), additional shifts, or manpower increases may require additional safety representatives.
    2. The Contractor's safety representative is required to ensure all tasks requiring JSA's or permits are in compliance with these requirements , maintain records, organize and participate in training sessions, attend weekly, monthly and quarterly safety meetings.

6. **Pre-Task Planning (PtP):** The Contractor shall complete a daily Pre-task Plan before work begins for each task. The Contractor's Pre-task Plan form shall identify the task being performed, the steps taken to accomplish the task, the hazards of performing the task, the proposed actions for mitigation of the hazard and the responsible parties for ensuring that the plan is followed. The pre-task plan must be communicated to all workers performing the task in the form of a daily huddle. For high risk activities, a more detailed JSA (see the following paragraph), the Pre-task Plan review with the workers must include relevant risk mitigation strategies from the JSA. The PTP shall be made available, if requested, to the Owner's Representative. All workers present at their specific pre-task plan meeting must sign the Pre-task Plan before work begins.

7. **Job Safety Analysis (JSA):**
    1. The Contractor shall complete the Job Safety Analysis for the following high risk activities including but not limited to: demolition works, ground works including excavations and piling operations, lift or hoist installation and removal, non-standard lifting operations, operations likely to endanger the public, work on or adjacent to live electrical and pressurized systems, work in confined spaces and hazardous atmospheres,materials management including manual

handling focusing soft tissue injury prevention, work with any hazardous chemical or substance having a flammability or reactivity hazard rating of 4, work at heights, frame erection, façade work, roof work and window installation and cleaning.

2. JSAs shall outline in detail, the job steps, operations or sequence involved in performing the work and potential hazards and risks associated with them. JSAs shall reference the equipment used and any associated inspections, calibrations, registration, maintenance or testing of the equipment. Details of safety inspections and emergency procedures shall be outlined.

8. **After Hours / Weekend Work:** All work activities out of normal working hours, including at night, shall have appropriate updated JSAs and PtPs in place. Contractor shall provide at least forty-eight (48) hours' notice of any work to be performed to the Owner's Representative Project Superintendent.

9. Worker Safety Orientation:

1. The Contractor is responsible for conducting site orientations to all employees of the Contractor and their subcontractors, suppliers, material persons and vendors before commencing workon site.

10. **Daily Coordination Meetings:** The Contractor is to provide field supervision, when requested, to attend Coordination Meetings.

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11. **Weekly Safety Toolbox Talks:** The Contractor shall conduct and document a weekly safety toolbox talk. The toolbox talk shall be relevant to the Contractor's Work and include applicable PtP for the week's work and any PtW and JSAs. A copy of the toolbox talk and attendance record shall be made available to the Owner's Representative upon request.

12. **Incident Reporting and Root Cause Analysis Requirements:** Contractor shall report all first aid incidents, injuries, near misses, environmental incidents and/or property damage to the Owner's Representative as soon as possible following the event and submit at a minimum an initial incident report to the Owner's Representative within 24 hours of the incident. Any incidents classified as critical must be investigated and will require Contractor's management to attend and participate in the root cause analysis (RCA) investigation. Any corrective actions required following the RCA investigation must be immediately implemented by the Contractor.

13. Safety Notices / Violations:

1. Contractor acknowledges their sole responsibility for safety and shall correct any conditions or acts promptly.
2. In the event the Contractor fails to correct any condition or act, the Owner's Representative reserves the right to take any necessary action and the costs of such actions shall be the responsibility of the Contractor in accordance with the terms and conditions of the contract.

14. Disciplinary Program:

1. Owner's Representative reserves the right to direct the Contractor to remove any worker at any time.
2. Owner's Representative reserves the right to direct the Contractor to remove any worker at any time in its sole discretion in the event such worker violates any health and safety policy, procedure or requirement, including, but not limited to, the following issues for which the project has a zero tolerance policy:
    i. Confined space requirements
    ii. Lock-out, tag-out requirements
    iii. Harassment of any kind
    iv. Possession of firearms
    v. No Smoking Policy
    vi. Alcohol or Drug Use
    vii. Falls Prevention Infractions
    viii. Security Infractions
    ix. Violence in the Workplace
    x. Tampering or destroying any critical fire safety equipment
    xi. Hot works violations
    xii. Any willful damage to the Owner's property.

SECTION 014533 - SPECIAL INSPECTION AND TESTING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Special Inspection and Testing shall be in accordance with Chapter 17 of the 2020 Building Code of New York State (BCNYS).

B. The program of Special Inspection and Testing is a quality assurance program intended to ensure that the work is performed in accordance with the Contract Documents.

C. This specification section is intended to inform the Contractor of the Owner's quality assurance program and the extent of the Contractor's responsibilities. This specification section is also intended to notify the Approved Special Inspection Agency, hereinafter referred to as the Special Inspector (SI), and other Agents of the SI, of their requirements and responsibilities.

D. The SI shall be the individual in charge of the Special Inspection and Testing program. The SI shall supervise and review the work of the Inspection and Testing Agents for each inspection or test. As explained in BCNYS Section 1704.2.1, the SI, and all its Agents, shall demonstrate competence to the satisfaction of the Registered Design Professional in Responsible Charge (RDPIRC) and the Building Official (BO) for inspection or testing of the particular type of construction or operation requiring special inspection or testing. Unless otherwise noted or agreed upon by the RDPIRC and the BO, the minimum qualifications are as follows:

1. Concrete Construction:

    a. Inspection: ACI Concrete Construction Special Inspector, ICC Reinforced Concrete Special Inspector, NICET Level II, Engineer-in-Training (EIT) with relevant experience, or Professional Engineer (PE) with relevant experience.
    b. Field Testing (sampling, slump and temperature testing only): ACI Field Testing Technician – Grade 1, or NICET Level I.
    c. Field Testing (other than sampling, slump and temperature testing): ACI Field Testing Technician – Grade 1, or NICET Level II.
    d. Laboratory Testing: ACI Concrete Laboratory Testing Technician – Grade 1, or NICET Level II.

2. Masonry Construction:

    a. Inspection: ICC Structural Masonry Special Inspector, EIT with relevant experience, or PE with relevant experience.
    b. Field Testing: ACI Field Testing Technician – Grade 1, or NICET Level II.
    c. Laboratory Testing: ACI Concrete Laboratory Testing Technician – Grade 1, or NICET Level II.

3. Structural Steel Construction and Steel Construction other than Structural Steel (as defined by AISC 303-2016):

a. Inspection (excluding welded connections): ICC Structural Steel and Bolting Special Inspector, EIT with relevant experience, or PE with relevant experience.
b. Inspection of Welded Connections: ICC Structural Welding Special Inspector, AWS Welding Inspector (WI) or Senior Welding Inspector (SWI). An AWS Associate Welding Inspector (AWI) is permitted to be used if under the direct supervision of WI, who is on the premises and available when weld inspection is being conducted.
c. Non-Destructive Testing (NDT) of Welded Connections: ASNT NDT Level II.

4. Soils:

a. Inspection: ICC Soils Special Inspector, EIT with relevant experience, PE with relevant experience.
b. Testing (sampling, sieve analysis, unit weight and moisture content tests only): NICET Level I.
c. Testing (other than sampling, sieve analysis, unit weight and moisture content testing): NICET Level II.

5. Sprayed Fire-Resistant Materials (SFRM): Registered Architect (RA) with relevant experience, EIT with relevant experience, PE with relevant experience, ICC Spray-Applied Fireproofing Special Inspector, or ICC Fire Inspector I.

6. Fire-Resistant Penetrations and Joints: IFC Firestop Special Inspector, Intertek Qualified Firestop Inspector, or ICC Firestopping Credential of Learning Achievement (CLA).

E. Frequency of Special Inspection or Testing: The individual special inspections and tests shall be performed either continuously or on a periodic basis, as defined below, in accordance with the Statement of Special Inspection and Testing:

1. Inspection, Continuous: The full-time observation of work requiring special inspection by an approved Special Inspector, or Agent, who is continuously present in the work area where the work is being performed.
2. Inspection, Periodic: The intermittent observation of work requiring special inspection by an approved Special Inspector, or Agent, who is present in the work area where the work has been or is being performed, and at the completion of the work.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

B. Statement of Special Inspection and Testing: See Section 014533a.

1.3 PAYMENT

A. The Owner, or an Owner's Authorized Agent, shall engage and pay for the services of the SI and its Agents.

B. The Contractor shall be responsible for the cost of any retesting or reinspection of work which fails to comply with the requirements of the Contract Documents, and any costs related to correcting the deficient work.

1.4 CONTRACTOR'S RESPONSIBILITIES

A. The Statement of Special Inspection and Testing shall be submitted to the BO with the application for Building Permit.

B. The Contractor shall cooperate with the SI and its Agents, so the special inspections and testing can be performed without hindrance.

C. The Contractor shall provide adequate OSHA-compliant access for the Special Inspector and its Agents to perform their work. This includes access to pipe scaffolds, swing-stage scaffolds, and any other method of accessing the work areas that the Contractor or its agents use to perform the work of the Contract.

D. The Contractor shall review the Statement of Special Inspection and Testing and shall, unless other agreed arrangements have been made, be responsible for coordinating and scheduling inspections and tests. The Contractor shall notify the SI and/or the applicable Agents at least 24 hours in advance of a required test or inspection. Uninspected work requiring inspection may be rejected solely on that basis.

E. The Contractor shall provide incidental labor and facilities to:

1. Provide access to the work to be inspected or tested.
2. Obtain and handle samples at the site or at the source of products to be tested.
3. Facilitate tests and inspections.
4. Store and cure test samples.

F. The Contractor shall keep at the project site: the latest set of construction drawings, field sketches, approved shop drawings, and specifications for use by the Special Inspector and its Agents.

G. The Special Inspection and Testing program shall in no way relieve the Contractor of his obligation to perform work in accordance with the requirements of the Contract Documents or from implementing an effective Quality Control program. All work subjected to special inspection and testing shall first be reviewed by the Contractor's Quality Control personnel.

H. The Contractor shall acknowledge each item listed as a discrepancy by the Special Inspection and Testing program in writing to the RDPIRC and Owner. The acknowledgment shall identify whether or not the discrepancy has been corrected, is in compliance with the contract documents, and is ready for re-inspection.

I. The Contractor shall ensure all products, materials or assemblies are properly labeled so the Special Inspector or its Agents can easily observe the label to confirm compliance with the approved construction documents.

J. The Contractor shall be solely responsible for construction site safety.

K. If the Contractor intends to utilize a fabricator that is not approved for fabricating components in their shop without shop special inspections and/or testing by the Special Inspector, the Contractor must request and receive approval from the DPIRC and BO prior to engaging the fabricator. Contractor shall reimburse Owner for any added costs for shop special inspections or testing that may be required.

1.5 LIMITS ON SPECIAL INSPECTOR AND TESTING AGENT AUTHORITY

A. Neither the SI nor its Agents may release, revoke, alter, or expand on the requirements of the Contract Documents.

B. The SI and its Agents will not have control over the Contractor's means and methods of construction.

C. Neither the SI nor its Agents shall be responsible for construction site safety.

D. Neither the SI nor its Agents shall have authority to stop the work.

1.6 RESPONSIBILITIES OF SPECIAL INSPECTOR AND INSPECTION AND TESTING AGENTS

A. The SI shall submit to the RDPIRC and BO for review and approval a copy of their qualifications and qualifications of all Agents, which shall include the names and qualifications of each of the individual inspectors and technicians who will be performing inspections or tests.

B. The SI, and all Agents, shall disclose any past or present business relationship or potential conflict of interest with the Contractor or any of the Subcontractors whose work will be inspected or tested.

C. The SI and its Agents shall have adequate equipment to perform the required tasks. The equipment shall be periodically calibrated in accordance with equipment manufacturers' recommendations.

D. The SI and its Agents shall notify the Contractor of their presence on the job site at the start of any required inspection or test.

E. The SI and its Agents shall notify the Contractor of the results of any inspection or test upon completion of the inspection or testing task, including any discrepancies noted. The SI shall report any discrepancies from the Contract Documents found during an inspection. If the discrepancies are not corrected during the inspection, the SI shall notify the RDPIRC and BO prior to the completion of that phase of work. Reports shall document all discrepancies identified and the corrective action taken.

F. The SI and its Agents shall prepare detailed reports of each inspection or test and submit the reports within three days of the inspection or test. Reports shall be in electronic format (legible handwritten reports may be submitted if final typed copies are not available) and include:

1. Date and time of test or inspection.
2. Name of inspector or technician and name of inspection or testing firm representing.
3. Location of specific areas tested or inspected.
4. Weather conditions (temperature, wind speed, humidity, cloud cover, etc.).

5. Description of test or inspection, including applicable ASTM standards.
6. Results of inspection and\or testing.
7. Identification of discrepancies.
8. Indication that contractor was made aware of discrepancies.
9. Whether or not the discrepancies were corrected.
10. Signature of inspector, or of the individual overseeing the inspection of testing.

G. Inspection and testing reports shall be submitted to the RDPIRC, Owner or Owner's Authorized Agent, and BO, or as agreed upon at the Special Inspection and Testing pre-construction meeting.

H. A Special Inspection and Testing pre-construction meeting shall be held by the SI. The meeting shall include any Inspection and Testing Agents, the Contractor and any applicable subcontractors, the Owner or Owner's Authorized Agent, and the RDPIRC. The purpose of the meeting shall be to identify the specifics of the Special Inspection and Testing program, including, but not limited to, the following:

1. Identify the SI and Testing Agents.
2. Review this specification section and Statement of Special Inspection and Testing.
3. Determine the distribution list for inspection and testing reports.
4. Provide contact information.
5. Determine which party shall schedule inspections and testing.

I. The SI and its Agents shall notify the RDPIRC by telephone or email of any test results which fail to comply with the requirements of the Contract Documents.

J. At the completion of the work requiring special inspections or testing, each Inspection and Testing Agent shall provide a statement to the Special Inspector that all work was completed in substantial conformance with the Contract Documents and that all appropriate inspections and tests were performed.

1.7 FINAL REPORT OF SPECIAL INSPECTION AND TESTING

A. The Final Report of Special Inspection and Testing shall be completed by the SI and submitted to the RDPIRC, the Owner or Owner's Authorized Agent, and BO prior to the issuance of a Certificate of Use and Occupancy.

B. The Final Report of Special Inspections and Testing will document that all required inspections have been performed and that all discrepancies have been resolved. Any unresolved discrepancies shall be clearly noted.

1.8 SUBMITTALS BY OWNER TO THE BUILDING OFFICIAL

A. In addition to the submittal of the special inspection and testing reports in accordance with BCNYS Section 1704.2.4, reports and certificates shall be submitted by the Owner, or Owner's Authorized Agent, to the BO for each of the following:

1. Certificates of Compliance for the fabrication of structural, load-bearing or lateral load-resisting members or assemblies on the premises of a registered and approved fabricator in accordance with BCNYS Section 1704.2.5.1.

2. Certificates of Compliance for open-web steel joists and joist girders in accordance with BCNYS Section 2207.5.

PART 2 PRODUCTS (Not used)

PART 3 EXECUTION (Not used)

END OF SECTION 014533

STATEMENT OF SPECIAL INSPECTIONS

Project: MAINE-ENDWELL CSD HOMER BRINK ELEMENTARY GYM ADDITION

Location: 3618 BRIAR LANE, ENDWELL, NY 13760

Owner: MAINE-ENDWELL CSD

Owner's Address: 3618 BRIAR LANE, ENDWELL, NY 13760

Architect of Record: KING + KING ARCHITECTS

Structural Engineer of Record: ST. GERMAIN & AUPPERLE CONSULTING ENGINEERS, PLLC

This *Statement of Special Inspections* is submitted as a condition for permit issuance in accordance with the Special Inspection requirements of the Building Code. It includes a Schedule of Special Inspection Services applicable to this project as well as the name of the special inspector and the identity of other approved agencies intended to be retained for conducting these inspections.

The Special Inspector shall keep records of all inspections and shall furnish inspection reports to the Building Official, Structural Engineer and Architect of Record. Discovered discrepancies shall be brought to the immediate attention of the contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official, Structural Engineer and Architect of Record. The Special Inspection program does not relieve the Contractor of his or her responsibilities.

Interim reports shall be submitted to the Building Official, Structural Engineer and Architect of Record.

A *Final Report of Special Inspections* documenting completion of all Special Inspections and correction of any discrepancies noted in the inspections shall be submitted prior to the issuance of a Certificate of Use and Occupancy.

Job site safety and means and methods of construction are solely the responsibility of the Contractor.

Interim report frequency:
☒ Per attached schedule.

Prepared by: Richard P. Aupperle III, PE

11/21/2025

Signature *Date*

STATE OF NEW YORK
RICHARD P. AUPPERLE III
EXCELSIOR
No. 080469
LICENSED PROFESSIONAL ENGINEER

Design Professional Seal

Owner's Authorization:

Signature *Date*

Building Official's Acceptance:

Signature *Date*

Schedule of Special Inspection Services

Project: MAINE-ENDWELL CSD HOMER BRINK ELEMENTARY GYM ADDITION

The following sheets comprise the required schedule of special inspections for this project. The construction divisions which require special inspections are as follows:

- ☒ Soils and Foundations
- ☒ Cast-in-Place Concrete
- ☐ Precast Concrete
- ☒ Masonry
- ☒ Structural Steel
- ☒ Cold-Formed Steel Framing
- ☐ Spray Fire Resistant Material
- ☐ Wood Construction
- ☐ Exterior Insulation and Finish System
- ☐ Mechanical & Electrical Systems
- ☐ Architectural Systems
- ☐ Wood Truss Construction

Inspection Agents	Firm	Address
1. Engineer of Record **Richard P. Aupperle III, PE**	**St. Germain & Aupperle Consulting Engineers, PLLC**	**5711 W. Genesee St.** **Camillus, NY 13031** **(315) 488-3550**
2. Geotechnical Engineer/ Special Inspector/Testing Laboratory:	**Kenney Geotechnical Engineering Services, PLLC**	**6901 Herman Road** **Syracuse, NY 13209** **(315) 638-2706**
3. Geotechnical Engineer/ Special Inspector/Testing Laboratory:	**CME Associates**	**6035 Corporate Drive** **East Syracuse, NY 13057** **(315) 701-0522**
4. Geotechnical Engineer/ Special Inspector/Testing Laboratory:	**Atlantic Testing**	**6085 Court Street Road** **Syracuse, NY 13206** **(315) 699-5281**

Note: The inspection and Testing agent shall be engaged by the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the building official, prior to commencing work.

Seismic Design Category: **B**

Ultimate Design Wind Speed: **115 mph**

Wind Exposure Category: **B**

Qualifications of Inspectors and Testing Technicians

Project: MAINE-ENDWELL CSD HOMER BRINK ELEMENTARY GYM ADDITION

The qualifications of all personnel performing Special Inspection activities are subject to the approval of the Building Official. The credentials of all Inspectors and Testing Technicians shall be provided if requested. It is recommended that the person administering the Special Inspection program be a Structural Engineer or a Professional Engineer experienced in the design of buildings.

Key for Minimum Qualifications of Inspection Agents:

When the Structural Engineer of Record deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the *Agent Number* on the *Schedule of Special Inspections.*

PSE **Structural Engineer** – a licensed SE or PE specializing in the design of building structures. This may be required for the inspection of critical structural elements.

GE **Geotechnical Engineer** – a licensed PE specializing in soil mechanics and foundations. This may be required for the inspection of difficult soil conditions or deep foundations.

EIT **Engineer-In-Training** – a graduate engineer who has passed the Fundamentals of Engineering examination. This may be required for the inspection of elements that require some engineering training to properly evaluate.

ACI **American Concrete Institute - Level 1 Certified Concrete Field Testing Technician.** This certification is appropriate for individuals performing concrete sampling, slump tests, air-content tests, temperature tests, unit weight tests, and casting compression test cylinders.

AWS **American Welding Society – Certified Welding Inspector** (CWI). This certification is appropriate for individuals performing visual inspection of welds

ASNT **American Society of Non-Destructive Testing** – Level II or Level III. This certification is appropriate for individuals performing ultra-sonic testing of welds.

SMSI **Structural Masonry Special Inspector** – Certification by ICC.

SWSI **Structural Steel and Welding Inspector -** Certification by ICC.

SFSI **Spray-Applied Fireproofing Special Inspector -** Certification by ICC.

PCSI **Prestressed Concrete Special Inspector -** Certification jointly sponsored by ICC, BOCA and SBCCI with participation form PCI and PTI.

RCSI **Reinforced Concrete Special Inspector** - Certification jointly sponsored by ACI, ICC, BOCA and SBCCI.

MSI **Master Special Inspector -** Certification by ICC.

Schedule of Special Inspection Services

Project: MAINE-ENDWELL CSD HOMER BRINK ELEMENTARY GYM ADDITION

Soils and Foundations: NYSBC Table 1705.6

Item	Agent No. (Qualif.)	Scope
1.Shallow Foundations	2,3 or 4 GE	a) Verify site preparation at proposed spread and strip footings. (Continuous) Refer to NYSBC Table 1705.6
2.Controlled Structural Fill	1 PSE, 2,3 or 4 GE 2,3 or 4 GE	a) Review submittals for fill material source location and current NYSDOT acceptance number. (Periodic) b) Verify compaction of backfill. (Continuous)

Schedule of Special Inspection Services

Project: MAINE-ENDWELL CSD HOMER BRINK ELEMENTARY GYM ADDITION

Cast-in-Place Concrete: NYSBC Table 1705.3

Item	Agent No. (Qualif.)	Scope
1.Mix Design	1, PSE	a) Verify use of required design mix. (Periodic) Provide submittals as indicated in project specifications.
2.Material Certification	1, PSE	a) Verify material components of required design mix. (Periodic) Provide submittals as indicated in project specifications.
3.Reinforcement Installation	2, 3, or 4, ACI	a) Inspection of reinforcing steel installation prior to the placement of concrete as indicated in project specifications. (Continuous)
4.Formwork Geometry	2, 3, or 4, ACI	a) Inspection of concrete formwork prior to the placement of concrete as indicated in project specifications. (Periodic)
5.Concrete Placement	2, 3, or 4, ACI 2, 3, or 4, ACI	a) Inspection of concrete placement. (Periodic) b) Sampling fresh concrete and performing slump, air content, and determining the temperature of fresh concrete at the time of making specimens for strength tests as indicated in project specifications. (Continuous)
6.Evaluation of Concrete Strength	2, 3, or 4, ACI	a) Provide concrete strength tests at 7- and 28-day intervals as indicated in concrete specification section. (Continuous)
7.Curing and Protection	2, 3, or 4, ACI	a) Inspect concrete curing and heat/cold protection techniques (Periodic)

Schedule of Special Inspection Services

Project: MAINE-ENDWELL CSD HOMER BRINK ELEMENTARY GYM ADDITION

Masonry: NYSBC 1705.4

Item	Agent No. (Qualif.)	Scope
1.Material Certification	1, PSE	a) Verify material components of concrete masonry units, joint reinforcing, mortar, grout, and reinforcing bars. (Periodic) Provide submittals as indicated in the project specifications.
2.Mixing of Mortar and Grout	2, 3, or 4, SMSI	a) Verify proportions of site-prepared mortar and grout. (Periodic) Provide submittals as indicated in the project specifications.
3.Installation of Masonry	2, 3, or 4, SMSI	a) Verify construction of mortar joints (Periodic).
4.Reinforcement Installation	2, 3, or 4, SMSI	a) Verify specified size, grade, and type of reinforcement and connectors, and location of reinforcing. (Periodic). Provide submittals as indicated in the project specifications. b) Verify connection of masonry to other structural elements. (Periodic)
5.Grouting Operations	2, 3, or 4, SMSI	a) Verify grout space is clean (Periodic). b) Verify placement of reinforcement and connectors prior to grout placement (Periodic).
6.Weather Protection	2, 3, or 4, SMSI	a) Verify protection of masonry during cold weather (temp. below 40 degrees F) or hot weather (temp. above 90 degrees F). (Periodic)
7.Evaluation of Masonry Strength	2, 3, or 4, SMSI	a) Verify concrete unit masonry, mortar, and grout comply with strength requirements as outlined in project specifications. (Periodic) Provide submittals and test data as indicated in the project specifications.
8.Anchors and Ties	2, 3, or 4, SMSI, EIT	a) Verify size and locations of anchors and ties (Periodic).

Schedule of Special Inspection Services

Project: MAINE-ENDWELL CSD HOMER BRINK ELEMENTARY GYM ADDITION

Structural Steel: NYSBC 1705.2

Item	Agent No. (Qualif.)	Scope
1.Fabrication Certification/ Quality Control Procedures	1, 2, 3, or 4, PSE or SWSI	a) Shop fabrication to be AISC Certified OR fabrication shop to be inspected and provide written quality control procedures. Provide documentation.
2.Material Certification	2, 3, or 4, SWSI 2, 3, or 4, SWSI	a) Material verification of high strength bolts, nuts, and washers, and screws: Identification markings to conform to ASTM standards specified in the approved Construction Documents. Manufacturer certificate of compliance required. (Periodic) b) Material verification of structural steel and metal roof deck: Identification markings to conform to ASTM standards specified in the approved Construction Documents. Manufacturers certified mill test reports required. (Periodic)
3.Bolting	2, 3, or 4, SWSI 2, 3, or 4, SWSI	a) Inspection of high strength bolting: bearing type connections. (Periodic) 25% of Connections b) Slip-critical connections: (continuous and periodic)
4.Welding	2, 3, or 4, SWSI 2, 3, or 4, AWS 2, 3, or 4, AWS 2, 3, or 4, AWS 2, 3, or 4, AWS 2, 3, or 4, AWS	a) Provide verification of weld filler material: Identification markings to conform to AWS specified in the approved Construction Documents. Manufacturer certificate of compliance required. (Periodic). b) Inspection of Structural Steel Welding: All field welds (Periodic). c) Inspection of Structural Steel Welding: All Full penetration field welds (Continuous). d) Shear Studs: Hammer test 25% for weld e) Multi-pass fillet welds (continuous). Single-pass fillet welds great than 5/16 inch (continuous). f) Reinforcing steel-resisting flexural and axial forces in intermediate and special moment frames, and boundary

		elements of special reinforced concrete shear walls and shear reinforcement (continuous).
	2, 3, or 4, AWS	g) Shear reinforcement (continuous).
	2, 3, or 4, AWS	h) Other reinforcing steel (periodic).
5.Structural Details	2, 3, or 4, SWSI	a) Inspection of conformance to construction documents (Periodic).
	2, 3, or 4, AWS	b) Inspection of steel frame joint details for compliance with approved construction documents (periodic).
6. Metal Roof Deck and Comp Metal Floor Deck	2, 3, or 4, SWSI	a) Inspection of details and 25% of connections for conformance to construction documents (Periodic)

Schedule of Special Inspection Services

Project: MAINE-ENDWELL CSD HOMER BRINK ELEMENTARY GYM ADDITION

Cold-Formed Steel Framing: NYSBC 1705.2

Item	Agent No. (Qualif.)	Scope
1.Member Sizes	2,3 or 4, SWSI	a) Verify member sizes conform to construction documents. (Periodic)
2.Material Thickness	2,3 or 4, SWSI	a) Verify thicknesses for each light gage component. (Periodic)
3.Material Properties	1, PSE	a) Review submittals for conformance with construction documents (Periodic)
4.Mechanical Connectors	2,3 or 4, SWSI	a) Review connections/connectors conform to construction documents in size, length, and location. (Periodic)
5.Welding	2,3 or 4, AWS/ SWSI 2,3 or 4, AWS/ SWSI	a) Provide verification of weld filler material: Identification markings to conform to AWS specified in the approved Construction Documents. (Periodic) b) Inspection of Structural Steel Welding: All field welds. (Periodic)
6.Framing Details	2,3 or 4, AWS/ SWSI	a) Inspection of conformance to construction documents. (Periodic)

SECTION 015100 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Supplemental General Conditions and other Division 1 Specification Sections, apply to this section.

B. Section 01 10 00 – Summary of Work

1. In the event of a conflict between section 01 10 00 and this section, section 01 10 00 shall take precedence.

1.2 SUMMARY

A. This Section includes detailed requirements for temporary facilities and controls, including temporary utilities, support facilities, security and protection.

1.3 QUALITY ASSURANCE

A. Regulation: Each Prime Contractor / Subcontractor shall comply with industry standards and with applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:

2. Building code requirements
3. Health and safety regulations
4. Utility company regulations
5. Police, fire department and rescue squad rules
6. Environmental protection regulations
7. Health Department regulations
8. New York State Education Department Regulations

Standards: Each Prime Contractor shall comply with NFPA 241 “Standard for Safeguarding Construction, Alterations, and Demolition Operations”, ANSI-A10 series standards for “Safety Requirements for Construction and Demolition”, and NECA Electrical Design Library “Temporary Electrical Facilities”.

1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with the normal application of trade regulations and union jurisdictions.
2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.4 PROJECT CONDITIONS

A. Temporary Utilities: Each Prime Contractor shall prepare a schedule indicating dates for implementation and termination of each temporary utility for which the Prime Contractor is responsible. At the earliest feasible time or unless otherwise noted, when acceptable to the Owner, change over from use of temporary service to use of permanent service.

1.5 DESCRIPTION

A. Description: Each contractor shall provide its own temporary facilities unless noted otherwise. Including storage and office trailers, power, telephone, and all costs associated thereof.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Each Prime Contractor shall provide new materials. If acceptable to the Architect, undamaged, previously used materials in serviceable condition may be used. Provide materials suitable for use intended.

B. Temporary Containment Partitions

1. Nominal 3-5/8" – 25 gage metal stud.
2. Batt insulation.
3. Type X 5/8" fire rated gypsum wallboard with taped joints on both sides.
4. ½" fire rated plywood liner on the demolition side.
5. In lieu of 5/8" GWBX and ½" FRT plywood, Contractor may substitute one layer of 5/8" U.S. Gypsum Fiberock abuse-resistant type X gypsum wallboard on demolition side.
6. Containment partitions are to have a 6-mil flame retardant polyethylene liner.
7. Paint occupied side of partition: 1 coat primer, 1 coat paint.

C. Lumber and Plywood: Comply with requirements as outlined in the Specifications.

1. For fences and vision barriers, provide minimum 3/8 inch (9.5 mm) thick exterior plywood.
2. For safety barriers, temporary exit ramps, temporary entrances, and similar uses, provide minimum 5/8 inch (16 mm) thick exterior plywood.

D. Paint: Comply with requirements as outlined in the Specifications.

1. For job-built sheds, fences, and other exposed lumber and plywood, provide exterior-grade acrylic-latex emulsion over exterior prime.
2. For sign panels and applied graphics, provide exterior-grade alkyd gloss enamel over exterior primer.
3. For interior walls of temporary offices, provide two (2) coats interior latex-flat wall paint.

E. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.

F. Water: Provide potable water approved by local health authorities.

2.2 EQUIPMENT

A. Water Hoses: Provide 3/4 inch (19 mm) heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet (30 m) long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles a hose discharge.

B. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

C. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

D. Lamps and Light Fixtures: Provide general service 26-watt compact fluorescent lamps required for adequate illumination. Provide guard cages or tempered-glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.

E. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized Trade association related to the type of fuel being consumed.

F. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

8. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.
9. U.L. Labeled with current inspection tags affixed.

PART 3 - FACILITIES

3.1 TEMPORARY SANITARY FACILITIES

A. The Abatement Contractor will provide portable toilets as noted below.

1. Furnish chemical toilets per OSHA 1926.51.C with hand washing facilities at the site for ALL Contractors, Subcontractors, etc. working at the site for the duration of the project. Maintain in a sanitary and clean condition at all times.
2. Toilets shall be maintained, located and removed as directed by Construction Manager. Contents shall be removed and disposed of in a manner and at such intervals as necessary to maintain sanitary conditions; at minimum, weekly.
3. Construction Manager's daily report will be used to determine number of toilets should there be a disagreement among the Trades.
4. Contractor's personnel will not be permitted to use the Owner's facilities.

3.2 TEMPORARY WATER

A. Drinking Water: Each Contractor will provide potable water for drinking purposes for its own personnel on the site. This will be accomplished through the use of portable water containers. Furnish disposable drinking cups and receptacles to collect used drinking cups within the general location of the portable water container.

B. Construction Water: It is the intent to use water from the Owner's domestic water system to test and fill any potable water system or to test and fill any mechanical hot water heating system, if the water is available from the Owner's domestic water system.

3.3 SNOW AND ICE REMOVAL

A. Not Used

3.4 SITE LOGISTICS **Refer to Attachment A**

A. The General Construction shall provide and maintain the following in accordance with the Site Logistics and Phasing plan:
   1. Temporary Construction Fencing
   2. Construction lay down area and parking area
   3. Temporary access roadways and construction entrances
   4. Protection of existing trees, bushes, and site amenities with in the lay down area.

B. Each Contractor must plan, provide and maintain his own access, ramping, and egress as required into and out of the site, staging of trailer(s), materials, machinery, and equipment in agreement with the Construction Manager. Contractor shall maintain free and safe access on the jobsite for other related project personnel.

C. The General Contractor shall maintain all temporary construction parking areas, temporary access roads and fences for the duration of the project. At the end of construction, the General Contractor shall remove temporary fencing, temporary access roads, and stone and be responsible to repave, re-grade and seed existing areas disturbed as required to return the area to its original or specified condition.

3.5 DUMPSTERS AND RUBBISH CONTAINERS

A. All dumpsters are to be tarped or covered and protected from wind and weather.

B. The General Contractor shall provide dumpsters for all trades, for the duration of the project,.

.

3.6 TEMPORARY BUILDING ENCLOSURES

A. See section 028213 **The General Contractor is responsible for the weather tightness of the adjoining walls of structure to remain.**

3.7 TEMPORARY CONTAINMENT PARTITIONS

A. See section 028213

3.8 TEMPORARY FIRE PROTECTION

A. The Abatement Contractor shall provide and maintain portable fire extinguishers on each floor level and building area in accordance with OSHA requirements (1926-150).

3.9 TEMPORARY FENCING, BARRICADING

A. Refer to Attachment A. This work is to be provided by the General Contractor.

3.10 CONSTRUCTION SIGNS

A. Each Contractor is required to provide all required construction site signage for traffic, safety and directions as it pertains to their scope of work.

B. The General Contractor is required to provide all required dual language safety signage with pictorial and verbal identification. Signage should include but is not limited to Caution, Danger and Warning signs for entry and Personal Protective Equipment.

C. Each Contractor shall provide, move, remove, and maintain all signs where indicated on the plans or as requested by the Construction Manager.

3.11 MAINTENANCE AND PROTECTION OF VEHICULAR AND PEDESTRIAN TRAFFIC

A. Each Contractor shall provide and maintain adequate traffic controls in areas impacting routine vehicular and pedestrian traffic patterns, including temporary lane closures, for the duration of the project. Each Contractor is responsible to ensure the safe and convenient passage of Owner's staff, motorists, pedestrians, adjacent property Owners', and Contractor's employees.

B. Each Contractor shall repair any damage to concrete and pavements caused by construction operations and the installation of temporary signs, railings, etc. necessary for the maintenance and protection of traffic.

C. Each Contractor shall employ a sufficient number of competent flagmen and/or temporary traffic lights to ensure safe passage of vehicular, equipment, and pedestrian traffic. Flagmen shall wear approved safety equipment and vests in conformance with the New York State Manual of Uniform Traffic Control Devices..

D. Existing signs, markers, and delineators lost or damaged because of negligence on the part of the Contractor shall be replaced at the Contractor's expense.

E. The Contractor responsible for earthwork related to their scop of work shall provide all street sweeping and / or clean up as required of roads, parking lots, and entrances to remove construction related dirt and debris on a daily basis, or as directed by the Construction Manager.

3.12 DUST AND EROSION PROTECTION

A. See section 028213

3.13 TEMPORARY STORAGE

A. Storage space is limited and will be permitted only in areas designated by the Construction Manager in advance.

3.14 TEMPORARY CLIMATE CONTROL

A. Not Used

3.15 TEMPORARY USE OF ELEVATORS FOR HOISTING OR WORKERS

A. No existing or new elevators shall be used for transportation of materials or workers.

3.16 TEMPORARY COVERED WALKWAYS

A. Not Used

3.17 TEMPORARY STAIRS AND RAILINGS

A. Not Used

3.18 TEMPORARY POWER AND LIGHTING

A. See section 028213

3.19 TEMPORARY PHONES

A. Each contractor will make their own provisions as they require at their own expense and independent from the Owner's phone system from a phone service in the vicinity of the construction trailer staging area.

PART 4 - EXECUTION

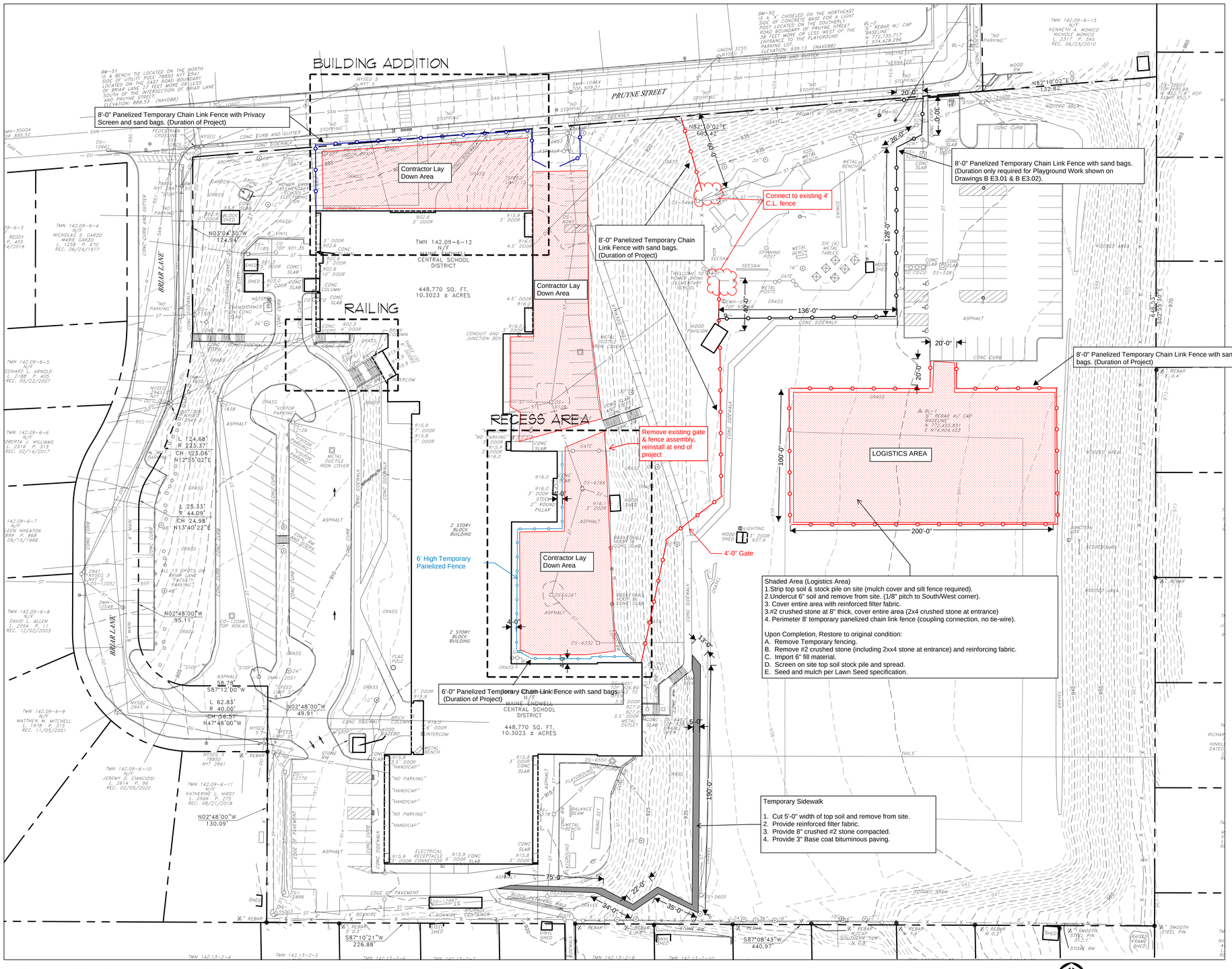
4.1 See section 028213

END OF SECTION 015100

TEMPORARY FACILITIES - Attachment A
Site Protection Plan

TEMPORARY FENCE LEGEND

- 8'-0" Panelized Temporary Chain Link Fence with Privacy Screen and sand bags. (Duration of Project)
- 8'-0" Panelized Temporary Chain Link Fence with sand bags. (Duration of Project)
- 6'-0" Panelized Temporary Chain Link Fence with sand bags. (Duration of Project)
- 8'-0" Panelized Temporary Chain Link Fence with sand bags. (Duration only required for Playground Work shown on Drawings B E3.01 & B E3.02).



LEGEND - HOMER BRINK ES

EXISTING	PROPOSED	DESCRIPTION
	CLL	CONTRACT LIMIT LINE
	MATCHLINE	MATCHLINE
		STREET LINE / PROPERTY EDGE
100	100	CONTOUR
		GRANITE CURB
		PAVEMENT EDGE
		SAWCUT LINE
		CURB REMOVAL
		UTILITY REMOVAL
OHW		OVERHEAD WIRES
W	2" W	WATER LINE
G		GAS LINE
T		BURIED TELEPHONE LINE
FO		BURIED FIBER OPTIC LINE
D		BURIED DATA LINE
E		BURIED ELECTRIC LINE
Sa	SAN	SANITARY SEWER - SIZE / TYPE
St	6" ST	STORM SEWER - SIZE / TYPE
	8" SMT	STORMWATER MANAGEMENT TRENCH
		UTILITY POLE
		UTILITY POLE WITH LIGHT
		GUY WIRE
LP		LIGHT POLE
CIPF		CAPPED IRON ROD FOUND
IRF		IRON ROD FOUND
IPF		IRON PIPE FOUND
TRANS		ELECTRIC TRANSFORMER
EMTR		ELECTRIC METER
EHH		ELECTRIC HANDHOLE
SMON		CONCRETE MONUMENT FOUND
PIV		POST INDICATOR VALVE
ERiser		ELECTRIC RISER
BOL	MB	METAL BOLLARD
		TRAFFIC SIGN
HYD	FH	FIRE HYDRANT
WV	WV	WATER VALVE
WMH		WATER MANHOLE
CB	SI	CATCH BASIN / STORM INLET
DMH	MH / DW	STORM MANHOLE / DRYWELL
SMH	SMH	SANITARY MANHOLE
CO		CLEANOUT
GV		GAS VALVE
CHAIN LINK FENCE	8' CL FENCE	VINYL CLAD CHAIN LINK FENCE
x257.25	456.50	SPOT GRADE
	F.V.	FIELD VERIFY
	E.O.P.	EDGE OF PAVEMENT
	TYP.	TYPICAL
	RL	ROOF LEADER
	FD	FOOTING DRAIN
	T/B	TOP/BOTTOM OF CURB
	TS/BS	TOP/BOTTOM OF STEP
	TR/BR	TOP/BOTTOM OF RAMP
	UFG/LFG	UPPER/LOWER FINISH GRADE
		EDGE OF WOODS
		TREES / SHRUBS
		DRAINAGE FLOW DIRECTION
		DETAIL FLAG
		CONSTRUCTION NOTE
		REMOVE EXISTING PAVEMENT
		REMOVE ASPHALT TO SUBBASE
		1½" ASPHALT MILLING AND TACK COAT
		1½" ASPHALT WEARING COURSE
		3½" ASPHALT ON EX. COMPACTED SUBBASE
	MDA	MEDIUM DUTY ASPHALT
	HDA	HEAVY DUTY ASPHALT
	HDC	HEAVY DUTY CONCRETE WITH SCORING
		STANDARD CONCRETE WITH SCORING
		BUILDING ADDITION
		LAWN TYPE 1 - 4" TOPSOIL, SEED AND MULCH
		LAWN TYPE 2 - 4" TOPSOIL, SEED AND STRAW MAT
		LAWN TYPE 3 - 4" TOPSOIL, 2" COMPOST AND SOD

SITE SURVEY - HOMER BRINK ES

NORTH

0 15 30 60 90
SCALE IN FEET

king + king ARCHITECTS

MAINE-ENDWELL CENTRAL SCHOOL DISTRICT
2022 CAPITAL IMPROVEMENT PROJECT - PHASE 5
HOMER BRINK ELEMENTARY SCHOOL

3618 BRIAR LANE
ENDWELL, NY 13760

KING + KING PROJ. NO.: 23-44-7956

SED PROJECT NUMBER:
B: HOMER BRINK ES: 03-11-01-06-0-001-023

appel osborne landscape architecture
320 West Division Street, Suite 100
Syracuse, NY 13204 | (315) 476-1022

DD PROGRESS PRINT NOT FOR CONSTRUCTION DATE: 2025-08-01

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DRAWING DATE: 09/10/2025
DRAWN BY: BM / AP
SCALE: AS NOTED
DRAWING TITLE:
SITE SURVEY

B L0.01

SECTION 017300 - SELECTIVE DEMOLITION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes procedural requirements for selective demolition.

B. Refer to other Sections for specific requirements and limitations applicable to selective demolition pertaining to individual parts of the Work.

1. Requirements of this Section apply to all Prime Contracts; refer to appropriate divisions for other requirements.

1.3 DEFINITIONS

A. Cutting: Physical modification of construction work, both new and existing, or removal of existing or installed materials necessary to permit installation or performance of other Work, including but not limited to; cutting, drilling, chopping, excavating, saw-cutting, trenching, backfill and compaction and other similar operations.

B. Patching: Restoration, replacement and installation of construction material, both new and existing, required to restore surfaces to original conditions and maintain fire rated assemblies after installation of other Work.

C. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain. Owner reserves the right to claim any or all salvaged material.

D. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in the same locations or in locations indicated.

E. New to remain: Protect all new construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.4 SUBMITTALS

A. Selective Demolition Plan: Submit a plan describing procedures at least 10 days before the time selective demolition will be performed for review and coordination. Include the following information:

1. Dates: Indicate when selective demolition will be performed.

2. Utilities: List utilities that selective demolition procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
3. Structural Elements: Where selective demolition involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
4. Proposed Dust-Control and Noise-Control Measures: Submit statement or drawing to Construction Manager that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.
5. Schedule of selective demolition activities indicating the following:
    a. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
    b. Interruption of utility services.
    c. Coordination for shutoff, capping, and continuation of utility services.
    d. Use of stairs and means of egress.
    e. Detailed sequence of selective demolition and removal work to ensure uninterrupted progress of other work.
6. Pre-demolition Photographs or Video recording: Show conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by selective demolition operations. Submit to Construction Manager before Work begins.
7. Record drawings at Project closeout.
    a. Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions.

1.5 QUALITY ASSURANCE

A. Perform removal work in careful workmanship manner with skilled labor protecting existing adjacent surfaces to remain.

B. Notify affected utility companies before starting work and comply with their requirements.

C. Pre-demolition Conference: If needed, conduct conference on site to review methods and procedures related to selective demolition including, but not limited to, the following:

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

D. Requirements for Structural Work: Do not selectively demolish structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

E. Operational and Safety Limitations: Do not selectively demolish operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

F. Visual Requirements: Do not selectively demolish construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been selectively demolished in a visually unsatisfactory manner.

G. Costs caused by out of sequence work prematurely installed, defective work, or work not conforming to the Contract Documents, including costs for additional services of the Construction Manager and Architect/Engineer, will be paid for by the party responsible for out of sequence, rejected or non-conforming work.

H. Miscellaneous Elements: Do not selectively demolish the following elements or related components in a manner that could change their load-carrying capacity that results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety.

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior curtain-wall construction.
4. Equipment supports.
5. Piping, ductwork, vessels, and equipment.
6. Noise and vibration-control elements and systems.

1.6 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition operations, by methods and with materials so as not to void existing warranties.

PART 2 – PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.
2. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain, demolished materials shall become the Contractor’s property and shall be removed from the site with further disposition at the Contractor’s option.
3. Carefully remove and salvage each item or object in a manner to prevent damage of new construction.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be selectively demolished and conditions under which selective demolition are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

B. Verify that utilities have been disconnected and capped.

C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

D. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

E. When unanticipated mechanical, electrical, or structural elements that conflict with the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly notify the Construction Manager and Architect for direction.

F. Survey the condition of the building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during selective demolition.

3.2 UTILITY SERVICES

A. If needed, maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

B. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services serving building to be selectively demolished.

1. Where utility services are required to be removed, relocated, or abandoned, provide bypass connections to maintain continuity of service to other parts of the building before proceeding with selective demolition
2. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit after bypassing.

C. Utility Requirements: Refer to Mechanical and Electrical Specification Sections for shutting off, disconnecting, removing, and sealing or capping utility services. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

A. Temporary Support: Provide temporary support of work to be cut.

B. Protection: Protect existing construction during selective demolition to prevent damage. Provide protection from adverse weather conditions for areas that might be exposed during selective demolition operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to minimize interruption of services to occupied areas.

E. Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.

F. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

G. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

H. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around selective demolition area.
   1. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
   2. Protect existing site improvements, appurtenances, and landscaping to remain.
   3. Provide temporary weather protection, during interval between demolition and installation of new construction, to ensure that no water leakage or damage occurs to structure or interior areas.
   4. Protect walls, ceilings, floors, and other existing finish work that are to remain and are exposed during selective demolition operations.

I. Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of building to be selectively demolished.

   1. Strengthen or add new supports when required during progress of selective demolition.

3.4 POLLUTION CONTROLS

A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.

   1. Do not use water when it may damage new construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

B. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain, using power-driven masonry saw or hand tools; do not use power-driven impact tools.

3.5 PERFORMANCE

A. General: Employ skilled workers to perform selective demolition. Proceed with selective demolition at the earliest feasible time and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by selective demolition operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter.
6. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
4. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
5. Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
6. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

3.7 CLEANING

A. Sweep the building broom clean upon completion of selective demolition operation.

END OF SECTION 017300

SECTION 017310 - CUTTING AND PATCHING
PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

B. Refer to Mechanical and Electrical Specification Sections for additional requirements and limitations on cutting and patching of mechanical and electrical work.

C. Each Prime Contractor shall refer to Specification Section 01 10 00 Summary of Work for additional Cutting and Patching requirements.

1.2 SUMMARY

A. This Section specifies the requirements for cutting, patching, demolition and alteration work without limiting the generality implied by the Specifications and Drawings. Refer to Section 01 10 00 for summary / scope of work.

B. Work of this Section applies to Each Prime Contractor and its Subcontractors. Prime Contractor and their Subcontractors shall provide required labor, materials, equipment, layouts, and other information for the cutting, patching, and alteration work shown, specified, or as implied to complete the work as described in this Specification Section or as indicated on the Contract Documents.

1.3 DEFINITIONS

A. 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 all Contracts.

1. Cutting: Physical modification of construction work, both new and existing, or removal of existing or installed materials necessary to permit installation or performance of other Work, including but not limited to; cutting, drilling, core-drilling, chopping, excavating, saw-cutting, trenching, backfill and compaction and other similar operations.

2. Patching: Restoration, replacement and installation of construction material, both new and existing, required to restore surfaces to original conditions and maintain fire rated assemblies after installation of other Work.

1.4 DESCRIPTION

B. Unless otherwise noted, each Prime Contractor shall be responsible for all cutting and patching, required in conjunction with the work of their contract and to:

1. Be familiar with all the Contract Documents, including other trades, to determine the extent of the cutting and patching requirements to be performed.
2. Ensure all components fit properly.
3. Remove out of sequence work installed prematurely.

4. Remove and correct defective work and work not conforming to requirements of Contract Documents.
5. Provide equipment, labor, materials, and incidentals necessary for cutting and patching as required for the installation of new work.

C. Coordination:
   1. Coordinate the installation of work with the work of other Contractors to minimize cutting and patching.

D. In addition to contract requirements, upon written instructions of the Construction Manager:

   1. All new work must be inspected prior to enclosing. If inspection has not been conducted, Contractor shall uncover newly installed work to provide for Construction Manager and Architect/Engineer's observation.

E. All Contractors shall bare the responsibility not to cut or otherwise alter the Owner's property or any separate Contractors' work except with the written consent of the Owner and of such separate Contractor. The Contractor shall not un-reasonably withhold from the Owner or any separate Contractor, consent to cutting or otherwise altering the work.

A. Each Contractor shall perform cutting and patching required for the installation of the work of their contract except where specifications or drawings specifically indicate otherwise. Each Contractor shall be responsible to review all the Contract Drawings for all trades to determine the extent of the cutting and patching that is required to install the work of their contract.

   1. Demolition, Cutting and Patching as indicated and as necessary to install new work in reconstruction areas of the existing building as indicated and in the new additions to the building as indicated.

   2. Salvage of Materials for reuse in the project, or where directed by the Construction Manager, salvage and delivery of specific items to Owner for its use where indicated or for use by Prime Contractor and Subcontractor for work of their trades as directed. The materials which are in good condition and which are specifically noted on the drawings for reuse in the project, shall be carefully removed and delivered to the Owner's Representative on the premises where directed, except for such items as the Owner may declare to be the Contractor's property to be legally disposed of offsite by the Contractor. **Refer to General Demolition Notes- GN-18 on Architectural Demolition Drawings.**

   3. Each Prime Contractor shall bear the cost of all cutting and patching required by and for the installation of their work unless otherwise indicated on the drawings or in the specifications. This shall include but not limited to the following:

      a. Cut existing architectural / structural components of the existing building as required for the installation of new work.

      b. Patch to match existing architectural / structural features after the new work has been installed by the contractor's work forces or work performed by other contractors.

      c. Any modification to structural components required for pipes or conduits to pass through will require approval by the Architect and Structural Engineer.

d. Each Prime Contractor or their Subcontractor is responsible for the actual cutting, capping, removing, relocating or otherwise making safe equipment, systems, or components of the systems that relate to their Scope of Work.

e. Drilling or core drilling shall be performed by the respective trade requiring it for the installation of their equipment, systems or components of their systems.

f. Review existing building conditions and access to install equipment in the required locations. Systems to be installed in any areas with difficult access may need to be provided in sections. If it is deemed necessary to perform cutting and patching to facilitate access to certain areas to systems, then the responsibility of cutting and patching shall be by the contractor responsible for that system.

g. Furnish and set all sleeves for penetrations in new and existing construction. Contractors shall provide the sleeves as specified, along with an accurate layout of the location of where these sleeves are to be placed. These sleeves shall be numbered, and that number shall correspond to the location of the sleeve shown on the layout drawing.

h. Fire safe all penetrations through fire rated construction created due to the work of their contract. All penetrations through rated construction shall be sealed fire safe by a UL listed approved method. Patching of fire rated assemblies shall be made using new materials equal to the fire rating of the new or existing assembly.

1.5 SUBMITTALS

A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

B. Any modification to structural components will require approval by the Architect and Structural Engineer.

1.6 QUALITY ASSURANCE

A. General: Structural and other conditions shall be verified with the Architect before proceeding with cutting, demolition and alterations work. Inspect structures prior to start of Work and notify the Architect in writing of any conditions detrimental to the execution of the Work.

B. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.

C. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

D. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic

qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

E. Costs caused by out of sequence work prematurely installed, defective work, or work not conforming to the Contract Documents, including costs for additional services of the Construction Manager and Architect/Engineer, will be paid for by the party responsible for out of sequence, rejected or non-conforming work.

F. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
   1. Water, moisture, or vapor barriers.
   2. Membrane and flashings.
   3. Exterior curtain-wall construction.
   4. Equipment supports.
   5. Piping, ductwork, vessels, and equipment.
   6. Noise and vibration-control elements and systems.

1.7 WARRANTY

A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

PART 2 - PRODUCTS

2.1 MATERIALS FOR REPLACEMENT OF WORK REMOVED

A. Materials for each trade or specialty involved in alterations, cutting, and patching shall be furnished and installed as specified in the respective specification sections or as specifically indicated on the drawings.

B. Where materials and installation are required but not specified, use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials. Samples of material finish or color are required for Architect's approval.

C. Supplement relocated materials where required to complete work of the project with similar materials.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect existing condition of work, including elements subject to movement or damage during removal of adjacent materials.

1. Photograph existing damage, which could be misconstrued as damage resulting from the Work of this Contract. State location and date of photograph and file with the Architect prior to starting work.

B. After uncovering work, inspect conditions affecting installation of new products.

3.2 PREPARATION: PRIOR TO CUTTING

A. Provide shoring, bracing and support as required to maintain structural integrity of project during demolition. Proposed General Contractor's Demolition Contractor is to submit NY PE stamped drawings for shoring methods to support existing structures to remain prior to any mass demolition or "Air Gapping".

B. Provide protection for materials on adjacent surfaces.

C. Provide protection when work will be exposed to the elements.

D. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the project that might be exposed during cutting and patching operation. Each Prime Contractor is responsible to cover and protect furniture, equipment, etc. not being used in rooms where furniture and equipment will remain during Contractor working hours. **It will be the General Contractors responsibility to protection the existing cast-in-place slab during demolition.**

E. Take all precautions necessary to avoid cutting existing pipe, conduit, or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

A. Remove and store in protected location, material, which is to be reused and relocated.

B. Cutting shall be done in a manner that will not adversely affect the strength of the building. Holes and openings shall be neatly cut so as to provide a finished appearance and shall be patched around the edge where required for a finished appearance.

C. Execute fitting and adjustment of products to provide finished installation to comply with specified tolerances and finishes.

D. Restore work, which has been cut or removed. Provide new products to complete work in accordance with requirements of Contract Documents.

E. Refinish entire surfaces as necessary to provide an even finish:
   1. Continuous Surfaces: to nearest intersections.
   2. Assembly: entire refinishing.

F. Fill and patch openings and holes in existing construction when bolts, piping, ducts, conduit and other penetrating items are removed.

G. Visual requirements: Do no cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities

or result in visual evidence of cutting and patching. Remove and replace work cut and patched in a visually unsatisfactory manner.

H. Fire resistive integrity: Where holes or gaps remain from removed elements, fill void using solid fire resistive materials full depth of structure; terminate below finishes to allow new finish to be installed (see patching). Maintain the fire resistive and structural integrity of the structures.

I. Firestopping: All products used for through-penetration firestop systems shall be tested and meet all federal, state, and local codes.

J. Cutting: cut existing construction use methods least likely to damage elements to be retained or adjoining construction. Where possible, review proposed procedures with the original installer; comply with the original installer's recommendations.

1. In general, where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. To avoid marring existing surfaces, cut or drill from the exposed or finished side into concealed surfaces.
3. Cut through concrete and masonry using a cutting machine such as a Carborundum saw or diamond core drill.

K. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Where removal of walls or partitions extends from one finished are to another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new.
4. Patching around piping and penetrations: Provide firestopping at perimeter of penetrations for smoke-tight seal to maintain integrity of fire resistive and smoke barrier qualities.
5. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch, after the patched area has received primer and second coat.
6. Patch, repair, or rehang existing ceiling as necessary to provide an even plane surface of uniform appearance.

3.4 CLEANING

A. Daily cleaning of alteration areas of the building shall be the responsibility of each Prime Contractor.

B. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely, paint, mortar, oils, putty, and items of similar nature. Thoroughly clean piping, conduit, and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

C. Dust generated by cutting and patching shall be controlled in a manner so as to prevent infiltration into occupied spaces. Contractor(s) responsible for dust infiltrating the existing duct systems shall bare the cost of cleaning these systems.

D. Demolished Materials shall be removed from the project site at frequent intervals. Piles of demolished materials will not be allowed to accumulate.

END OF SECTION 017310

SECTION 017400 - PROGRESS CLEANING

PART 1 - GENERAL

1.1 RELATED DCOUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes the requirements for clean up requirements.

1.3 DESCRIPTION

A. Maintain premises and public properties free from accumulations of waste, debris, and rubbish caused by operations.

B. All occupied portions of the facility affected by the construction activity shall be cleaned at the close of each workday.

C. Upon Substantial Completion of Work, remove balance of waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all exposed surfaces; leave project clean and ready for occupancy.

1.4 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 that 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.

B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.1 DURING CONSTRUCTION

A. Execute cleaning to ensure that building, grounds and public properties are maintained free from accumulations of waste materials and rubbish.

B. Wet down dry materials and rubbish to lay dust and prevent blowing dust. Erect dustproof barriers to keep dust from drifting through the building.

C. Each day Contractor shall affect the following:

1. **Areas of intense activity, such as cutting and sawing must be swept clean and reorganized at the end of each day.**
2. **Areas of moderate activity such as installation of plumbing, ductwork, electrical work must be returned to good order at the end of each day.**
3. **Debris below scaffolds (and shoring/reshoring) must at all times, be kept sufficiently consolidated to keep walkways free of tripping hazards. These work areas must also be swept clean immediately upon removal of scaffolds.**
4. **All swept up debris, waste materials, and packing must be removed and/or placed in the dumpster by noon of the following workday.**
5. **All stored material must be kept in good order.**
6. **As portions of the work are completed, all used and excess materials must be removed promptly.**
7. **Daily clean-up and good housekeeping is the responsibility of each Contractor individually and will be monitored by the Construction Manager.**
8. **Contractors shall promptly comply with requests to organize scattered materials.**
9. **Large amounts of debris must be removed by using enclosed chutes or a similar sealed system. There shall be no movement of debris through occupied spaces of the building. No material shall be dropped or thrown outside the walls of the building.**

D. Separate and recycle as required by local authorities and regulations.

E. Handle materials in a controlled manner with as few handling as possible; do not drop or throw materials from heights. The General Construction Contractor shall provide and maintain a trash chute at the existing buildings for use by all trades.

F. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.

G. Excess concrete, block, terrazzo mix, mortar or grout is the responsibility of the Contractor to remove from the site.

H. Each Contractor working on site shall provide the Construction Manager with one worker as required by the Construction Manager to perform clean up at the site.

I. In the event of a Prime Contractor not performing their cleaning responsibility, the Construction Manager can elect to hire the school custodial service, or an outside cleaning agency, and back charge the negligent contractor for services rendered.

3.2 FINAL CLEANING

A. Each Contractor shall provide complete the final cleaning of all work installed under this Scope of Work, prior to acceptance by the Construction Manager and the Architect, and prior to the Owners occupancy.

B. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight exposed interior and exterior finished surfaces; polish surface so designated to shine finish.

C. Repair, patch and touch up marred surfaces to specified finish, to match adjacent surfaces

D. In preparation for substantial completion or occupancy, the Owner and Construction Manager will conduct an inspection of sight-exposed interior and exterior surfaces, and of concealed spaces.

E. Maintain cleaning until project, or portion thereof, is occupied by Owner.

END OF SECTION 017400

SECTION 017700 - PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes the process and requirements for project closeout procedures for all Contractors.

1.3 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor:
   1. Submit written notice through Construction Manager that Project, or designated portion of Project, is substantially complete.
   2. Submit list of major items to be completed and/or corrected and a list of all material to be turned over to the Owner.

B. Architect/Engineer in conjunction with Construction Manager will make an inspection within a reasonable time after receipt of notice.

C. Should Architect/Engineer consider that work is substantially complete:
   1. Architect/Engineer shall prepare and issue a Certificate of Substantial Completion, AIA G704, complete with signatures of Owner and Contractor, accompanied by Contractor's list of items to be completed or corrected, as verified, and amended by Architect/Engineer.
   2. Owner occupancy of Project or designated portion of Project:
      a. Contractor shall:
         i Cooperate with Construction Manager to obtain permanent/temporary certificate of occupancy.
         ii Perform final cleaning.
      b. Owner will occupy Project, under provisions stated in Certificate of Substantial Completion.
   3. Contractor shall complete work listed for completion or corrections prior to Owner occupancy.

D. Should Architect/Engineer consider that work is not substantially complete:
   1. Architect/Engineer shall immediately notify Construction Manager and Contractor, in writing, stating reasons.
   2. Contractor shall complete work and send second written notice to Architect/Engineer through Construction Manager, certifying that Project, or designated portion of Project, is substantially complete.
   3. Architect/Engineer will reinspect work.

1.4 FINAL INSPECTION PROCEDURES

A. Contractor shall submit written certification that:
   1. Contract Documents have been reviewed.

2. Project has been inspected for compliance with Contract Documents.
3. Work has been completed in accordance with Contract Documents.
4. Equipment and systems have been tested in presence of Owner's Representative and are operational.
5. Project is completed and ready for final inspection.
6. Owner's designated staff have been instructed on all equipment and systems and an Owner signed receipt furnished to the Construction Manager
7. All project record documents "As-Builts" have been submitted to the Architect/Engineer.
8. Operational and Maintenance Manuals have been submitted to the Architect/Engineer.
9. Owner has received the specified spare parts and maintenance items. A signed receipt by Owner representative shall be provided to the Architect/Engineer and/or Construction Manager.
10. All warranties and guarantees have been submitted to the Architect/Engineer.

B. Architect/Engineer will make final inspection within a reasonable time after receipt of certifications.

C. Should Architect/Engineer consider that work is not finally complete:
   1. Architect/Engineer shall notify Construction Manager and contractor, in writing, stating reasons.
   2. Contractor shall take immediate steps to remedy the stated deficiencies and send second written notice to Architect/Engineer through construction manager certifying that work is complete.
   3. Architect/Engineer will re-inspect work.

1.5 REINSPECTION COSTS

A. Should Architect/Engineer be required to perform second inspections because of failure of work to comply with original certifications of Contractor, Owner will compensate Architect/Engineer for additional services and deduct amount paid from final payment to Contractor.

B. <u>All Contractors are required to complete all "punch list" items and all "close out" requirements within 30 (thirty) calendar days after substantial completion.</u> If the Architect and Construction Manager are required to provide additional services, extend the duration of services to the Owner and/or perform additional inspections because the Contractor fails to comply with the requirements of the Contract, or the Contractor did not complete the work in accordance with the construction schedule, the amount of compensation paid to the Architect/Engineer and Construction Manager by the Owner for additional services shall be deducted from the final payment to the Contractor. If the Contractor does not complete the punch list work within 30 (thirty) calendar days after substantial completion, the Owner and Construction Manager retain the right to hire another Contractor to complete the punch list on a time and material bases and deduct the cost of completing this work and any and all other remaining punch list work items and deduct such cost from the Contractor's application for payment.

1.6 CLOSEOUT SUBMITTALS

A. Project Records Documents
   Operating and Maintenance Data / Demonstration and Training
   Warranties and Guarantees

B. Spare Parts and Maintenance Materials: Conform to requirements of individual technical sections.

C. Deliver evidence of compliance with requirements of governing authorities.
   1. Certificates of Inspection
      a. Structural Steel
      b. Plumbing
      c. HVAC
      d. Electrical
      e. Others if required

D. Deliver Certificate of Insurance covering the warranty period as specified in the Contract Documents per General Conditions A232, Article 11.

E. The Asbestos Abatement Contractor shall supply the following in addition to all other items listed herein:
   1. Physical/Exams and Worker Acknowledgment.
   2. All testing and lab results.
   3. Transportation and disposal records.

1.7 FINAL APPLICATION FOR PAYMENT

A. Refer to Specification 01 29 00 for final application for payment requirements.

END OF SECTION 017700

SECTION 019113 – COMMISSIONING REQUIREMENTS

1.0 PART 1 - GENERAL

1.1 DESCRIPTION

A. Commissioning. Commissioning (Cx) is a systematic process of ensuring that all building systems perform interactively according to the design intent and the Owner's operational needs. The commissioning process shall coordinate components of the traditionally separate functions of system documentation, equipment startup, control system calibration, testing and balancing, performance testing and training.

B. The intent of the commissioning on this project is to fulfill the commissioning requirements of C408 of the 2020 Energy Conservation Construction Code of New York State (ECCCNYS). This overview is provided to outline those requirements and detail the responsibilities of all parties.

C. The commissioning process does not take away from or reduce the responsibility of the system designers or installing Contractors to provide a finished and fully functioning product.

1.2 RELATED SECTIONS

A. All work under this section is subject to the Contract Documents and this Contractor shall be responsible for and governed by all the requirements therein.

B. This Contractor shall reference the entirety of Divisions 22, 23 and 26 as they apply to this work, with specific attention to the following sections:

1. Section 230593 – Testing and Balancing
2. Section 230923 – Temperature Controls
3. Refer to Section 230010 for additional requirements related to Operation and Maintenance Manuals.
4. Refer to section 230593 for additional testing and balancing requirements.

1.3 ABBREVIATIONS. The following are common abbreviations used in these Specifications.

A/E-	Architect and Design Engineer	FT-	Functional Performance Test
BACS-	Building Automation Control System	CM-	Construction Manager
CA-	Commissioning Authority	TAB-	Test and Balance
Cx-	Commissioning		
Cx Plan-	Commissioning Plan		

1.4 COORDINATION

A. Commissioning Team.

1. The commissioning team members shall include Commissioning Authority, the Owner's Construction Manager/Project Manager (CM), the Architect and Design Engineers, and the various construction contractors on the project with work associated with the systems to be commissioned ("contractor"). This generally includes, but may not be limited to representatives from the General Contractor (GC), the Mechanical (HVAC) Contractor(s) (MC), the Plumbing Contractor (PC), the Testing and Balancing Contractor (TAB), the Controls Contractor (CC), the Electrical Contractor (EC) and any other installing Subcontractors or suppliers of equipment. The Owner may designate facilities staff as members of the commissioning team.

2. The contents of these specifications describe the roles and responsibilities for each of the traditional commissioning team members. In the event that individuals serve multiple roles, the responsibilities shall equally apply.

B. Management.

1. The CA shall be provided directly by the Owner. The CA directs and coordinates the commissioning activities and reports to the CM and Owner. All members work together to fulfill their contracted responsibilities and meet the objectives of the Contract Documents.

C. Scheduling.

1. The CA shall work with the CM according to established protocols to schedule commissioning activities. The CA shall provide sufficient notice to the CM for scheduling commissioning activities. The CM shall regularly update the CA regarding construction progress, changes to commissioned systems, and expected completion. The CM shall inform the CA a minimum of 14 days in advance when initial start-up appointments are scheduled for commissioned systems. The CM shall integrate all commissioning activities into the master schedule and shall maintain an adequate window of time for each required activity. All parties shall address scheduling problems and make necessary notifications in a timely manner in order to expedite the commissioning process.

1.5 COMMISSIONING PROCESS

A. Commissioning Plan. The Commissioning Plan provides guidance in the execution of the commissioning process.

1. The CA shall distribute a draft Commissioning Plan in an industry standard format to the Commissioning Team as early as practical in the construction process.

2. Based on construction observations, changes in project scope or at the discretion of the CA, the commissioning plan may be updated throughout the construction process and during actual testing procedures as necessary to adequately validate the operation of systems being commissioned.

3. The commissioning plan shall contain, as a minimum:

   a. A narrative description of the activities that will be accomplished during each phase of commissioning, including the personnel intended to accomplish each of the activities.

   b. A listing of the specific equipment, appliances or systems to be tested and a description of the tests to be performed.

   c. Functions to be tested, including, but not limited to, calibrations and economizer controls.

   d. Conditions under which the test will be performed. Testing shall affirm winter and summer design conditions and full outside air conditions.

   e. Measurable criteria for performance.

B. Commissioning Process. The following provides a brief overview of typical construction phase commissioning tasks and the general order in which they occur.

1. Commissioning during construction begins with the ongoing development of the Commissioning Plan by the CA. This includes formalizing testing procedures and processes.

2. A Pre-Commissioning meeting may be conducted by the CA. The commissioning testing procedures are reviewed at this time and opened for comment by additional team members.

3. Additional meetings may be required during construction to plan, coordinate, schedule future activities, and resolve issues. The additional meetings will be scheduled through the CM with necessary parties attending.

4. Appropriate documentation and communication paths (project dependent) are developed with all team members.

5. The CA will perform (three (3)) progress compliance inspections to determine deviations from contract documents, construction issues which may adversely affect the ability to commission the systems, and / or make recommendations to improve project outcome. In the event that observations require clarification from other members of the Commissioning Team, these requests for information shall be placed in writing and become part of the commissioning record.

6. Detailed equipment start-up procedures for major equipment shall be submitted to the CA for review and comment. Depending on project complexity, the CA may attend selected equipment startups, and shall be notified a minimum of 14 days prior to their scheduled date.

7. The CA develops specific equipment and system Functional Performance Test procedures and forms. These shall be presented within the Commissioning Plan or separate associated document package.

8. The Functional Performance Tests are executed by the Contractors under the direction of the CA. The CA documents functional performance test results.

9. Items of contract non-compliance in material, installation or setup are documented by the CA and forwarded in appropriate report format for correction at the Contractor's expense. Non-compliance issue resolutions shall be documented in a Commissioning Issues Log (or other acceptable format) by the CA. This log shall be maintained throughout the project, and include items noted during site inspections and functional performance testing.

10. Prepare a preliminary report of commissioning test procedures and results. Report is to be certified as a complete summary of findings and shall be forwarded to the Engineer for review and comment prior to being provided to the building Owner or Owner's Representative. Failure to provide this report in a timely manner may delay building occupancy. The report shall contain the following:

    a. Clearly labeled as "Preliminary Commissioning Report".

    b. Organized with mechanical and service hot water findings in separate sections to allow independent review.

    c. Itemization of deficiencies found during testing that have not been corrected at the time of report preparation.

    d. Deferred tests that cannot be performed at the time of report preparation because of climatic conditions.

    e. Climatic conditions required for the performance of deferred tests.

11. Seasonal or other deferred testing may be required to optimally test the systems and shall be conducted as required for system performance verification. These tests, and participation by all commissioning team members, shall be provided at no additional costs to the Owner.

12. The CA prepares a final report to document the results of the commissioning process. The final report shall be provided to the Owner or Owner's Representative within 90 days of receipt of the certificate of occupancy.

1.6 RESPONSIBILITIES

A. The general roles and responsibilities of the primary Cx team members toward the Cx process are outlined in this section. Other various additional startup activities related to the Cx process reside in the specific sections for equipment (boilers, chillers, etc), systems (Temperature controls), or activities (testing and balancing).

B. Architect (of A/E)

1. Construction and Acceptance Phase:

a. Attend any pre-commissioning scoping meeting and selected commissioning team meetings.

b. Perform usual and customary submittal review and construction observation.

c. Provide design narrative documentation requested by the CA necessary to clarify design intent.

d. Coordinate resolution of system deficiencies identified during commissioning, according to the Contract Documents.

e. Review and approve the O&M Manuals

C. Mechanical, Plumbing and Electrical Designers/Engineers (of the A/E)

1. Construction and Acceptance Phase:

a. Attend commissioning scoping meetings and other selected commissioning team meetings.

b. Perform usual and customary submittal review and construction observation.

c. Review TAB Strategies and Procedures Plan submittal, forward approved copy to Commissioning Agent for their use.

d. Provide design narrative and sequence documentation requested by the CA. The designers shall assist (along with the Contractors) in clarifying the operation and control of commissioned equipment in areas where the specifications, control drawings or equipment documentation is not sufficient for writing detailed testing procedures.

e. Participate in the resolution of system deficiencies identified during commissioning, according to the Contract Documents.

f. Review the Preliminary Commissioning Report, append any necessary comments, and transmit document to the Owner for record. Failure to review and transmit this manual to the Owner in a timely manner may delay final inspections and occupancy.

g. Review and approve the MEP/FP component of the O&M Manuals.

h. Approve air and water systems balancing reports.

i. Provide technical review and assistance to the Owner and Architect regarding CA comments reflecting upon the Commissioning Activities.

D. Commissioning Authority (CA)

1. Construction and Acceptance Phase:

a. Coordinate and direct the commissioning activities in a logical, sequential, and efficient manner using technical expertise, consistent protocols and forms, centralized documentation, clear and regular communications/consultation with all necessary parties, and frequently updated timelines/schedules.

b. Coordinate the commissioning work and, with the CM, ensure that commissioning activities are being scheduled into the master schedule.

c. Develop the Commissioning Plan document that describes construction phase commissioning activities.

d. Plan and conduct a pre-commissioning meeting and other commissioning meetings as needed.

e. Review and comment upon approved TAB Strategies and Procedures Plan. Where ambiguities exist, request clarifications from the Engineer.

f. Where project complexity indicates, attend the Testing and Balancing Conference.

g. Before startup, review the current control sequences and interlocks and work with Contractors and design engineers until sufficient clarity has been obtained, in writing, to be able to write detailed testing procedures.

h. Perform three (3) site visits to observe component and system installations. Attend selected planning and job-site meetings to obtain information on construction progress. Review construction meeting minutes for revisions/substitutions relating to the commissioning process. Assist in resolving any discrepancies.

i. Write the Functional Performance Test procedures and develop test forms for equipment and systems.

j. Analyze any functional performance trend logs and monitored data to verify performance.

k. Supervise manual Functional Performance Tests with installing Contractors. Coordinate retesting as necessary until satisfactory performance is achieved.

l. Maintain a master Commissioning Issues Log and testing records. Communicate test results and non-compliance issues to the CM. Recommend actions to resolve non-compliance issues.

m. Compile and maintain the Commissioning Record Manual.

n. Review, spot validate, and certify the accuracy and completeness of the lighting controls testing performed by the Electrical Contractor (see section(s) 260923 and paragraphs C408.3 through C408.3.2 of the 2020 Energy Conservation Construction Code of New York State for testing and documentation requirements).

o. Provide a final Commissioning Report providing the following information:

1) Organized with mechanical and service hot water findings in separate sections to allow independent review.

2) Disposition of deficiencies found during testing, including details of corrective measures used or proposed.

3) Outcome of deferred tests that could not be performed at the time of preliminary report preparation because of climatic conditions, and the conditions under which the tests were performed.

4) Functional performance test procedures used during the commissioning process, including measurable criteria for test acceptance (provided in report for repeatability).

2. Warranty Period:

a. Coordinate and supervise required seasonal or deferred testing and deficiency corrections.

E. Construction Manager - Owner's Project Manager (CM)

1. Construction and Acceptance Phase:

a. Facilitate the coordination of the commissioning work by the CA. Maintain commissioning activity in the master schedule. For successful commissioning it is critical that the master schedule clearly denote adequate time frames for each of the following work segments:

1) Completion and startup of all mechanical equipment

2) Completion and pre-commissioning of temperature control systems (reference 230923.1.11

3) Completion of Testing and Balancing of HVAC Systems

4) Functional Testing of HVAC and remediation of Issues Log findings. **Functional testing shall not commence until the CA has received complete confirmation of and / or startup reports for all HVAC equipment from the Mechanical contractor and completed pre-commissioning forms from the Temperature Controls Contractor. The CA may, at their discretion, proceed with functional testing prior to receipt of a fully certified testing and balancing report, approved by the Engineer of Record.**

b. Review the final Construction Phase Commissioning Plan.

c. Coordinate and attend a pre-commissioning meeting and other commissioning team meetings.

d. When requested by the CA, observe startup and functional testing of selected equipment.

e. Coordinate the resolution of non-compliance and design deficiencies.

f. Review Commissioning Issues Log and follow up Contractors to achieve resolution of non-compliance issues.

g. Furnish a copy of all Contract Documents, as-built documents, addenda, change orders, approved submittals, and shop drawings related to commissioned equipment to the CA.

2. Warranty Period:

a. Assist the CA as necessary in the seasonal or deferred testing and

b. Ensure that any seasonal or deferred testing and any deficiency issues are addressed.

F. Contractors

1. Construction and Acceptance Phase:

a. The Contractors shall provide all tools or the use of tools to start, check-out, and functionally test equipment and systems.

b. Execute commissioning responsibilities according to the Contract Documents and schedule.

c. A representative shall attend a pre-commissioning meeting and other necessary meetings scheduled by the CM and CA to facilitate the Cx process.

d. Provide to the CA detailed start-up procedures, all requested submittal data, and specific Owner responsibilities required to keep warranties in force.

e. Execute Functional Performance Tests under the direction of the CA. The CA documents the Functional Performance Test process and results.

f. Correct non-compliance issues.

g. Prepare O&M Manuals according to the Contract Documents; clarify and update the original control sequences to as-built conditions.

2. Warranty Period:

a. Execute seasonal or deferred Functional Performance Testing, witnessed by the CA, according to the specifications.

b. Correct non-compliance issues and document resolutions in the Commissioning Issues Log and make necessary adjustments to O&M Manuals and as-built drawings for applicable issues identified in any seasonal testing.

G. Equipment Suppliers

1. Provide all requested submittal data, including detailed start-up procedures and specific responsibilities of the Owner to keep warranties in force.

2. Assist in equipment testing per agreements with Contractors.

3. Include all special tools and instruments (e.g., tools only available from vendor or specific to a piece of equipment) required for testing equipment according to these Contract Documents.

4. Provide information requested by CA regarding equipment control sequences and testing procedures.

5. Review test procedures for equipment installed by factory representatives.

H. Owner (or Owner's Authorized Representative)

1. Construction and Acceptance Phase:

a. A representative shall attend a pre-commissioning meeting and other necessary meetings scheduled by the CM and CA to facilitate the Cx process.

b. Assist to the extent necessary with access and scheduling for testing of mechanical and service hot water systems.

c. Provide transmittal to the Code Official that acknowledges receipt of the Preliminary Commissioning Report. Failure to provide transmittal may delay final inspection and occupancy of the project. On request by the Code Official, release a copy of the Preliminary Commissioning Report for Code Official review, or authorize the CA to do so on behalf of the Owner.

1.7 SYSTEMS TO BE COMMISSIONED

Option 1 Example:

A. All energy consuming equipment as schedule on contract drawings.

B. All newly installed or modified / existing HVAC Control Systems as described on contract drawings and within Specification Sections 230923.

C. Lighting System Controls shall be tested by the contractors as described under section (s) 260923, Lighting System Functional Testing. The testing reports shall be provided to the commissioning authority upon completion for spot verification and inclusion in the project Commissioning Report.

2.0 PART 2 - PRODUCTS

2.1 TEST EQUIPMENT

A. All standard testing equipment required to perform startup and initial checkout and required Functional Performance Testing shall be provided by the Division Contractor for the equipment being tested. For example, the mechanical (HVAC) Contractor of Division 23 shall ultimately be responsible for all standard testing equipment for the HVAC system and controls system in Division 23, except for equipment specific to and used by TAB in their commissioning responsibilities.

B. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified in the Specifications. If not otherwise noted, the following minimum requirements apply: Temperature sensors and digital thermometers shall have a certified calibration within the past year to an accuracy of 0.5°F and a resolution of + or - 0.1°F. Pressure and humidity sensors shall have an accuracy of + or - 2.0% of the value being measured (not full range of meter) and have been calibrated within the last year. All equipment shall be calibrated according to the manufacturer's recommended intervals and when dropped or damaged. Calibration tags shall be affixed or certificates readily available.

3.0 PART 3 - EXECUTION

3.1 MEETINGS

A. Commissioning Scoping Meeting. The CA (through the CM) shall schedule, plan and conduct a commissioning scoping meeting with the entire commissioning team in attendance.

B. Miscellaneous Meetings. Other meetings will be planned and conducted by the CA (through the CM) as construction progresses. These meetings will cover coordination, deficiency resolution and planning issues with particular Contractors. The CA will plan these meetings and will minimize unnecessary time being spent by the Contractors.

3.2 REPORTING

A. The CA will coordinate commissioning meetings and activities through the CM. The CA will develop and maintain the Commissioning Issues Log to document non-compliance issues and deficiencies noted throughout the Cx process. The CA will regularly submit the Commissioning Issues Log to the CM who is responsible for communicating deficiencies to the responsible Contractors and coordinating resolution to issues. The CM and all Contractors are responsible for detailing the resolution of issues in the Commissioning Issues Log and returning it regularly to the CA as issues become resolved.

B. A preliminary commissioning report shall be generated meeting the requirements of paragraph 1.5.B.10.

C. A final commissioning report shall be generated meeting the requirements of paragraph 1.6.D.1.m.

3.3 START-UP AND INITIAL CHECKOUT

A. The Contractor responsible for the purchase of the equipment shall attach completed manufacturer's detailed start-up and checkout procedures and the Contractor's normally used field checkout sheets.

B. Sensor and Actuator Calibration. In lieu of specifications to the contrary, all field-installed control components and sensors (e.g., temperature, relative humidity, CO_2, pressure) and all actuators (e.g., dampers and valves) on all equipment shall be pre-commissioned as described within section 230923.1.11. The following general format shall be used by the contractor for recording all calibration results. Alternate methods and recording formats may be used if approved by the A/E and CA. All test instruments shall have had a certified calibration within the preceding 12 months.

Temperature Controls Pre-Commissioning Checklist					
Project Name:					
IBC Project #:					
SED Project #:					
Analog Inputs					
Equipment	Point Name	Sensor Range	Reference Reading	Sensor Reading	Testing Method
Analog Outputs					
Equipment	Point Name	Output Range	Visual Verification	Upstream Temp	Downstream Temp

Binary Inputs				
Equipment	Point Name	Verified Closed Status	Verified Open Status	Associated Binary Output

Binary Outputs				
Equipment	Point Name	Enable/Disable Verified	Associated Binary Input	Hard Wire Interlocks Tested

C. Pre-Commissioning shall include completion of the following additional items. The Controls Contractor, via the Construction Manager, shall provide a notice to the Commissioning Authority certifying that the following have been completed and are ready for testing.

1. Communication Network Startup – All controllers and integration with factory controllers shall be completed.

2. Graphical User interface – the GUI shall be completed and ready for review for compliance with section 230923.

3. Software – The contractor shall certify that the software meets the requirements of the contract documents and is ready for functional testing.

D. Functional testing shall not proceed until pre-commissioning as described under this paragraph, including the notice of certification to the Commissioning Authority are complete, reviewed and accepted by both the CA and the A/E.

3.4 FUNCTIONAL PERFORMANCE TESTING

A. The commissioning activities described in the Functional Performance Tests as contained in the commissioning plan shall be performed by the contractor under the direction of the CA. Each task shall be assigned to the appropriate trade, generally the specific contractor providing the equipment. Only skilled tradesmen knowledgeable in the operation of the equipment and systems shall be perform the each of the FT requirements.

B. Objectives and Scope. The objective of Functional Performance Testing is to demonstrate that each system is operating according to the documented Design Intent and Contract Documents. Functional Performance Testing facilitates bringing systems from a state of substantial completion to full dynamic operation. During the testing process, areas of deficient performance are identified and corrected, improving the operation and functioning of the systems.

C. In general, each system will be operated through all critical modes of operation (e.g., seasonal, occupied, unoccupied, warm-up, cool-down, part- and full-load) where there is a specified system response. Verify each action and response documented in control sequences. Proper responses to such modes and conditions as power failure, freeze condition, low oil pressure, no flow, equipment failure, etc. may also be tested.

D. Test Methods.

1. Functional Performance Testing and verification may be achieved through a combination of manual testing (manual manipulation of the equipment and observation performance), monitoring field performance data and analyzing the results using the control system's trend log capabilities or by stand-alone dataloggers.

2. Setup. Each function and test shall be performed under conditions that simulate actual conditions as closely as is practicable. The tradesmen executing the test shall provide all necessary materials, system modifications, etc. to produce the necessary flows, pressures, temperatures, etc. necessary to execute the test according to the specified conditions. Upon completion of the test, the Contractor shall return all affected building equipment and systems to their pre-test condition. In the event that commissioning leads to changes in the baseline control setpoints and / or parameters, these shall be closely documented by the CA and forwarded to the Owner and A/E team for technical evaluation.

3. Coordination and Scheduling. The Contractors via the CM shall provide sufficient notice to the CA regarding their completion schedule for the Pre-Commissioning activities and startup of all equipment and systems.

   a. In general, functional testing is conducted after control system Pre-Commissioning and startup and Testing and Balancing have been satisfactorily completed. The control system is to be sufficiently tested before it is used for TAB or to verify performance of other components or systems. The air balancing and water balancing to be is completed and debugged before functional testing of air-related or water-related equipment or systems

4. Problem Solving. The CA may recommend solutions to problems found, however the burden of responsibility to solve, correct and retest problems is with the CM, GC, Contractors and A/E.

3.5 DOCUMENTATION, NON-COMPLIANCE AND APPROVAL OF TESTS

A. Documentation. The CA shall witness and document the results of all Functional Performance Tests using the specific procedural forms developed for that purpose.

B. Lighting control systems shall be tested by the Division 26 contractor as described in Section(s) 260923 and documented on the forms provided therein. The completed test forms shall be provided to the CA for field verification (on a spot-check basis) and inclusion in the project commissioning record.

C. Non-Compliance.

1. The CA shall record the results of the Functional Test on the test form. All deficiencies or non-compliance issues shall be noted and reported to the CM via a Commissioning Issues Log, developed by the CA.

2. Minor deficiencies identified during testing may be corrected during testing at the discretion of the CA. In such cases the deficiency and resolution will be documented on the Commissioning Issues Log.

3. Every effort will be made to expedite the testing process without compromising the integrity of the test procedures. However, the CA shall not be pressured into overlooking deficiencies or loosening acceptance criteria to satisfy scheduling or cost issues unless the Owner provides a written request to do so.

4. Each deficiency identified during testing shall be recorded on the Commissioning Issues Log. The CM shall coordinate resolution of any deficiencies. Any disputes regarding the validity of or responsibility for correcting a deficiency shall follow these guidelines:

    a. Resolutions are made at the lowest management level possible. Other parties are brought into the discussions as needed. Final interpretive authority is with the A/E. Final acceptance authority is with the Owner.

    b. Once the interpretation and resolution have been decided, the appropriate party corrects the deficiency. The CA reschedules the test and the test is repeated until satisfactory performance is achieved.

5. Cost of Retesting.

    a. The cost for the CA to retest / re-verify a Functional Test, after a second round of testing on a piece of equipment shall be provided by the party responsible for the defect or deficiency. In the event that multiple parties are responsible for test failures, any cost recovery for retesting shall be negotiated with the CM and subsequently assigned to the responsible parties.

6. Any required retesting by any Contractor shall not be considered a justified reason for a claim of delay or for a time extension by the Contractor.

7. Failure Due to Manufacturer Defect. If 10% or three, whichever is greater, of identical pieces (size alone does not constitute a difference) of equipment fail to perform to the Contract Documents (mechanically or substantively) due to manufacturing defect, all identical units may be considered unacceptable by the CA. In such case, the Contractor shall provide the Owner with the following:

    a. Within one week of notification from the CA, the Contractor or manufacturer's representative shall examine all other identical units making a record of the findings. The findings shall be provided to the CM within two weeks of the original notice.

    b. Within two weeks of the original notification, the Contractor or manufacturer shall provide a signed and dated, written explanation of the problem, cause of failures, etc. and all proposed solutions which shall include full equipment submittals. The proposed solutions shall not significantly exceed the specification requirements of the original installation.

    c. The CM shall determine whether a replacement of all identical units or a repair is acceptable.

    d. Two examples of the proposed solution shall be installed by the Contractor and the A/E and CA shall be allowed to test the installations for up to one week, where after the A/E, taking into account information provided by the CA shall decide whether to accept the solution.

e. Upon acceptance, the Contractor and/or manufacturer shall replace or repair all identical items, at their expense and extend the warranty accordingly, if the original equipment warranty had begun. The replacement/repair work shall proceed with reasonable speed beginning within one week from when parts can be obtained.

3.6 DEFERRED TESTING

A. Seasonal / Deferred Testing: During the warranty period, seasonal testing (tests delayed until weather conditions are closer to the system's design conditions) shall be completed as part of this contract. The CA shall note in the final commissioning report where environmental conditions did not allow for definitive results, or where testing could not be completed, and a description of requirements to complete the functional testing with a plan for implementation. The Owner and CM shall coordinate this activity with the Contractors. The results of this testing shall be forwarded to the CA to update the Commissioning Report. Any final adjustments to the O&M Manuals and as-built drawings due to the testing shall be made by the contractors.

END OF SECTION 019113

SECTION 024100 - DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Building demolition excluding removal of hazardous materials and toxic substances.

B. Selective demolition of built site elements.

C. Selective demolition of building elements for alteration purposes.

D. Abandonment and removal of existing utilities and utility structures.

1.2 RELATED REQUIREMENTS

A. Divion 00 Section Information Available to Bidders: Existing building survey conducted by Owner; information about known hazardous materials.

B. Section 011000 – Summary of Work: Limitations on Contractor's use of site and premises.

C. Section 011000 – Summary of Work: Sequencing and staging requirements.

D. Section 011000 – Summary of Work: Description of items to be removed by Owner.

E. Section 011000 – Summary of Work: Description of items to be salvaged or removed for re-use by Contractor.

F. Section 015100 - Temporary Facilities: Site fences, security, protective barriers, and waste removal.

G. Section 017310 - Cutting & Patching: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

H. Section 311201 – Site Preparation: Vegetation and existing debris removal; earth stripping and stockpiling.

I. Section 312201 – Site Earthwork: Rough and fine grading.

J. DEFINITIONS

K. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

L. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.

M. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.

N. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

O. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

P. MATERIALS OWNERSHIP

1. Unless otherwise indicated, demolition waste becomes property of Contractor.
2. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
   a. Carefully salvage in a manner to prevent damage and promptly return to Owner.

Q. PREINSTALLATION MEETINGS

1. Predemolition Conference: Conduct conference at Project site.
   a. Inspect and discuss condition of construction to be selectively demolished.
   b. Review structural load limitations of existing structure.
   c. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
   d. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
   e. Review areas where existing construction is to remain and requires protection.

1.3 DEFINITIONS

A. Demolish: Dismantle, raze, destroy, or wreck any building or structure or any part thereof.

B. Remove: Detach or dismantle items from existing construction and dispose of them off site, unless items are indicated to be salvaged or reinstalled.

C. Remove and Salvage: Detach or dismantle items from existing construction in a manner to prevent damage. Clean, package, label and deliver salvaged items to Owner in ready-for-reuse condition.

D. Remove and Reinstall: Detach or dismantle items from existing construction in a manner to prevent damage. Clean and prepare for reuse and reinstall where indicated.

E. Existing to Remain: Designation for existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.4 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.5 SUBMITTALS

A. See Section 013300 Submittals, for submittal procedures.

B. Site Plan: Indicate:

1. Vegetation to be protected.
2. Areas for temporary construction and field offices.
3. Areas for temporary and permanent placement of removed materials.

C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.

1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
2. Summary of safety procedures.
3. Identify demolition firm and submit qualifications.

D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For refrigerant recovery technician. By Mechanical Contractor.

B. Engineering Survey: Submit engineering survey of condition of building.

C. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property for environmental protection. Indicate proposed locations and construction of barriers.

1. Adjacent Buildings: Detail special measures proposed to protect adjacent buildings to remain including means of egress from those buildings.

D. Schedule of Building Demolition Activities: Indicate the following:

1. Detailed sequence of demolition work, with starting and ending dates for each activity.
2. Temporary interruption of utility services.
3. Shutoff and capping or re-routing of utility services.

E. Predemolition Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by salvage and demolition operations. Comply with Section 013233 "Photographic Documentation." Submit before the Work begins.

F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered. By Mechanical Contractor.

1.7 QUALITY ASSURANCE

A. Demolition Firm Qualifications: Company specializing in the type of work required.

PART 2 PRODUCTS

2.1 MATERIALS

A. Fill Material: See Section 312323.

PART 3 EXECUTION

3.1 DEMOLITION

A. Remove the entire building designated Gymnasium.

B. Remove portions of existing buildings in the following sequence:

1. Roofing & Equipment.
2. CMU and Brick Veneer Walls.
3. Structural Steel.

3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with other requirements specified in Section 017700.

B. EXAMINATION

C. Verify that utilities have been disconnected and capped before starting demolition operations.

D. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

E. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.

F. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.

1. Obtain required permits.
2. Comply with applicable requirements of NFPA 241.
3. Use of explosives is not permitted.
4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
5. Provide, erect, and maintain temporary barriers and security devices.
6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.

7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
8. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
9. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.

G. Do not begin removal until receipt of notification to proceed from Owner's representative.

H. Do not begin removal until built elements to be salvaged or relocated have been removed.

I. Do not begin removal until vegetation to be relocated has been removed and vegetation to remain has been protected from damage.

J. PROTECTION

K. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.

L. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of demolition.

M. Existing Utilities to Remain: Maintain utility services to remain and protect from damage during demolition operations.

1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.
   a. Provide at least 72 hours` notice to occupants of affected buildings if shutdown of service is required during changeover.

N. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Section 015000 "Temporary Facilities and Controls."

1. Protect adjacent buildings and facilities from damage due to demolition activities.
2. Protect existing site improvements, appurtenances, and landscaping to remain. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
3. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
4. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.

5. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.
6. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.
7. Historic Areas: Demolition and hauling equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection, by 12 inch (300 mm) or more.

O. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

P. Minimize production of dust due to demolition operations. Do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

Q. Hazardous Materials: Present in buildings should be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine the report and the Environmental drawings to become aware of locations where hazardous materials are present.

1. Hazardous material remediation is specified elsewhere in the Contract Documents.
2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under the procedures specified elsewhere in the Contract Documents.
3. If hazardous materials are discovered during the removal operations, stop work, do not disturb and notify the Architect and Owner's Representative.

3.3 EXISTING UTILITIES

A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone. Identify and mark, in same manner as other utilities to remain, utilities to be reconnected.

3.4 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.

1. Verify construction and utility arrangements are as indicated.
2. Report discrepancies to Architect before disturbing existing installation.
3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from areas that remain occupied.

1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 015000 in locations indicated on drawings.
2. Provide sound retardant partitions of construction and in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure, except for interruptions required for replacement or modifications; prevent water and humidity damage.

D. Remove existing work as indicated and required to accomplish new work.

1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction indicated.
2. Remove items indicated on drawings.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, Telecommunications) Remove existing systems and equipment as indicated.

1. Maintain existing active systems to remain in operation and maintain access to equipment and operational components.
2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
3. Verify that abandoned services serve only abandoned facilities before removal.
4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings. Remove back to source of supply where possible, otherwise cap stub and tag with identification.

F. Protect existing work to remain.

1. Prevent movement of structure. Provide shoring and bracing as required.
2. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.
4. Patch to match new work.

3.5 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site complying with all applicable laws and regulations.

B. Remove materials not to be reused on site.

C. Leave site in clean condition, ready for subsequent work.

D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 024100

SECTION 028213 - ASBESTOS ABATEMENT

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 SCOPE OF WORK

A. The asbestos abatement work will consist of the removal and disposal of non-asbestos materials, asbestos containing materials and asbestos contaminated materials at the Maine-Endwell Central School District Homer Brink Elementary School as a part of the Maine-Endwell CSD 2022 CIP – Phase 5 Homer Brink ES Project (SED Project Number 03-11-01-06-0-001-023) .

B. Reference Drawings B X0.00, B X0.01 and B X0.02 for asbestos abatement notes and abatement locations, quantities, and details. Reference the Bid Package "Information Available to Bidders" section for the Pre-Renovation Asbestos Survey Report.

C. Abatement operations shall include, but not limited to, the removal of the following asbestos containing and asbestos contaminated materials:

Drawing	Location	Description of ACM Material	Approximate Quantity (SF/LF/Unit)
B X0.01	Corridors G-1 and G-3	Asbestos Floor Tile / Mastic	820 SF
B X0.02	Gym Roof Section	Skylight Asbestos Roof Curb Flashing	6 Skylights / 18 SF Flashing

1. Asbestos Containing Floor Tile and associated Asbestos Containing Mastic: Asbestos containing 9" x 9" floor tile (VAT) and associated asbestos containing mastic to be removed is present beneath non-asbestos 12" x 12" floor tile in the basement Corridors G-1 & G-3 as shown on Drawing B X0.01. The total quantity of VAT / mastic to be removed at the referenced locations is approximately 820 square feet. VAT / mastic abatement work shall be performed in a large-project negative pressure work area having attached airlock systems and utilizing a remote decontamination enclosure system as per the requirements of 12 NYCRR Part 56 Subpart 56-11.7 for "Non-friable Flooring and/or Mastic Removal" and AV-A-3 for "Chemical Methods with Low Speed Buffers".

2. Asbestos Containing Roof Curb Flashing: The asbestos containing roof curb flashing to be removed is associated with the gym roof skylight curbs as shown on drawing B X0.03. The total quantity of curb flashing associated with the 6 skylights to be removed is approximately 18 square feet. Asbestos roof curb flashing removal shall be performed within an exterior regulated abatement work area as per the requirements of 12 NYCRR Part 56 Subpart 56-11.6 for "Exterior Project Removal of Non-friable ACM Roofing".

D. Measurements and quantities included above are approximate and are provided for reference only. The contractor is responsible for field verifying quantities and any discrepancies shall be brought to the attention of the owner and owner representative upon discovery.

E. The Contractor shall be aware of all conditions of the Project and is responsible for verifying quantities and locations of all Work to be performed. Failure to do so shall not relieve the Contractor of its obligation to furnish all labor and materials necessary to perform the Work.

F. All Work shall be performed in strict accordance with the Project Documents and all governing codes, rules, and regulations. Where conflicts occur between the Project Documents and applicable codes, rules, and regulations, the more stringent shall apply.

1.3 SPECIAL JOB CONDITIONS

A. The Contractor may submit for a Site Specific Variance to accomplish the Project. Variance petition shall be submitted to the Owners Representative for review and approval prior to submission to the New York State Department of Labor (NYS DOL).

B. Work shifts and working hours shall be as necessary to complete the project in the required time frame and shall be submitted to the Owner's Representative for review/approval. The Contractor shall coordinate and schedule all Work with the facility, the Owner, and the Owner's representative.

C. Contractor is to provide add / deduct unit prices for the following items. Reference Section 012200 "Unit Prices for additional unit pricing information and requirements.

1. Unit Price No. 1 - Removal of Asbestos Containing Pipe Fitting Insulation present above non-asbestos ceiling systems and within non-asbestos wet-walls / interstitial wall spaces – Price shall be based on removing up to 10 linear feet of fitting insulation utilizing glovebags in a Minor-Project Negative Pressure Tent Enclosure up to 10' x 10' in size. Unit price shall include removal of non-asbestos wall / ceiling systems as necessary to access fitting insulation, construction of minor-project tent enclosure / airlock systems, glovebag removal of up to 10 linear feet of fitting insulation, waste packaging / disposal, and all other applicable requirements of 12 NYCRR Part 56 for minor-project glovebag in tent removal. Provide Cost per Tent.

2. Unit Price No. 2 - Removal of Asbestos Containing Floor Tile and Mastic – Price shall be based on removing asbestos containing floor tile and associated asbestos containing mastic. Unit price shall include construction of negative pressure work area / splash-guards, airlock system, waste packaging / disposal, and all other applicable requirements of 12 NYCRR Part 56 Subpart 56-11.7 for "Non-friable Flooring and/or Mastic Removal" and AV-A-3 for "Chemical Methods with Low Speed Buffers". Provide Cost per Square Foot.

D. Owner will provide a tie-in location for electric and water source. The contractor will be responsible for providing GFCI electrical panel(s) and connecting to the building system as necessary for project power.

E. Any air sampling necessary to meet OSHA requirements will be the responsibility of the Asbestos Contractor.

F. Waste Dumpster locations shall be approved by the Owner's Representative. All dumpsters receiving RACM Waste shall be lined, enclosed and lockable (i.e. no open-to dumpsters).

G. Locations of all Airlocks and/or Decontamination Enclosure Units shall be approved by the Owner's Representative.

1.4 PERMITS AND COMPLIANCE

A. The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State, and local laws, rules, and regulations pertaining to Work practices, protection of Workers, authorized visitors to the site, persons, and property adjacent to the Work.

B. Perform asbestos related Work in accordance with New York State Industrial Code Rule 56 (herein referred to as 12 NYCRR Part 56), 40 CFR 61, 29 CFR 1926, AHERA Regulations, 40 CFR Part 763 Subpart E and as specified herein. Where more stringent requirements are specified, adhere to the more stringent requirements.

C. The Contractor must maintain current licenses pursuant to New York State Department of Labor and Department of Environmental Conservation for all Work related to this Project, including the removal, handling, transport, and disposal of asbestos containing materials.

D. The Contractor must have and submit proof upon request that any persons employed by the Contractor to engage in or supervise Work on any asbestos Project have a valid NYS asbestos handling certificate pursuant to Code Rule 56.

E. Failure to adhere to the Project Documents shall constitute a breach of the Contract and the Owner shall have the right to and may terminate the Contract provided, however, the failure of the Owner to so terminate shall not relieve the Contractor from future compliance

F. The Contractor shall be responsible for compliance with The New York State Uniform Fire Prevention and Building Code, or its successor during all Work at the site.

G. The contractor shall be responsible for any waste water permits required to perform his work under this contract. Any cost associated with waste water permits shall be included in his Bid.

H. The contractor shall be responsible for any Local City and/or State building permits required to perform his work. Any cost associated with building permits shall be included in his Bid.

I. Failure to adhere to the Project Documents shall constitute a breach of the Contract and the Owner shall have the right to and may terminate the Contract provided, however, the failure of the Owner to so terminate shall not relieve the Contractor from future compliance.

1.5 SUBMITTALS

A. Reference the Front–end and Division 01 documents for submittal requirements/procedures.

B. Pre-Work Submittals: Within 7 days prior to the pre-construction conference, the Contractor shall submit the documents listed below for review and approval prior to the commencement of asbestos abatement activities:
   1. Contractor license issued by New York State Department of Labor.
   2. Progress Schedule:
      a. Show the complete sequence of abatement activities and the sequencing of Work for each floor.

b. Show the dates for the beginning and completion of each major element of Work including substantial completion dates for each Work Area and Floor.

3. Project Notifications: As required by Federal and State regulatory agencies together with proof of transmittal (i.e. certified mail return receipt).
4. Building Occupant Notification: As required by regulatory agencies.
5. Abatement Work Plan: Provide plans that clearly indicate the following:
   a. All Work Areas/containments numbered sequentially.
   b. Proposed locations and types of all decontamination enclosures.
   c. Location of water and electrical connections to building services.
   d. Waste transport routes through the building to the waste storage container.
6. Disposal Site/Landfill Permit from applicable regulatory agency.
7. NYS Department of Environmental Conservation Waste Transporter Permit.

C. On-Site Submittals: Refer to Part 3.01.D for all submittals, documentation, and postings required to be maintained on-site during abatement activities.

D. Project Close-out Submittals: Within 15 days of project completion, the Contractor shall submit an electronic pdf format copy of the documents listed below for review and approval prior to the Contractor's final payment.
   1. OSHA compliance air monitoring records conducted during the Work.
   2. Daily progress log, including the entry/exit log.
   3. Provide the Contractor's Acknowledgement Statement located in Appendix A of this specification section that lists all Workers used in the performance of the Project, including name and NYS DOL certification number. The Statement shall be notarized (Original notarized statement shall be sent to the owner).
   4. Fully executed/signed Originals of all waste disposal manifests shall be submitted as per applicable State and Federal Regulations and time frame requirements.

1.6 PRE-CONSTRUCTION CONFERENCE

A. Prior to start of preparatory Work under this Contract, the Contractor shall attend a pre-construction conference attended by Owner, Facility Personnel, and Environmental Consultant.

B. Agenda for this conference shall include but not necessarily be limited to:
   1. Contractor's scope of Work, Work plan, and schedule to include number of workers and shifts.
   2. Contractor's safety and health precautions including protective clothing and equipment and decontamination procedures.
   3. Environmental Consultant's duties, functions, and authority.
   4. Contractor's Work procedures including:
      a. Methods of job site preparation and removal methods.
      b. Respiratory protection.
      c. Disposal procedures.
      d. Cleanup procedures.
      e. Fire exits and emergency procedures.
   5. Contractor's required pre-work and on-site submittals, documentation, and postings.
   6. Contractor's plan for twenty-four (24) hour Project security both for prevention of theft and for barring entry of unauthorized personnel into Work Areas.
   7. Temporary utilities.
   8. Handling of furniture and other moveable objects.
   9. Storage of removed asbestos containing and asbestos contaminated materials.

10. Waste disposal requirements and procedures, including use of the contractor's waste manifest.

C. In conjunction with the conference the Contractor shall accompany the Owner and Environmental Consultant on a pre-construction walk-through documenting existing condition of finishes and furnishings, reviewing overall Work plan, location of fire exits, fire protection equipment, water supply and temporary electric tie-in.

1.7 APPLICABLE STANDARDS AND REGULATIONS

A. The Contractor shall comply with the following codes and standards, except where more stringent requirements are shown or specified:

B. Federal Regulations:
1. 29 CFR 1910.1001, "Asbestos" (OSHA)
2. 29 CFR 1910.1200, "Hazard Communication" (OSHA)
3. 29 CFR 1910.134, "Respiratory Protection" (OSHA)
4. 29 CFR 1910.145, "Specification for Accident Prevention Signs and Tags" (OSHA)
5. 29 CFR 1926, "Construction Industry" (OSHA)
6. 29 CFR 1926.1101, "Asbestos, Tremolite, Anthophyllite, and Actinolite" (OSHA)
7. 29 CFR 1926.500 "Guardrails, Handrails and Covers" (OSHA)
8. 40 CFR 61, Subpart A, "General Provisions" (EPA)
9. 40 CFR 61, Subpart M, "National Emission Standard for Asbestos" (EPA)
10. 40 CFR Part 763 Subpart E, "Asbestos-Containing Materials in Schools Rule"
11. TSCA Subchapter II: Asbestos Hazard Emergency Response (15 U.S.C. § 2641-2656)
12. 49 CFR 171-172, Transportation Standards (DOT)

C. New York State Regulations:
1. 12 NYCRR, Part 56, "Asbestos", Industrial Code Rule 56 (DOL).
2. 6 NYCRR, Parts 360, 364, Disposal and Transportation (DEC)
3. 10 NYCRR, Part 73, "Asbestos Safety Program Requirements" (DOH)

D. Standards and Guidance Documents:
1. American National Standard Institute (ANSI) Z88.2-80, Practices for Respiratory Protection
2. ANSI Z9.2-79, Fundamentals Governing the Design and Operation of Local Exhaust Systems
3. EPA 560/585-024, Guidance for Controlling Asbestos Containing Materials in Buildings (Purple Book)
4. EPA 530-SW-85-007, Asbestos Waste Management Guidance
5. ASTM Standard E1368 "Standard Practice for Visual Inspection of Asbestos Abatement Projects."

1.8 NOTICES

A. The Contractor shall provide notification of intent to commence asbestos abatement activities as indicated below.

1. If applicable, at least ten (10) Working days prior to beginning abatement activities, send written notification to:

U.S. Environmental Protection Agency
National Emissions Standards for Hazardous Air Pollutants (NESHAPS) Coordinator
26 Federal Plaza, New York, NY 10007.

The Contractor is required to send notification via mail or package delivery service that will provide proof of delivery and receipt.

2. At least ten (10) days prior to beginning abatement activities, submit notification to:

New York State Department of Labor
Division of Safety and Health, Asbestos Control Program.
State Office Campus, Building 12 - Room 454
Albany, NY 12240

Contractor shall print copy of electronic NYS DOL Notification Notice and post onsite.

B. The Contractor shall post and/or provide Building Occupant Notification at least 10 days prior to beginning abatement activities as required by Code Rule 56.

1.9 PROJECT MONITORING AND AIR SAMPLING

A. The Owner shall engage the services of an Environmental Consultant (the Consultant) who shall provide Project Monitoring and Air Sampling for the project.

B. The Contractor is required to ensure cooperation of its personnel with the Consultant for the air sampling and Project monitoring functions described in this section. The Contractor shall comply with all direction given by the Consultant during the course of the Project.

C. The Consultant shall review and approve or disapprove all onsite submittals as required by section 3.01.

D. The Consultant shall staff the Project with a trained and certified person(s). This individual shall be designated as the Asbestos Project Monitor (APM).
   1. The APM shall be on-site at all times the Contractor is on-site. The Contractor shall not be permitted to conduct any Work unless the APM is on-site (except for inspection of barriers and negative air system during non-working days).
   2. The APM shall have the authority to direct the actions of the Contractor verbally and in writing to ensure compliance with the Project documents and all regulations. The APM shall have the authority to Stop Work when gross Work practice deficiencies or unsafe practices are observed, or when ambient fiber concentrations outside the removal area exceed .01 f/cc or background level.
      a. Such Stop Work order shall be effective immediately and remain in effect until corrective measures have been taken and the situation has been corrected.
      b. Standby time required to resolve the situation shall be at the Contractor's expense.
   3. The APM shall provide the following services:
      a. Inspection of the Contractor's Work, practices, and procedures, including temporary protection requirements, for compliance with all regulations and Project specifications.
      b. Provide abatement Project air sampling as required by applicable regulations and the Owner’s requirements. Sampling will include background, work area preparation, asbestos handling, and final cleaning and clearance air sampling.
      c. Verify daily that all Workers used in the performance of the Project are certified by the appropriate regulatory agency.
      d. Monitor the progress of the Contractor's Work, and report any deviations from the schedule to the Owner’s Representative.
      e. Monitor, verify, and document all waste load-out operations.

f. Verify that the Contractor is performing personal air monitoring daily, and that results are being returned and posted at the site as required.

g. The APM shall maintain a log on site that documents all project related and Consultant and Contractor actions, activities, and occurrences.

4. The following minimum inspections shall be conducted by the APM. Additional inspections shall be conducted as required by Project conditions. Progression from one phase of Work to the next by the Contractor is only permitted with the written approval of the APM.

   a. Pre-Construction Inspection: The purpose of this inspection is to verify the existing conditions of the Work Areas and to document these conditions.

   b. Pre-Abatement Inspection: The purpose of this inspection is to verify the integrity of each containment system prior to disturbance of any asbestos containing material. This inspection shall take place only after the Work Area is fully prepped for removal.

   c. Work In-Progress Inspections: The purpose of this inspection is to monitor the Work practices and procedures employed on the Project and to monitor the continued integrity of the containment system. Inspections within the removal areas shall be conducted by the APM during all preparation, removal, and cleaning activities at least twice every Work shift. Additional inspections shall be conducted as warranted.

   d. Visual Clearance Inspection: The purpose of this inspection is to verify that: all materials in the scope of work have been properly removed; no visible asbestos debris/residue remains; no pools of liquid or condensation remains; and all required cleanings are complete. This inspection shall be conducted before final air clearance testing.

   e. Post-Clearance Inspection: The purpose of this inspection is to ensure the complete removal of ACM, including debris, from the Work Area after satisfactory final clearance sampling and removal of all isolation/critical barriers and equipment from the Work Area.

E. The Consultant shall provide abatement Project air sampling and analysis as required by applicable regulations (New York State and/or AHERA). Sampling will include background, work area preparation, asbestos handling, and final cleaning and clearance air sampling.

1. Unless otherwise directed by the Owner, the Consultant shall have samples analyzed by Phase Contrast Microscopy (PCM). TEM clearance following AHERA protocols/methodology shall be followed for all large-project work areas.

2. Samples shall be collected as required by applicable regulations (New York State and/or AHERA) and these specifications. If Transmission Electron Microscopy (TEM) clearance air sampling is utilized by the owner, the clearance criteria and sampling protocols must be in compliance with AHERA. If PCM air sample analysis results exceed the satisfactory clearance criteria, then TEM analysis of the entire set of clearance air samples may be used, provided that a standard NIOSH/ELAP accepted laboratory analysis method is utilized that shall report each air sample result in fibers per cubic centimeter.

3. If the air sampling during any phase of the abatement project reveals airborne fiber levels at or above .01 fibers/cc or the established background level, whichever is greater, outside the regulated Work Area, Work shall stop immediately and corrective measures required by Code Rule 56 shall be initiated. Notify all employers and occupants in adjacent areas. The Contractor shall bear the burden of any and all costs incurred by this delay.

4. The Environmental Consultant shall submit copies of all elevated air sampling results collected during abatement and all final air clearance results to the Commissioner of Labor.

1.10 CONTRACTOR AIR SAMPLING

A. In addition to the requirements of OSHA 1926.1101, the Contractor shall be required to perform personal air monitoring every Work shift in each Work Area during which abatement activities occur in order to determine that appropriate respiratory protection is being worn and utilized.

B. The Contractor shall conduct air sampling that is representative of both the 8-hour time weighted average and 30-minute short-term exposures to indicate compliance with the permissible exposure and excursion limits.

C. The Contractor's laboratory analysis of air samples shall be conducted by an NYS DOH ELAP approved laboratory, subject to approval of the Owner's Representative.

D. Results of personnel air sample analyses shall be available, verbally, within twenty-four (24) hours of sampling and shall be posted upon receipt. Written laboratory reports shall be delivered and posted at the Work site within five (5) days. Failure to comply with these requirements may result in all work being stopped until compliance is achieved.

1.11 PROJECT SUPERVISOR

A. The Contractor shall designate a full-time Project Supervisor who shall meet the following qualifications:
   1. The Project Supervisor shall hold New York State certification as an Asbestos Supervisor.
   2. The Project Supervisor shall meet the requirements of a "Competent Person" as defined by OSHA 1926.1101 and shall have a minimum of one year experience as a supervisor.
   3. The Project Supervisor must be able to read and write English fluently, as well as communicate in the primary language of the Workers.

B. If the Project Supervisor is not on-site at any time whatsoever, all Work shall be stopped. The Project Supervisor shall remain on-site until the Project is complete. The Project Supervisor cannot be removed from the Project without the written consent of the Owner. The Project Supervisor shall be removed from the Project if so requested by the Owner.

C. The Project Supervisor shall maintain the bound Daily Project Log that also includes the entry/exit logs as required by New York State Department of Labor and section 2.03 of the specifications and the Waste Disposal Log required by section 4.04 of the specifications.

D. The Project Supervisor shall be responsible for the performance of the Work and shall represent the Contractor in all respects at the Project site. The Supervisor shall be the primary point of contact for the Asbestos Project Monitor.

1.12 MEDICAL REQUIREMENTS

A. Before exposure to airborne asbestos fibers, provide Workers with a comprehensive medical examination as required by 29 CFR 1910.1001, and 29 CFR 1926.1101.
   1. This examination is not required if adequate records show the employee has been examined as required by 29 CFR 1910.1001, and 29 CFR 1926.1101 within the past year.
   2. The same medical examination shall be given on an annual basis to employees engaged in an occupation involving asbestos fibers and within thirty (30) calendar days before or after the termination of employment in such occupations.
   3. Medical Examination records shall be maintained on site for each employee.

1.13 TRAINING

A. As required by applicable regulations, prior to assignment to asbestos Work instruct each employee with regard to the hazards of asbestos, safety and health precautions, and the use and requirements of protective clothing and equipment.

B. Establish a respirator program as required by ANSI Z88.2 and 29 CFR 1910.134, and 29 CFR 1926.1101. Provide respirator training and fit testing.

C. An onsite "tool box talk" is mandatory for all Contractor field personnel before the asbestos removal can begin. This talk will review Cornell University practices and procedures pertaining to asbestos control. Workers not complying with these specifications or Cornell University practices and procedures will be asked to leave the job.

1.14 RESPIRATORY PROTECTION

A. Select respirators from those approved by the Mine Safety and Health Administration (MSHA), and the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services.

B. Respirators shall be individually fit-tested to personnel under the direction of an Industrial Hygienist on a yearly basis. Fit-tested respirators shall be permanently marked to identify the individual fitted, and use shall be limited to that individual. Fit-test records shall be maintained on site for each employee.

C. Where fiber levels permit, and in compliance with regulatory requirements, Powered Air Purifying Respirators (PAPR) are the minimum allowable respiratory protection permitted to be utilized during gross removal operations of OSHA Class I or OSHA Class II friable ACM.

D. No respirators shall be issued to personnel without such personnel participating in a respirator training program.

E. High Efficiency Particulate Air (HEPA) respirator filters shall be approved by NIOSH and shall conform to the OSHA requirements in 29 CFR 1910.134 and 29 CFR 1926.1101.

F. A storage area for respirators shall be provided by the Contractor in the clean room side of the personnel decontamination enclosure where they will be kept in a clean environment.

G. The Contractor shall provide and make available a sufficient quantity of respirator filters so that filter changes can be made as necessary during the work day. Filters will be removed and discarded during the decontamination process. Filters cannot be reused. Filters must be changed if breathing becomes difficult.

H. Filters used with negative pressure air purifying respirators shall not be used any longer than one eight (8) hour work day.

I. Any authorized visitor, Worker, or supervisor found in the Work Area not wearing the required respiratory protection shall be removed from the Project site and not be permitted to return.

J. The Contractor shall have at least two (2) Powered Air Purifying Respirators stored on site designated for authorized visitors use. Appropriate respirator filters for authorized visitors shall be made available by the Contractor.

1.15 DELIVERY AND STORAGE

A. Deliver all materials to the job site in original packages with containers bearing manufacturer's name and label.

B. Store all materials at the job site in a suitable and designated area.
   1. Store materials subject to deterioration or damage away from wet or damp surfaces and under cover.
   2. Protect materials from unintended contamination and theft.
   3. Storage areas shall be kept clean and organized.

C. Remove damaged or deteriorated materials from the job site. Materials contaminated with asbestos shall be disposed of as asbestos debris as herein specified.

1.16 TEMPORARY UTILITIES

A. Temporary shutdown of HVAC and lock out of electric power to abatement work areas shall be the responsibility of the contractor and shall be coordinated with the owner. If electrical circuits, machinery and other electrical systems in or passing through a given regulated abatement work area must stay in operation, the contractor shall isolate/seal the live electric as per the requirements of 12 NYCRR Part 56 Subpart 56-7.7.

B. The Owner will provide a tie-in location to building power for the Contractor's GFCI electric panel for project power. All temporary power to the work areas shall be brought in from outside the work area through a ground-fault circuit interrupter at the source. The contractor will be responsible for all temporary power (including the power required by the owner's representative for air sampling equipment). All operations associated with electrical service work (i.e. lockout, temporary power hook-up, etc.) shall be performed by a licensed electrician.

C. Provide temporary lighting with "weatherproof" fixtures for all Work Areas including decontamination chambers.
   1. The entire Work Area shall be kept illuminated at all times.
   2. Provide lighting as required by the Environmental Consultant for the purposes of performing required inspections.

D. All temporary devices and wiring used in the Work Area shall be capable of decontamination procedures including HEPA vacuuming and wet-wiping.

E. Utilize domestic water service, if available, from Owner's existing system. Provide hot water heaters with sufficient capacity to meet Project demands.

PART 2 PRODUCTS

2.1 PROTECTIVE CLOTHING

A. Provide personnel utilized during the Project with disposable protective whole body clothing, head coverings, gloves and foot coverings. Provide disposable plastic or rubber gloves to protect hands. Cloth gloves may be worn inside the plastic or rubber for comfort, but shall not be used alone. Make sleeves secure at the wrists and make foot coverings secure at the ankles by the use of tape, or provide disposable coverings with elastic wrists or tops.

B. Provide sufficient quantities of protective clothing to assure a minimum of four (4) complete disposable outfits per day for each individual performing abatement Work.

C. Eye protection and hard hats shall be provided and made available for all personnel entering any Work Area.

D. Authorized visitors shall be provided with suitable protective clothing, headgear, eye protection, and footwear whenever they enter the Work Area.

2.2 SIGNS AND LABELS

A. Provide warning signs and barrier tapes at all approaches to asbestos Work Areas. Locate signs at such distance that personnel may read the sign and take the necessary protective steps required before entering the area.

1. Provide danger signs in vertical format conforming to 29 CFR 1926.1101, minimum 20" x 14" displaying the following legend:

DANGER
ASBESTOS CANCER AND LUNG DISEASE
HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
ARE REQUIRED IN THIS AREA

2. Provide 3" wide yellow barrier tape printed with black lettered, "DANGER ASBESTOS REMOVAL". Locate barrier tape across all corridors, entrances and access routes to asbestos Work Area. Install tape 3' to 4' AFF.

B. Provide asbestos danger labels affixed to all asbestos materials, scrap, waste, debris and other products contaminated with asbestos.

1. Provide asbestos danger labels of sufficient size to be clearly legible, displaying the following legend:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

2. Provide the following asbestos labels, of sufficient size to be clearly legible, for display on waste containers (bags or drums) which will be used to transport asbestos contaminated material in accordance with United States Department of Transportation 49 CFR Parts 171 and 172:

RQ HAZARDOUS
SUBSTANCE
SOLID, NOS
ORM-E, NA 9188
ASBESTOS

3. Generator identification information shall be affixed to each waste container indicating the following printed in indelible ink:

Generator Name
Facility Name
Facility Address

2.3 DAILY PROJECT LOG

A. Provide a Daily Project Log. The log shall contain on title page the Project name, name, address and phone number of Owner; name, address and phone number of Owner's Representative; name, address and phone number of Environmental Consultant; name, address and phone number of Abatement Contractor; emergency numbers including, but not limited to local Fire/Rescue department and all other New York State Department of Labor requirements.

B. All entries into the log shall be made in non-washable, permanent ink and such pen shall be strung to or otherwise attached to the log to prevent removal from the log-in area. Under no circumstances shall pencil entries be permitted.

C. All persons entering and exiting the Work Area shall sign the log and include name, social security number, and time.

D. The Project Supervisor shall document all Work performed daily and note all inspections required by Code Rule 56, i.e. testing and inspection of barriers and enclosures.

2.4 SCAFFOLDING AND LADDERS

A. Provide all scaffolding and/or staging as necessary to accomplish the Work of this Contract. Scaffolding may be of suspension type or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of all scaffolding and ladders shall comply with all applicable OSHA construction industry standards.

B. Provide scaffolding and ladders as required by the Environmental Consultant for the purposes of performing required inspections.

2.5 SURFACTANT (AMENDED WATER)

A. Wet all asbestos-containing materials prior to removal with surfactant mixed and applied in accordance with manufacturer's printed instructions.

B. Approved Manufacturer:
   1. International Protective Coatings Corp.: Serpiflex Shield
   2. American Coatings Corp.: EPA 55 Asbestos Removal Agent
   3. Certified Technologies: CerTane 2075 Penetrating Surfactant

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2.6 ENCAPSULANT

A. Encapsulant shall be tinted or pigmented so that application when dry is readily discernible.

2.7 DISPOSAL BAGS, DRUMS, AND CONTAINERS

A. Provide 6 mil polyethylene disposal bags printed with asbestos caution labels. Bags shall also be imprinted with U.S. Department of Transportation required markings.

B. Provide 30 or 55 gallon capacity fiber, plastic, or metal drums capable of being sealed air and water tight if asbestos waste has the potential to damage or puncture disposal bags. Affix asbestos caution labels on lids and at one-third points around drum circumference to assure ready identification.

C. Containers and bags must be labeled in accordance with 40 CFR Part 61 NESHAPS and Code Rule 56. When the bags/containers are moved to the lockable hardtop dumpster from the waste decontamination system washroom, the bags must also be appropriately labeled with the date they are moved on the bag/container in waterproof markings.

D. Labeled ACM waste containers or bags shall not be used for non-ACM waste or trash. Any material placed in labeled containers or bags, whether turned inside out or not shall be handled and disposed of as ACM waste.

2.8 HEPA VACUUM EQUIPMENT

A. All dry vacuuming performed under this contract shall be performed with High Efficiency Particulate Absolute (HEPA) filter equipped industrial vacuums conforming to ANSI Z9.2.

B. Provide tools and specialized equipment including scraping nozzles with integral vacuum hoods connected to a HEPA vacuum with flexible hose.

2.9 POWER TOOLS

A. Any power tools used to drill, cut into, or otherwise disturb asbestos material shall be manufacturer equipped with HEPA filtered local exhaust ventilation.

2.10 POLYETHYLENE SHEETING

A. All polyethylene (plastic) sheeting used on the Project (including but not limited to sheeting used for critical and isolation barriers, fixed objects, walls, floors, ceilings, waste container) shall be at least 6 mil fire retardant sheeting.

B. Decontamination enclosure systems shall utilize at least 6 mil opaque fire retardant plastic sheeting. At least 2 layers of 6 mil reinforced fire retardant plastic sheeting shall be used for the flooring.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

A. Should visible emissions or water leaks be observed outside the Work Area, immediately stop Work and institute emergency procedures per Code Rule 56. Should there be elevated fiber levels outside the Work Area, immediately stop Work, institute emergency procedures per Code Rule 56, and notify all employers and occupants in adjacent areas. All costs incurred in decontaminating such non-Work Areas and the contents thereof shall be borne by the Contractor, at no additional cost to the Owner.

B. Medical approval, fit test reports, and NYS DOL certificates shall be on site prior to admittance of any Contractor's employees to the asbestos Work Area.

C. The following submittals, documentation, and postings shall be maintained on-site by the Contractor during abatement activities at a location approved by the Abatement Project Monitor:
   1. Contractor license issued by New York State Department of Labor.
   2. Certification, Worker Training, Medical Surveillance:
      a. New York State Asbestos Handler certification cards for each person employed in the removal, handling, or disturbance of asbestos.

      b. NYS Department of Health Certificate of Asbestos Safety Training DOH-2832 for each person employed in the removal, handling, or disturbance of asbestos.

      c. Evidence that Workers have received proper training required by the regulations and the medical examinations required by OSHA 29 CFR 1926.1101.

      d. Documentation that Workers have been fit tested specifically for respirators used on the Project.

   3. Daily OSHA personal air monitoring results.
   4. NYS Department of Health ELAP certification for the laboratory that will be analyzing the OSHA personnel air samples.
   5. NYS Department of Environmental Conservation Waste Transporter Permit.
   6. Project documents (specifications and drawings.)
   7. Notifications and variances (site specific and applicable.) Ensure that the most up-to-date notifications and variances are on-site.
   8. Applicable regulations.
   9. Safety Data Sheets for all supplies/chemicals used on the Project.
   10. Approved Abatement Work Plan.
   11. List of emergency telephone numbers.
   12. Magnahelic manometer semi-annual calibration certification.
   13. Supervisor's Daily Project Log.
   14. Entry/Exit Logs.

D. The following documentation shall be maintained on-site by the Abatement Project Monitor during abatement activities:
   1. Contractor license issued by New York State Department of Labor.
   2. Air Sample Log.
   3. Air sample results.
   4. Project Monitor Daily Log
   5. Asbestos Survey Report.
   6. A copy of ASTM Standard E1368 "Standard Practice for Visual Inspection of Asbestos Abatement Projects."

E. Each Work Area must be vacated by building occupants prior to decontamination enclosure construction and Work Area preparation.

F. All demolition necessary to access asbestos containing materials for removal must be conducted within negative pressure enclosures by licensed asbestos handlers. Demolition debris may be disposed of as construction and demolition debris provided the Abatement Project Monitor determines that it is not contaminated with asbestos and there has been no

disturbance of ACM within the enclosure. If the demolition debris is determined to be contaminated or ACM has been disturbed, it must be disposed of as asbestos waste.

3.2 PERSONNEL DECONTAMINATION ENCLOSURE

A. Provide a personnel decontamination enclosure system when required. The system shall be contiguous to the Work Area unless the use of a remote unit is permitted by Code Rule 56 or a Site Specific Variance. The decontamination enclosure shall not be located within the work area unless isolation barriers are installed. If the decontamination unit is accessible to the public it shall be fully framed and sheathed to prevent unauthorized entry.

B. For attached Unit, access to the Work Area will be from the clean room through an air-lock to the shower and through an air lock to the equipment room. Each airlock shall be a minimum of three feet from door to door. Additional air locks shall be provided as required by Code Rule 56 for remote decontamination enclosures.

C. The decontamination enclosure ceiling and walls shall be covered with one layer of opaque 6 mil polyethylene sheeting. Two layers of reinforced polyethylene sheeting shall be used to cover the floor.

D. The entrance to the clean room shall have a lockable door. Provide suitable lockers for storage of Worker's street clothes. Storage for respirators along with replacement filters and disposable towels shall also be provided.

E. Provide a temporary shower with individual hot and cold water supplies and faucets. Provide a sufficient supply of soap and shampoo. There shall be one shower for every six Workers. The shower room shall be constructed in such a way so that travel through the shower chamber shall be through the shower. The shower shall not be able to be bypassed.

F. Shower water shall be drained, collected and filtered through a system with at least a 5.0 micron particle size collection capability containing a series of several filters with progressively smaller pore sizes to avoid rapid clogging of the system. The filtered waste water shall then be discharged in accordance with applicable codes and the contaminated filters disposed of as asbestos waste.

G. The equipment room shall be used for the storage of tools and equipment. A walk-off pan filled with water shall be located in the Work Area outside the equipment room for Workers to clean foot coverings when leaving the Work Area. A labeled 6 mil plastic ACM waste bag for collection of contaminated clothing shall be located in this room.

H. The personal decontamination enclosure shall be cleaned and disinfected minimally at the end of each Work shift and as otherwise directed by the Asbestos Project Monitor.

3.3 WASTE DECONTAMINATION ENCLOSURE

A. Provide a waste decontamination enclosure system when required. The system shall be contiguous to the Work Area unless the use of a remote unit is permitted by Code Rule 56 or a Site Specific Variance. The decontamination enclosure shall not be located within the work area unless isolation barriers are installed. If the Unit is accessible to the public it shall be fully framed and sheathed to prevent unauthorized entry.

B. The waste decontamination enclosure system shall consist of a holding area, air lock and washroom. The airlock shall be a minimum of three feet from door to door. The entrance to the holding area shall have a lockable door.

C. The decontamination enclosure ceiling and walls shall be covered with one layer of opaque 6 mil polyethylene sheeting on walls and ceiling. Two layers of reinforced polyethylene sheeting shall be used to cover the floor.

D. Where there is only one egress from the Work Area, the holding area of the waste decontamination enclosure system may branch off from the personnel decontamination enclosure equipment room, which then serves as the waste wash room.

E. The waste wash room water shall be drained, collected, and filtered through a system with at least a 5.0 micron particle size collection capability containing a series of several filters with progressively smaller pore sizes to avoid rapid clogging of the system. The filtered waste water shall then be discharged in accordance with applicable codes and the contaminated filters disposed of as asbestos waste.

F. In small asbestos Projects where only one egress from the Work Area exists, the shower room may be used as a waste washroom. In this instance, the clean room shall not be used for waste storage, but shall be used for waste transfer to carts, which shall immediately be removed from this enclosure.

3.4 WORK AREA ENTRY AND EXIT PROCEDURES

A. Access to and from the asbestos Work Area is permitted only through the personnel decontamination enclosure unless otherwise stipulated in a Site Specific Variance, the Cornell Ithaca Campus-Wide Variance, or 12 NYCRR Part 56 Subpart 11 Special Projects.

B. Workers shall sign the entry/exit log upon every entry and exit.

C. The following procedures shall be followed when entering the Work Area:
   1. Before entering the Work Area, Workers shall proceed to the clean room, remove all street clothes, and don protective clothing, equipment, and respirators.
   2. Workers shall proceed from the clean room through the shower room and the equipment room and into the Work Area.

D. The following procedures shall be followed when exiting the Work Area:
   1. Before leaving the Work Area, gross asbestos contamination will be removed by brushing, wet cleaning and/or HEPA vacuuming.
   2. In the equipment room, Workers shall remove disposable clothing, but not respirators, and shall place clothing in plastic disposal bags for disposal as contaminated debris prior to entering the shower room.
   3. Workers shall shower thoroughly while wearing respirators, then wash respirator with soap and water prior to removal.
   4. Upon exiting the shower, Workers shall don new disposable clothing if the Work shift is to continue or street clothes to exit area. Under no circumstances shall Workers enter public non-Work Areas in disposable protective clothing.

E. If remote decontamination enclosures are permitted by Code Rule 56 or a Site Specific Variance, workers shall wear two disposable suits for all phases of Work. Workers exiting the work area shall HEPA vacuum the outer suit, enter the airlock, remove the outer suit and then place it back into the Work Area. A clean second suit shall be donned before exiting the

airlock and proceeding to the decontamination enclosure or another work area via the designated pathway required by Code Rule 56.

3.5 NEGATIVE AIR PRESSURE FILTRATION SYSTEM

A. For Minor Project negative pressure tent work areas, a HEP-vacuum shall be utilized for negative air as per 12 NYCRR Part 56-11.3

B. For small-project and large-project work areas, provide a portable asbestos filtration system that develops a minimum pressure differential of negative 0.02 in. of water column within all full enclosure areas relative to adjacent unsealed areas and that provides a minimum of 4 air changes per hour in the Work Area during abatement and 6 air changes for non-friable flooring and/or mastic removal.

C. Such filtration systems must be made operational after critical and isolation barriers are installed but before wall, floor, and ceilings are plasticized and shall be operated 24 hours per day during the entire Project until the final cleanup is completed and satisfactory results of the final air samples are received from the laboratory.

D. The system shall include a series of pre-filters and filters to provide High Efficiency Particulate Air (HEPA) filtration of particles down to 0.3 microns at 100% efficiency and below 0.3 microns at 99.9% efficiency. Provide sufficient replacement filters to replace pre-filters every 2 hours, secondary pre-filters every 24 hours, and primary HEPA filters every 600 hours of operation.

E. A minimum of one additional filtration unit of at least the same capacity as the primary unit(s) shall be installed and fully functional to be used during primary unit (s) filter changing and in case of primary failure.

F. At no time will the unit exhaust indoors, within 15 feet of a receptor, including but not limited to windows and doors, or adversely affect the air intake of the building. Exhaust ducting shall not exceed 25' in length unless the conditions of AV-A-2 are utilized. Provide construction fencing at ground level exhaust termination locations per Code Rule 56.

G. Upon electric power failure or shut-down of any filtration unit, all abatement activities shall stop immediately and only resume after power is restored and all filtration units are fully operating. For shut-downs longer than one hour, all openings into the Work Area, including the decontamination enclosures, shall be sealed.

H. For all OSHA Class I removal Work Areas, the Contractor shall provide a manometer to verify negative air pressure. Manometers shall be read twice daily and recorded within the Daily Project Log.

I. For all small and large project work areas, there shall be at least a 4 hour settling period after the Work Area is fully prepared and the negative filtration units have been started to ensure integrity of the barriers.

J. Once installed and operational, the Contractor's Supervisor shall conduct daily inspections of the Work Area to insure the airtight integrity of the enclosure and operation of the negative air system. Findings shall be recorded within the Daily Project Log. Inspections shall also be conducted on days when no abatement activities are in progress per Code Rule 56 (i.e. weekends).

3.6 REMOVAL OF ASBESTOS CONTAINING MATERIALS

A. Asbestos-containing materials shall be removed in accordance with the Contract Documents and the approved Asbestos Work Plan. Only one type of ACM shall be abated at a time within a Work Area. Where there are multiple types of ACM requiring abatement, Code Rule 56 procedures for sequential abatement shall be followed.

B. Sufficiently wet asbestos materials with a low pressure, airless fine spray of surfactant to ensure full penetration prior to material removal. Re-wet material that does not display evidence of saturation.

C. One Worker shall continuously apply amended water while ACM is being removed.

D. Perform cutting, drilling, abrading, or any penetration or disturbance of asbestos containing material in a manner to minimize the dispersal of asbestos fibers into the air. Use equipment and methods specifically designed to limit generation of airborne asbestos particles. All power operated tools used shall be provided with HEPA equipped filtered local exhaust ventilation.

E. Upon removal of ACM from the substrate, the newly exposed surfaces shall be HEPA vacuumed and/or wet cleaned. Surfaces must be thoroughly cleaned using necessary methods and any required solvents to completely remove any adhesive, mastic, etc.

F. All removed material shall be placed into 6 mil plastic disposal bags or other suitable container upon detachment from the substrate. Cleanup of accumulations of loose debris or waste shall be performed whenever there is enough accumulation to fill a single bag or container and minimally at the end of each workshift.

G. Large components shall be wrapped in two layers of 6 mil polyethylene sheeting. Sharp components likely to tear disposal bags shall be placed in fiber drums or boxes and then wrapped with sheeting.

H. Power or pressure washers are not permitted for asbestos removal or clean-up procedures unless approved in a Site Specific Variance.

I. All open ends of pipe and duct insulation not scheduled for removal shall be encapsulated using lag cloth.

J. All construction and demolition debris determined by the Environmental Consultant to be contaminated with asbestos shall be handled and disposed of as asbestos waste.

K. The use of metal shovels, metal dust pans, etc. are not permitted inside the work area.

3.7 EQUIPMENT / WASTE CONTAINER DECONTAMINATION AND REMOVAL PROCEDURES

A. External surfaces of contaminated containers and equipment shall be cleaned by wet cleaning and/or HEPA vacuuming in the Work Area before moving such items into the waste decontamination enclosure system airlock by persons assigned to this duty. The persons in the Work Area shall not enter the airlock. No gross removal operations are permitted when waste transfer is in progress.

B. The containers and equipment shall be removed from the airlock by persons stationed in the washroom during waste removal operations. The external surfaces of containers and equipment shall be cleaned a second time by wet cleaning.

C. The cleaned containers of asbestos material and equipment are to be dried of any excessive pooled or beaded liquid, placed in uncontaminated 6 mil plastic bags or sheeting, as the item's physical characteristics demand, and sealed airtight.

D. The clean recontainerized items shall be moved into the airlock that leads to the holding area. Workers in the washroom shall not enter this airlock.

E. Containers and equipment shall be moved from the airlock and into the holding area by persons dressed in clean personal protective equipment, who have entered from the holding area.

F. The cleaned containers of asbestos material and equipment shall be placed in water tight carts with doors or tops that shall be closed and secured. These carts shall be held in the holding area pending removal. The carts shall be wet cleaned and/or HEPA vacuumed at least once each day.

G. The exit from the decontamination enclosure system shall be secured to prevent unauthorized entry.

H. Where the waste removal enclosure is part of the personnel decontamination enclosure, waste removal shall not occur during shift changes or when otherwise occupied. Precautions shall be taken to prevent short circuiting and cycling of air outward through the shower and clean room.

3.8 NON-FRIABLE FLOORING AND/OR MASTIC REMOVALS

A. The following procedures may only be used for the removal of non-friable flooring and/or mastic materials using manual and chemical methods. These procedures shall not apply to beadblaster use or other abrasive abatement methods.

B. The Contractor shall restrict access to the immediate area where tent removal procedures are taking place using barrier tape and/or construction barriers. Caution signs shall be posted.

C. Remote personnel and waste decontamination enclosures may be utilized and shall be constructed at a location in accordance with the approved Work Plan.

D. The Work Area shall include critical barriers and perimeter splash-guard.

E. Negative air shall be maintained at six (6) air changes per hour.

F. OSHA compliance air monitoring is required per section 1.10.

G. ACM removal shall follow procedures defined in section 3.6.

H. Waste material shall be placed in properly labeled 6 mil plastic bags or other appropriate containers. The outside of the bags or containers shall be wet wiped and/or HEPA vacuumed before being passed into the airlock for double- bagging. The bags or containers shall then be transported to the waste storage container. All transportation of waste bags and containers outside the Work Area shall be in watertight carts.

I. Following completion of gross abatement and after all accumulations of asbestos waste materials have been containerized, the following decontamination procedures shall be followed.
   1. All bagged asbestos waste and unnecessary equipment shall be decontaminated and removed from the Work Area.
   2. All surfaces in the Work Area shall be wet cleaned. A wet-purpose shop vacuum may be used to pick up excess liquid, and shall be decontaminated prior to removal from the Work Area.
   3. The Asbestos Project Monitor shall conduct a visual inspection of the Work Area for cleanliness and completion of abatement.
   4. The Contractor shall then apply a thin coat of encapsulant to all non-removal surfaces covered with plastic in the Work Area. In no event shall encapsulant be applied to any surface that was the subject of removal prior to obtaining satisfactory air monitoring results. Encapsulants shall be pigmented or tinted to provide an indication for completeness of coverage. The Asbestos Project Monitor shall determine adequacy of coverage.
   5. After the encapsulant has been applied and the required waiting/settling and drying time has elapsed, aggressive final clearance air sampling shall then be conducted by the Environmental Consultant.
   6. Upon receipt of satisfactory final clearance air sampling results, the isolation and critical barriers shall be removed. Following this, the decontamination enclosures shall be removed.

3.9 TENT ENCLOSURES

A. Tent enclosures may only be used where specifically permitted by Code Rule 56 or a Site Specific Variance issued by the NYS Department of Labor.

B. The Contractor shall restrict access to the immediate area where tent removal procedures are taking place using barrier tape and/or construction barriers. Caution signs shall be posted.

C. Remote personnel and waste decontamination enclosures shall be constructed when required, based on the scope of the tent work scope. Configuration shall be as required by Project size. For tent enclosures with gross abatement of friable materials, a contiguous decontamination system shall be constructed, maintained and utilized, except for minor size tent enclosure work areas where a remote decontamination enclosure is permitted by Code Rule 56.

D. The Work Area shall be precleaned. All objects and equipment that will remain in the restricted area during abatement shall be sealed with two layers of six mil polyethylene and tape.

E. The tent shall be a single use barrier constructed with a rigid frame and at least two layers of six mil polyethylene unless one layer of six mil polyethylene is otherwise permitted by Code Rule 56. Tents with twenty (20) square feet or less of floor space or no gross removal of friable ACM shall be constructed of one (1) layer of six mil polyethylene and shall include walls, ceilings and a floor (except portions of walls, floors and ceilings that are the removal surface) with double folded seams. All seams shall be sealed airtight using duct tape and/or spray adhesive.

F. The tent shall be constructed with at least one airlock for worker/waste egress.

G. A monometer shall be used for all OSHA Class I abatement.

H. Negative air shall be maintained at four (4) air changes per hour for non-friable and glovebag abatement tent enclosure work areas. Eight (8) air changes shall be maintained for friable gross removal tent enclosure work areas. In a Minor size abatement tent enclosure work area a HEPA vacuum may be used to maintain the required air changes.

I. OSHA compliance air monitoring is required per section 1.09.

J. ACM removal shall follow procedures defined in section 3.07.

K. Waste material shall be placed in properly labeled 6 mil plastic bags or other appropriate containers. The outside of the bags or containers shall be wet wiped and/or HEPA vacuumed and shall then be placed in a second bag/container before being transported to the waste storage container. All transportation of waste bags and containers outside the Work Area shall be in watertight carts. These carts shall be held in the holding area pending removal. The carts shall be wet cleaned and/or HEPA vacuumed at least once each day.

L. Following completion of gross abatement and after all accumulations of asbestos waste materials have been containerized, the following decontamination procedures shall be followed.

1. All bagged asbestos waste and unnecessary equipment shall be decontaminated and removed from the Work Area.

2. All surfaces in the Work Area shall be wet cleaned. A wet-purpose shop vacuum may be used to pick up excess liquid, and shall be decontaminated prior to removal from the Work Area.

3. The Asbestos Project Monitor shall conduct a visual inspection of the Work Area for cleanliness and completion of abatement.

4. After the waiting/settling and drying time requirements have elapsed, aggressive final clearance air sampling shall then be conducted by the Environmental Consultant.

5. Upon receipt of satisfactory final clearance air sampling results, the tent shall be collapsed into itself, placed in suitable disposal bags, and transported to the waste decontamination enclosure. Isolation and critical barriers shall then be removed.

3.10 EXTERIOR REMOVALS OF NON-FRIABLE ASBESTOS CONTAINING ROOFING

A. Except as modified by this section, removal of exterior non-friable ACM roofing and caulk shall conform to all provisions of this specification.

B. Unless Site Specific Variances have been otherwise obtained, removals shall be conducted in accordance with the provisions of 12 NYCRR Rule 56 Subpart 56-11.6 for Exterior Project Removal of Non-friable Caulking and Roofing.

C. The immediate exterior area shall be considered the exterior regulated abatement work area from which the exterior Non-Friable Caulks / Roofing are actively being removed. The asbestos project regulated abatement work area shall extend twenty-five (25') feet from the perimeter of the immediate work area and shall have signage in accordance with Section 56-7.4. An airlock shall be required at the entrance to the regulated abatement work area to serve as a changing area.

D. Non-certified Workers are not allowed in the Work Area until the Work Area is cleared by the Asbestos Project Monitor.

E. A decontamination area or enclosure system shall be constructed at a location in accordance with the approved Work Plan but must be within fifty (50) feet of the building structure entrance used by the asbestos handlers (workers), and shall be removed only after an acceptable visual inspection has determined that the abatement is complete, as per Section 56-9. 2, (e). It shall be cordoned off at a distance of 25 feet to separate it from public areas.

F. All building openings (including but not limited to operable windows, doors, hatches, vents, ducts, and grilles) within 25 feet of the active work area shall be sealed with two layers of six mil polyethylene.

G. The removal of the ACM may require the use of scrapers, solvents, mastic removal chemicals, or other methods/procedures to ensure complete removal.

H. The Contractor is required to provide temporary protection of the building (i.e. window openings, construction joints, etc.) at the end of each Work shift so as to maintain the building in a watertight condition.

I. Dumpsters used for waste storage shall be lined with two layers of six mil polyethylene. The top shall be closed with polyethylene flaps that are sealed at the end of each work shift.

J. Personal protective equipment, including respirators, shall be utilized and worn during all removal operations until the Work Area is cleared by the Asbestos Project Monitor.

K. The Owner may, at his discretion, choose to conduct air sampling. If air samples collected during abatement indicate any airborne asbestos fiber concentration(s) at or above 0.01 f/cc, Work shall be stopped immediately and Work methods shall be altered to reduce the airborne asbestos fiber concentration(s).

L. Following completion of gross abatement and after all accumulations of asbestos waste materials have been containerized, the following decontamination procedures shall be followed:
   1. All surfaces in the Work Area shall be HEPA vacuumed and then wet cleaned.
   2. The Asbestos Project Monitor shall conduct a visual inspection of the Work Area for cleanliness.
   3. Upon satisfactory visual inspection results, the isolation and critical barriers shall be removed. Following this, the decontamination enclosures shall be removed.

3.11 RESTORATION OF UTILITIES, FIRESTOPPING, AND FINISHES

A. After final clearance, remove locks and restore electrical and HVAC systems. All temporary power shall be disconnected, power lockouts removed and power restored. All temporary plumbing shall be removed.

B. Finishes damaged by asbestos abatement activities including, but not limited to, plaster/paint damage due to duct tape, staples, and spray adhesives, and floor tile lifted due to wet or humid conditions, shall be restored prior to final payment.
   1. Finishes unable to be restored shall be replaced under this Contract at the Contractor's expense.
   2. All foam and expandable foam products and materials used to seal Work Area openings shall be completely removed upon completion of abatement activities.

C. All penetrations (including, but not limited to, pipes, ducts, etc.) through fire rated construction shall be fires-topped using materials and systems tested in accordance with ASTM E814 on Projects where re-insulation is part of the required work.

PART 4 DISPOSAL OF ASBESTOS WASTE

4.1 TRANSPORTATION AND DISPOSAL SITE

A. The Contractor's Hauler and Disposal Site shall be approved by the Owner's Representative.

B. The Contractor shall give twenty-four (24) hour notification prior to removing any waste from the site. Waste shall be removed from the site only during normal working hours unless otherwise specified. No waste may be taken from the site unless the Contractor and Environmental Consultant are present and the Environmental Consultant authorizes the release of the waste as described herein.

C. All waste generated as part of the asbestos project shall be removed from the site within ten (10) calendar days after successful completion of all asbestos abatement work.

D. Upon arrival at the Project Site, the Hauler must possess and present to the Environmental Consultant a valid New York State Department of Environmental Conservation Part 364 Asbestos Hauler's Permit. The Environmental Consultant may verify the authenticity of the hauler's permit with the proper authority.

E. The Hauler, with the Contractor and the Environmental Consultant, shall inspect all material in the transport container prior to taking possession and signing the Asbestos Waste Manifests.

F. Unless specifically approved by the Owner, the Contractor shall not permit any off-site transfers of the waste or allow the waste to be transported or combined with any other off-site asbestos material. The Hauler must travel directly to the disposal site as identified on the notifications with no unauthorized stops.

4.2 WASTE STORAGE CONTAINERS

A. All waste containers shall be fully enclosed and lockable (i.e. enclosed dumpster, trailer, etc.). No open containers will be permitted on-site (i.e. open dumpster with canvas cover, etc.) unless specifically permitted by a Site Specific Variance.

B. The Environmental Consultant shall verify that the waste storage container and/or truck tags (license plates) match that listed on the New York State Department of Environmental Conservation Part 364 permit. Any container not listed on the permit shall be removed from the site immediately.

C. The container shall be plasticized and sealed with two (2) layers of 6 mil polyethylene. Once on site, it shall be kept locked at all times, except during load out. The waste container shall not be used for storage of equipment or contractor supplies.

D. While on-site, the container shall be labeled with EPA Danger signage:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

E. The New York State Department of Environmental Conservation Asbestos Hauler's Permit number shall be stenciled on both sides and back of the container.

F. The container is not permitted to be loaded unless it is properly plasticized, has the appropriate danger signage affixed, and has the permit number appropriately stenciled on the container.

4.3 ASBESTOS WASTE MANIFESTS

A. The proposed asbestos waste manifest shall be submitted to the Owner's Representative prior to the start of the project for review and approval.

B. The Manifest shall be completed by the Contractor and verified by the Environmental Consultant that all the information and amounts are accurate and the proper signatures are in place.

C. The Manifests shall have the appropriate signatures prior to any waste being removed from the site.

D. Copies of the completed Manifest shall be retained by the Environmental Consultant and the Contractor and shall remain on site for inspection.

E. Upon arrival at the Disposal Site, the Manifest shall be signed by the Disposal Facility operator to certify receipt of ACM covered by the manifest. The Disposal Facility operator shall return the original Manifest to the Contractor.

F. The Contractor shall forward copies of the Manifest to the Owner's Representative within 14 days of the waste container being removed from the site. Failure to do so may result in payment being withheld from the Contractor.

G. Originals of all waste disposal manifests shall be submitted by the Contractor to the Owner's Representative with the final close-out documentation.

END OF SECTION 02 82 13

Attachment A

CONTRACTOR'S ACKNOWLEGEMENT STATEMENT

CONTRACTOR'S ACKNOWLEDGEMENT STATEMENT

Re: Abatement of Asbestos Containing Materials

_____
(Project Title)

_____
(Project Location)

_____
(Project Number)

In consideration of the following individuals' employment in connection with the abatement, handling, and disposal of asbestos containing materials at the referenced project, I hereby certify that the employees: a) have received the medical examinations required by OSHA 29 CFR 1926.1101; b) have been fit tested specifically for respirators used on the Project; and c) have received training as required by OSHA 29 CFR 1926.1101 in the proper handling of asbestos containing materials, including the health implications and risks involved, as well as the use and limitations of the respiratory equipment to be used.

Employee Name	Asbestos Certificate Number
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Supervisor Signature

_____

(Notary block here)

Printed Name

_____

_____
Title

Page ____ of ____

SECTION 028313 - LEAD-BASED PAINT

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. The Contractor shall be held to have read all Bidding Documents, Contract Drawings, and Division 1 specification sections, and in the execution of the work he will be bound by all of the conditions and requirements herein.

B. The Pre-Renovation XRF Lead-Based Paint Survey Report is included in the Bid Package "Information Available to Bidders" section and indicates the various building components, surfaces, and structural members to be impacted as a part of the project that are coated with lead-based paint.

1.2 CONDITIONS

A. For all locations where lead-based paint must be removed, the Contractor shall remove, contain, capture, collect and dispose of the lead-based paint and lead containing materials in compliance with all current and pending Federal and State regulations, including the Environmental Protection Agency (EPA) 40 CFR Part 745, 8 NYCRR Chapter II Sub-Chapter J Part 155.5, the Resource Conservation and Recovery Act (RCRA), the Hazardous and Solid Waste Amendment (HSWA) the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and the Occupational Safety and Health Administration (OSHA), including 29 CFR 1926 for protection of workers.

B. The Contractor shall bear responsibility for insuring that the waste is properly handled at each stage of operation and properly stored in approved containers. The District shall be the generator of the waste, and shall supply its EPA I.D. number and address for use in filling out the manifests. The Contractor shall be responsible for the preparation of the manifest (information and tracking form) to be signed by all applicable parties. The Contractor shall allow two weeks for the District to review and sign the completed manifests.

C. The Contractor shall retain an environmental or chemical testing laboratory, accredited by the State of New York, as legally required to sample and test the waste in accordance with EPA method 1311, Toxicity Characteristic Leaching Procedure (TCLP).

D. Waste classified as hazardous shall be shipped off site for treatment or recovered and reused in compliance with Federal and State regulations. Obtain all applicable permits. Provide certification of disposal to the District.

E. All work areas involving demolition, cutting, modification, etc., to any existing building components, surfaces or structural members identified as being coated with lead-based paint shall be considered a lead hazard area per 29 CFR 1926 for the protection of workers unless the contractor removes the potential sources of air borne lead.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

END OF SECTION 028313

SECTION 033100 - STRUCTURAL CONCRETE

1.0 PART 1 – GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE:

A. Rough machine excavation and grading for concrete work.
B. All site concrete.
C. Provision and installation of masonry reinforcing and filling of block cores.
D. Decking
E. Furnishing anchor bolts, anchors, sleeves, and inserts for other trades.

1.2 DESCRIPTION OF WORK: Work covered by this section shall include all labor, material, equipment, and services necessary to complete the job as shown or called for on Architectural and Structural Drawings. Also included, but not limited to, shall be:

A. Cast-in-place concrete in foundations, floors, columns, and walls including footings, slabs on grade, reinforcing and all miscellaneous concrete as shown on drawings and/or specified.
B. All hand excavation and cleaning of trenches required in preparation for placing of concrete.
C. All necessary forms, accessories, tools, labor, and materials.
D. Build in all sleeves, inserts, anchors, bolts, and other items furnished by other trades, which are required to be built into the concrete work.
E. All vapor retarders and vapor barriers.
F. All joint fillers and sealants.
G. Set all anchor bolts and grout base and/or leveling plates for structural steel or miscellaneous iron as required.
H. All concrete finishes.

1.3 SUBMITTALS: Submit for review an electronic copy of each of complete plans checked by this Contractor. Shop Drawings shall be clearly and carefully drawn, showing sufficient dimensions and views in plan, elevation, and/or section so that there will be no confusion the field as to the proper location of the reinforcing bars. Show all accessories, mesh, and supports. Review shall not relieve the Contractor of responsibility for supplying all materials required by the plans and specifications or for the proper fabrication and fit of that material. Unchecked shop drawings will not be reviewed. Supply reviewed prints for field use as required. Drawings shall be submitted early enough to allow adequate time for proper review.

1.4 CODES AND STANDARDS: Concrete, forms, and reinforcing shall conform to codes, standards, and specifications of the following:

A. American Society for Testing and Materials (ASTM).
B. American Concrete Institute (ACI).
C. American Welding Society (AWS).
D. New York State Department of Transportation (NYSDOT).
E. New York State Building Code.
F. Occupational Safety and Health Standards (OSHA).

1.5 TESTING: Concrete testing will be performed by an independent testing laboratory engaged by the Owner as per NYS Building Code Chapter 17.

A. Required tests:

1. Standard 6" x 12" compression cylinders (ASTM C39) in sets of four, moist cured. Break two at 7 days and two at 28 days. Cylinders made by testing laboratory, not by the Contractor.

   a. One set for approval of each mix design.
   b. One set for each 50 cubic yards or fraction thereof placed per day.
2. Slump - Each batch, minimum.
3. Air content - (ASTM C231) each batch, minimum.

B. General: The Contractor shall maintain a record set of plans at site showing date and extent of each pour, temperature, and weather conditions during placement. If any portion of work shows low test results, the Engineer may require additional testing, load tests, cored samples, or replacement of the faulty work, etc., at this Contractor's expense. To conform to these specifications, the average of all strength tests, as well as the average of any three consecutive tests shall not be less than 10% over the specified design strength and no individual strength shall have an average value of less than 500 psi of the specified strength.

C. Reports: All test cylinders shall be cast, water cured, and broken under laboratory conditions in accordance with the standard ASTM method (ASTM C31 and C39). All four cylinders of a test shall be taken from the middle third of a single load. Each cylinder shall be properly labeled with an identifying mark, the mix proportions, amount of water, slump, and the location in the structure where that concrete was placed. Test reports shall include all this information. Copies of all test reports shall be submitted to the Engineer no later than three working days after the tests are completed.

D. Pumped Concrete: When pumping concrete required tests may be taken at point of placement. Adjustments to the mix design may be necessary based on field and weather conditions. Changes to mix design need to be submitted and approved by the Engineer.

1.6 MIXES

A. The Contractor shall submit for review by the Engineer laboratory calculations, sieve analysis, specific gravities, minimum three point water-cement ratio versus compressive strength curves, the proposed proportion of aggregates and expected yield for the various mixes as required below. Mix designs shall conform to the ACI Standard Recommended Practice for the Design of Concrete Mixes (ACI 613 and ACI 613A).

B. Test for approval: Alternate procedure; in lieu of proportioning as specified in paragraph 1.06, Part A above, a mix design employing the same ingredients proposed for use, and used successfully on a previous project under similar conditions to those anticipated on this project, may be used provided the following are submitted and approved:

1. The concrete mix design.
2. Reports for at least 20 consecutive sets of 7 and 28 day concrete strength tests made during the last 6 months.
3. Reports of compliance tests of fine and coarse aggregates made during the last 6 months.

C. No job concrete shall be placed until the mix design for that concrete has been accepted by the Engineer. Once the mix has been accepted, it shall not be changed without the Engineer's written acceptance.

D. Ready-mixed concrete from an established company will be accepted if conforming to ASTM C94 and to this specification. All concrete shall be batched and mixed in a plant conforming to the following requirements and controlled in a manner to assure uniform concrete for the quality specified.

E. Specific Requirements: See page 03310-4. Water-cement ratio (W/C) includes aggregate moisture and absorption.

F. All concrete shall contain an approved water reducing admixture. If required by field conditions, the Engineer may require the use of accepted retarding admixtures. Accelerating admixtures containing chlorides are not acceptable. Accelerating admixtures shall be for cold weather use only subject to acceptance by the Engineer.

G. All concrete for exposed walls, slabs, beams, columns, and entrance slabs shall contain air entraining admixtures.

1.7 INSPECTION: Work shall be spot inspected in the field by the Engineer or his authorized representative.

A. Contractor shall notify the Engineer a minimum of 24 hours prior to a concrete placement.

B. Contractor shall be responsible for providing suitable, safe, and adequate forms of wood or plywood. Where in contact with exposed concrete, forms shall be smooth-faced (plastic coated), true to line, plumb, tight, properly braced, and thoroughly oiled before placing reinforcing.

C. No placing or wiring of steel less than 6 hours before a pour will be permitted.

D. Placing of concrete shall not be scheduled until all of the reinforcing for that section is in place and the reinforcing and forms have been accepted by the Engineer.

1.8 FABRICATION: Concrete reinforcing shall meet the following requirements:

A. Workmanship and details shall conform to ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures".

B. Provide any special details shown on plans (bars to mason for bond beams, etc.).

C. All splices not shown on the Contract Drawings shall be accepted in writing by the Engineer.

D. Provide (2)-#4 diagonal bars at each corner of every rectangular opening in slabs or walls unless shown otherwise on the plans.

Use	f' c, psi	Minimum Cement Factor	Maximum Water Cement (W/C) Ratio		Air Content (%)	Maximum Slump	Maximum Aggregate Size
			Non-Air Entrained	Air Entrained			
Footing and Piers	3,000	5.0 Bags/C.Y.	0.62	~~~~~	~~~~~	3”	1-1/2”
Walls	3,000	5.5 Bags/C.Y.	0.60	0.57	5 to 7	3”	3/4”
Interior Slab on Grade and Metal Deck	4,000	6.0 Bags/C.Y.	0.51	~~~~~	~~~~~	4”	3/4”
Exterior Slab on Grade	4,000	6.0 Bags/C.Y.	~~~~~	0.49	5 to 7	4”	3/4”
Steel Pan Stair Treads	3,000	5.5 Bags/C.Y.	0.57	~~~~~	~~~~~	3”	3/8”
Topping	4,000	6.25 Bags/C.Y.	0.44	0.35	7 to 9	2”	3/8”
Lightweight Concrete (115 pcf Maximum)	4,000	6.5 Bags/C.Y.	~~~~~	0.46	5 to 7	4”	3/4”
Flowable Fill w/ MasterCell 25	110	1.0 Bags/C.Y.	~~~~~	~~~~~	15 to 30	8”	Fines

2.0 PART 2 – PRODUCTS

2.1 MATERIALS: shall be of finest quality, and shall be delivered, stored, and handled so as to prevent damage. Accepted brands or sources must be used, without change for the entire project.

A. Normal Portland Cement: A standard brand, ASTM C150 Type I or Type II for structural concrete.
B. Sand: Clean, sharp, durable, and sound material free from harmful amounts of soft, friable, thin, elongated or laminated pieces, conforming to ASTM C33.
C. Coarse Aggregate: Strong, clean, crushed limestone or gravel conforming to ASTM C33. Crushed limestone shall be used for slabs on metal deck
D. Water: Clean, potable, and free from strong acids, alkalis, oils, or organic material.
E. Reinforcing Bars: Shall be manufactured from material conforming to ASTM A615 Grade 60, with sizes and spacing as shown on the plans and sections. All bars are to be from new billet steel produced in the U.S.A. Submit two certified copies of mill reports for all reinforcing before any reinforcing is placed.
F. Welded Wire Mesh: Shall be cold drawn in accordance with ASTM A185, supplied in flattened sheets or mats and of sizes shown on the drawings.
G. Reinforcing Accessories: Chairs and bolsters in accordance with ACI 315, plastic tipped.
H. Form Materials: For all areas not exposed, shall be Class I or II, BB plyform, exterior grade APA. For all exposed surfaces, shall be Class I, BB plyform, exterior grade APA. Other than footings, when first used on the job, shall be new.
I. Footing Form Materials: Material may be used form material, patent panels, or other suitable form materials, provided they meet the requirements under Paragraph 1.07 B.
J. Wall-Form Ties: Snap-ties type with integral water stops. Wire form ties will not be permitted.
K. Perimeter Insulation: extruded plastic foam insulation. See Drawings for thicknesses required.
L. Vapor Retarder: .010" thick clear polyethylene film in as wide rolls as possible. Vapor retarder shall conform to ASTM E 1745 latest date.
M. Grouting Under Plates: 5 Star non-shrink grout or an accepted equal.
N. Curing Compound: Sonneborn's "Kure-N-Seal", “Kure-N-Seal 0800” or accepted equal. Compound shall not affect bond of any applied floor finishes.
O. Joint Sealer: Toch Brothers "Thiotok Sealant" or accepted equal.
P. Joint Filler: fibre expansion joints, W.R. Meadows “Sealtight”, or accepted equal.
Q. Water Reducing Admixture: Grace Concrete Products “WRDA with Hycol’ or accepted equal.
R. Air Entraining Admixture - Grace Concrete Products “Darex AEA” or accepted equal.
S. Fibrous Reinforcing: 100% virgin polypropylene fibrillated engineered fibers, "Fibermesh", by Fibermesh Co. or an accepted equal.
T. Liquid Hardener: Sonneborn’s “Kure-N-Harden” or accepted equal.
U. Zero Perm Vapor Barrier: Premoulded seven ply membrane consisting of reinforced core and carrier sheet with fortified bitumen layers, protective weather coating and plastic sheet. Water vapor transmission rate of 0.00 grains per square foot per hour when tested according to ASTM E 96, Method B. Provide manufacturer’s recommended mastic and gusset tape. Zero perm vapor barrier to be placed below wood floor areas only. W. R. Meadows, Inc. “Sealtight Premoulded Membrane” or accepted equal.
V. Lightweight Coarse Aggregate: Prior to use, submit for approval the trade name of the lightweight coarse aggregate, the manufacturer's certificate of its physical properties. Only one brand of lightweight coarse aggregate shall be used. Lightweight coarse aggregate shall conform to ASTM C330, be manufactured from shale by an approved

rotary kiln process. Particle sizes shall be uniformly graded from 3/4" to #4 and shall be non-corrosive and free of impurities that will damage finishes or completed concrete. Lightweight coarse aggregate shall have a minimum FSP ratio of 6.0 when determined in accordance with ACI 318 and ASTM C39, C192, and C496 and shall have a maximum absorption of 11% in accordance with C127.

W. Fly Ash: Fly Ash is not permitted to be used in mix design.

3.0 PART 3 – EXECUTION

3.1 WORKMANSHIP: Shall be first quality throughout, conforming to ACI 318 and these specifications.

3.2 INSTALLATION:

A. Footings shall rest on undisturbed earth. Hand trim excavation to required levels.
B. No reinforcing shall be placed until shop drawings have been reviewed by the Engineer.
C. Preparation of form surfaces:

1. All forms shall be sufficiently tight to prevent leakage of grout or cement paste.
2. All butted edges shall occur over supports or backup material.
3. Plywood surfaces shall be thoroughly cleaned and oiled prior to placing reinforcing steel.
4. Use full sheets of plywood where possible. Refer to Architectural Drawings for special relief details on exterior surfaces.
5. Provide clean-out panels at the bottoms of all column, pier, and wall forms.

D. The Contractor is responsible to determine the time at which forms may be removed without endangering the structure, subject to the following limitations and the acceptance of the Engineer:

1. Footing forms, 24 hours minimum, continue curing as specified.
2. Wall forms, three days minimum, continue curing as specified.

E. Unless noted on drawings, reinforcement shall not be bent after partially embedded in hardened concrete. Bending shall be accomplished by heating the reinforcing bars as recommended by ACI.
F. Dowels must be wired in place before concreting begins.
G. Footing reinforcing shall be supported on pre-cast concrete blocks, spaced at intervals required by size of reinforcing used to keep reinforcing a minimum of 3" above grade.
H. Cutting of bars to clear openings in walls or slabs is strictly prohibited. Warp bars around such openings.
I. Welded wire mesh in slabs on grade shall be supported at mid-depth, lap 6" minimum and cut mesh reinforcing at construction and control joints.
J. Contractor shall accurately set all anchor bolts for structural steel and shall provide all miscellaneous slots, chases, and openings for all trades in accordance with reviewed shop drawings. Sleeves required shall be provided by trades involved and set by this Contractor.
K. Floor slabs on grade shall meet the following:

1. Provide minimum of 6" compacted select gravel fill.

2. Form depressed ribs under partitions as required and at electrical conduits by shaping the gravel.
3. Over sub-grade, lay vapor retarder specified. Lap a minimum of 6" and seal all joints with mastic. Installation shall be in accordance with ASTM E 1643 latest date.
4. Provide for contraction and isolation joints as specified and shown on plans.
5. Pour slab of thickness shown on drawings. Screed, float level, and finish as specified.

L. Slabs on metal deck shall meet the following:

1. Over metal deck, lay welded wire mesh of size shown on the Contract Drawings.
2. Place concrete as dry as possible, using 3/4" maximum aggregate size.
3. All mesh to be continuously supported with continuous chairs at 2’-0” on center. Vary height for slab thickness. See details.
4. Slabs shall be monolithic trowelled.

M. Stair treads and landings shall meet the following:

1. All treads and landings shall be reinforced with 2x2xW0.9xW0.9 welded wire mesh over the entire area, set 1" from the bottom of the slab.
2. Mix shall be as dry as can be worked. After the concrete fill has been screeded off level and true, it shall be permitted to stand until it will bear the weight of a workman standing on boards. Stairs are to receive a steel trowel finish.

N. Miscellaneous concrete shall include forms, reinforcing, placing and finishing such miscellaneous concrete as sills, caps, curbs, pads, etc. as shown or required to complete the concrete work of this contract. All exposed miscellaneous concrete shall be rubbed to a smooth, even finish with a carborundum stone.

O. Anchor bolts, leveling plates, and base plates for structural steel shall be:

1. Accurately set in accordance with accepted anchor bolt plans by the steel fabricator. Centerlines and elevations shall be carefully located by Engineer's transit and bolts set in a wooden template, wired to maintain them perpendicular and at the correct projection during the placement of concrete.
2. Carefully set on a full bed of non-shrink grout, all loose base plates or leveling plates for structural steel. Plates shall be set true and level at specified elevation. Leveling plates, base plates, and bearing plates shall be bolted in place to provide vertical confinement for grout.

P. Concrete exterior platforms: Set two layers of 6x6xW2.9xW2.9 welded wire mesh. Place slabs monolithically to minimum 5" thickness. Divide in squares not more than 25 square feet. Screed level, steel trowel, broom slightly, and tool all edges.

Q. Slabs supported on forms shall meet the following:

1. Build all forms to required dimensions.
2. Lay all reinforcing as shown on accepted placing plans. Support bars at specified height with bolsters, chairs, etc., so that reinforcing will not be moved from the specified position during the placing of concrete.
3. All conduit in slabs or beams shall be laid above the bottom bars and below the top bars.

4. Place concrete as specified.
5. Maintain uniform slab thickness by adjusting screeds to form cambers.

R. Concrete topping shall meet the following:

1. Plank shall be cleaned and wetted just prior to placing concrete topping, minimum 2" thickness.
2. Topping shall be continuous over the entire span. Partitions shall be built on top of the topping.
3. Topping shall have one layer 6x6xW1.4xW1.4 welded wire mesh at center, lapped 6" minimum except as noted otherwise on plans.

S. Joints in concrete shall meet the following:

1. Construction joints other than slabs on grade.
   a. Joints shall be located at points which least impair the strength of the structure. Each joint shall be provided with a full dam or stop, drilled to pass all reinforcing bars which cross the joint. Provide keyways in all construction joints. Provisions shall be made to prevent under-run of the second placement.
   b. Reinforcing projecting through the dam of a construction joint shall be cleaned of spilled concrete immediately after placement. Where a joint is made, the surface of the concrete shall be thoroughly cleaned and all latency removed. Before placing new concrete, the previously placed concrete shall be thoroughly wetted and slushed with neat cement grout to fully bond the joint.

2. Control joints for shrinkage shall be in all concrete walls. Where practical, locate construction joints at control joints. Half of the horizontal reinforcing shall continue across the joint and the other half stopped at the joint. Create a plane of weakness at the control joint by a vertical chamfered notch on each face of the wall as shown on the plans.
3. Expansion joints shall be constructed where shown and as detailed on the plans.
4. Joints in slabs on grade shall meet the following:

   a. Construction joints in slabs on grade shall be located where shown on the plan. Each joint shall be provided with full dam or stop and continuous keyway. A minimum of 3 days is required before placing concrete adjacent to these construction joints.
   b. Contraction joints shall be located on column centerlines and where shown on the Contract Drawings. Sawn joints, where shown, shall be cut no more than 24 hours after placing slab and as soon as the slab is hard enough to prevent unraveling under a heavy-duty saw.

T. Cooperate with Mechanical Contractors in permitting the placing of all necessary sleeves and inserts for their trades. General Contractor shall notify the Mechanical Contractor in ample time for the responsible Contractor to place all embedded items; sleeves, slots, holes, chases, anchor bolts, etc.

U. Concrete surfaces finish shall meet the following:

1. Typical vertical surfaces as-cast plywood finish is applicable for:

a. Foundation walls below grade, walls and columns in unfinished space, service areas, slab soffits, and concrete concealed by other materials.
b. Remove all metal ties 1" below the surface. Remove all projections and irregularities.
c. Point and patch depressions left from removed ties, fins, holes, water, air pockets, honeycombs, etc. with a mortar mix.
d. Chip out major stone pockets and repair as directed.

2. Exposed vertical surfaces - smooth finish is applicable for:

a. Concrete exposed to view, either on the inside or outside of the structure. Metal ties removed and holes shall be pointed and patched.
b. Any exposed surface which is out of level, or alignment, or which does not present a uniform, neat, clean appearance, shall be removed and replaced unless the Engineer and/or Architect grants permission to patch. Permission to patch does not waive the Engineer's and/or Architect's right to require removal and replacement of inferior section if patching does not produce satisfactory results.

3. Concrete finishes on floors or sidewalks:

a. See room finish schedule for location and type of floors.
b. All finish floors shall be level within a tolerance of 1/4" in 10 feet. See Architectural Finish Schedule for location of particular type of finish. Dusting with dry cement to hasten set is prohibited. All floors shall be cured as specified, whether or not finished.
c. Floated Finish: When water sheen has disappeared from surface and/or the mix has stiffened sufficiently to permit proper operation of men and equipment, the surface shall be consolidated with power driven floats leaving a uniform, smooth granular texture.
d. Trowelled Finish: Typical all floors. The surface shall be finished first with power floats as specified. Follow with power trowelling to close all pores and surface defects. Final trowelling shall be done when a ringing sound is produced as the trowel moves over the surface. The finished surface shall be free of any trowel marks, uniform in texture and appearance.
e. Broom Finish: Sidewalks and entry slabs. Immediately after floating, provide coarse transverse texture by drawing a broom or burlap belt across the surface.
f. Surface Treatment: Exposed concrete floors. After surface water is gone and slab can be walked on, spray or brush on two coats of Sonneborn's "Kure-N-Harden". Apply both coats at the rate of 350 s.f. per gallon. Application to be in accordance with manufacturer's recommended procedures. Just before turning the building over to the Owner, clean all dust, dirt and debris from the floors. Lightly acid etch the floors with muriatic acid diluted 10:1 until sufficient slip resistance is achieved. Protect all adjacent surfaces during acid etching. Apply two coats of Sonneborn's "Kure-N-Seal 0800, 21% solids. Application to be in accordance with manufacturer's recommended procedures. Apply the second coat at a rate of 500 s.f. per gallon.

3.3 PROTECTION: Concrete protection and curing shall meet the following:

A. Warm Weather Protection: See ACI 305R, latest date.

1. Minimum curing period is seven (7) days.
2. Prevent drying out by keeping all surfaces thoroughly wetted at all times.
3. Cover floors with curing compound as specified in strict accordance with the manufacturer's recommendations.
4. Vertical Surfaces - Keep forms on or cover with burlap blankets, keep wet.
5. When the average air temperature exceeds 80°F, shield concrete and its ingredients from the sun where possible and eliminates unnecessary mixing or handling.
6. The maximum temperature of the concrete when first placed shall not exceed 90°F. All concrete exceeding this temperature will be rejected.

B. Cold Weather Protection: See ACI 306, latest date.

1. Heat aggregate and water, cover placed concrete with tarps and heat with salamanders. Torches, open flames, salts, or chemicals are prohibited.
2. Maintain temperatures above 60°F and below 80°F for not less than the 7 day damp curing period.
3. Accelerating admixtures will not be accepted.
4. Frozen concrete will be rejected.

C. Contractor shall protect all finished concrete surfaces from mechanical damage.

3.4 MIXING: Concrete batching, mixing, conveying, and placing shall meet the following:

A. Aggregate, sand, and cement accurately measured by weight. Varying aggregate moisture shall be accounted for in weight measurements. Water measurements by volumetric float control.
B. Concrete mixed until there is a uniform distribution of materials and discharged completely before the mixer is recharged. Mixer rotated at speed recommended by manufacturer and mixing continued for a least one minute after all materials are in the mixer. Fibrous reinforcing, where required, shall be added at the rate of 1.5 lbs./C.Y. concrete.
C. Air Entrainment Admixture shall be added to interior and/or exterior concrete mixes subject to freeze/thaw cycles.
D. Concrete conveyed from mixer to place of final deposit by methods which will prevent the segregation or loss of the material.
E. Equipment for chuting, dumping, or pneumatically conveying concrete shall be of such size and design as to insure a practically continuous flow of concrete at the delivery end without separation of the material.
F. Place within 90 minutes of mixing. Discard concrete with initial set before placing. No retempering.
G. Place in not more than one foot layers within 6 feet of final position; do not attempt to flow concrete horizontally. In deep forms, use a tremie. Concrete shall not be dropped more than 6 feet. If necessary to convey concrete further than 10 feet, use buggies, pump, or crane and bucket. Use of chutes longer than 10 feet or belt conveyors is prohibited.

H. Vibrate concrete into corners, spade stone away from forms. If free water shows on top surface of concrete, reduce water. Screed all work to level surfaces. Rake surfaces to provide bond for later finishes if required.

I. Pumping: If concrete is to be moved by pumping, complete information, including special concrete mix and equipment, shall be submitted to the Engineer for acceptance.

END OF SECTION 033100

SECTION 035416 - HYDRAULIC CEMENT UNDERLAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Polymer-modified, self-leveling, hydraulic cement underlayment for application below interior floor coverings.
   a. Refer to Part 4 “Extent of Work”, at the end of this Section, for work areas.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include plans indicating substrates, locations, and average depths of underlayment based on survey of substrate conditions.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Installer who is approved by manufacturer for application of underlayment products required for this Project.

B. Product Compatibility: Manufacturers of underlayment, adhesives, and floor-covering systems certify in writing that products are compatible.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ventilation, ambient temperature and humidity, and other conditions affecting underlayment performance.

1. Place hydraulic cement underlayments only when ambient temperature and temperature of substrates are between 50 and 80 deg F (10 and 27 deg C).

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated, according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

C. IIC-Rated Assemblies: For IIC-rated assemblies, provide materials and construction identical to those tested in assembly indicated, according to ASTM E492 and classified according to ASTM E989 by an independent testing agency.

2.2 HYDRAULIC CEMENT UNDERLAYMENTS

A. Hydraulic Cement Underlayment: Polymer-modified, self-leveling, hydraulic cement product that can be applied in minimum uniform thickness of 1/16 inch (1.5 mm) and that can be feathered at edges to match adjacent floor elevations. Installs up to 1/16 inch up to 1/2 inch.

1. Product: Subject to compliance with requirements, provide:
   a. Ardex K60 Arditex – Rapid Setting, Latex Smoothing, Self-Leveling Underlayment Compound (Basis of Design)
2. Cement Binder: ASTM C150/C150M, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C219.
3. Compressive Strength: Not less than 3,500 psi at 28 days when tested according to ASTM C109/C109M.
4. Flexural Strength: Not less than 1,000 psi at 28 dyas when tested according to ASTM C348.
5. VOC: 0
6. Underlayment Additive: Resilient-emulsion product of underlayment manufacturer, formulated for use with underlayment when applied to substrate and conditions indicated.

B. Flash Patch / Skim Coat Finish Underlayment: A blend of Portland-cement and other hydraulic cements mixed with water to produce a trowel-on underlayment that can be applied in feather-edge thickness minimum to a maximum thickness of ½ inch.

1. Product: Subject to compliance with requirements, provide:
   a. Ardex Feather Finsh – Self-Drying Cement-Based Finishing Underlayment (Basis of Design)
   b. Compressive Strength: Not less than 4,200 psi at 28 days when tested according to ASTM C109/C109M.
   c. VOC: 0

C. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3 to 6 mm); or coarse sand as recommended by underlayment manufacturer.

1. Provide aggregate when recommended in writing by underlayment manufacturer for underlayment thickness required.

D. Water: Potable and at a temperature of not more than 70 deg F (21 deg C).

E. Reinforcement: For underlayment applied to wood substrates, provide galvanized metal lath or other corrosion-resistant reinforcement recommended in writing by underlayment manufacturer.

F. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.

1. Product: Subject to compliance with requirements, provide:
   a. Ardex P51 Primer.
      1) Absorbent concrete may require two applications to minimize the potential for pinholes forming.

G. Corrosion-Resistant Coating: Recommended in writing by underlayment manufacturer for metal substrates.

H. Surface Sealer: Designed to reduce porosity as recommended by manufacturer for type of floor covering to be applied to underlayment.

2.3 MOISTURE CONTROL

A. Moisture Mitigation Barrier: One-coat, 100% solids epoxy resin moisture management system for RH readings up to 100% in new or existing concrete. ASTM E96 – 0.06 perms.
   1. Design Make: Ardex MC Rapid.

B. Primer System: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for conditions affecting performance of the Work.

B. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Prepare and clean substrate according to manufacturer's written instructions.

1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through underlayment.
2. Fill substrate voids to prevent underlayment from leaking.

B. Concrete Substrates: Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond.

1. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft. (304.8 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
   a. Relative Humidity Test: Using in situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 85 percent relative humidity level measurement, or as recommended by hydraulic cement underlayment manufacturer.

C. Wood Substrates: Mechanically fasten loose boards and panels to eliminate substrate movement and squeaks. Sand to remove coatings that might impair underlayment bond and remove sanding dust.

1. Install underlayment reinforcement recommended in writing by manufacturer.

D. Metal Substrates: Mechanically remove, according to manufacturer's written instructions, rust, foreign matter, and other contaminants that might impair underlayment bond. Apply corrosion-resistant coating compatible with underlayment if recommended in writing by underlayment manufacturer.

E. Nonporous Substrates: For ceramic tile, quarry tile, and terrazzo substrates, remove waxes, sealants, and other contaminants that might impair underlayment bond, and prepare surfaces according to manufacturer's written instructions.

F. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

3.3 APPLICATION

A. General: Mix and apply underlayment components according to manufacturer's written instructions.

1. Close areas to traffic during underlayment application and for time period after application recommended in writing by manufacturer.
2. Coordinate application of components to provide optimum adhesion to substrate and between coats.
3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.

B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.

C. Apply underlayment to produce uniform, level surface.

1. Apply a final layer without aggregate to product surface.
2. Feather edges to match adjacent floor elevations.

D. Cure underlayment according to manufacturer's written instructions. Prevent contamination during application and curing processes.

E. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.

F. Apply surface sealer at rate recommended by manufacturer.

G. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

3.4 PROTECTION

A. Protect underlayment from concentrated and rolling loads for remainder of construction period.

PART 4 - EXTENT OF WORK

4.1 WORK AREAS

A. Contractor shall coordinate the scope of work of this Section with architectural drawings. Contractor shall level all existing floors prior to installation of new floor finish.

B. Contractor shall provide and install primer and moisture control system WHERE INDICATED at existing floors scheduled to receive new floor finish over a concrete slab, whether on-grade or elevated.

END OF SECTION 035416

SECTION 042000 – UNIT MASONRY

1.0 PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Face brick.
2. Mortar and grout.
3. Masonry joint reinforcement.
4. Ties and anchors.
5. Embedded flashing.
6. Miscellaneous masonry accessories.

B. Related Sections:

1. Section 014533 “Structural Tests and Special Inspections” for inspection of unit masonry reinforcing and grouting.
2. Section 033000 "Cast-in-Place Concrete" for concrete foundation walls supporting masonry construction.
3. Section 042200 “Concrete Unit Masonry” for reinforced concrete units and associated materials.
4. Section 051200 "Structural Steel Framing" for installing anchor sections of adjustable masonry anchors for connecting to structural steel frame.
5. Section 055000 "Metal Fabrications" for furnishing steel lintels and shelf angles for unit masonry.
6. Section 078413 "Penetration Firestopping" for firestopping unit masonry.
7. Section 076200 "Sheet Metal Flashing and Trim" for exposed sheet metal flashing and for furnishing manufactured reglets installed in masonry joints.

1.3 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Owner will engage a qualified independent testing agency to perform preconstruction testing indicated below. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

1. Clay Masonry Unit Test: For each type of unit required, according to ASTM C 67 for compressive strength.

2. Concrete Masonry Unit Test: For each type of unit required, according to ASTM C 140 for compressive strength.

3. Mortar Test (Property Specification): For each mix required, according to ASTM C 780 for compressive strength.

4. Grout Test (Compressive Strength): For each mix required, according to ASTM C 1019.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.

2. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."

3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

C. Samples for Initial Selection:

1. Face brick

2. Colored mortar.

3. Weep holes/vents.

D. Samples for Verification: For each type and color of the following:

1. Face brick

2. Pigmented and colored-aggregate mortar. Make Samples using same sand and mortar ingredients to be used on Project.

3. Weep holes and vents.

1.6 INFORMATIONAL SUBMITTALS

A. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.

1. Submittal is for information only. Neither receipt of list nor approval of mockup constitutes approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.

B. Qualification Data: For testing agency.

C. Material Certificates: For each type and size of the following:

1. Masonry units.

a. Include material test reports substantiating compliance with requirements.

b. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.

c. For exposed brick, include test report for efflorescence according to ASTM C 67.

d. For masonry units include data and calculations establishing average net-area compressive strength of units.

2. Cementitious materials. Include brand, type, and name of manufacturer.

3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.

4. Grout mixes. Include description of type and proportions of ingredients.

5. Reinforcing bars.

6. Joint reinforcement.

7. Anchors, ties, and metal accessories.

D. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91 for air content.

E. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

F. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.7 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.

B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

D. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.

E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup of typical wall area.

2. Where masonry is to match existing, erect mockups adjacent and parallel to existing surface.

3. Clean exposed faces of mockups with masonry cleaner as indicated.

4. Protect accepted mockups from the elements with weather-resistant membrane.

5. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.

a. Approval of mockups is also for other material and construction qualities specifically approved by Architect in writing.

b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by Architect in writing.

6. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.

1.9 PROJECT CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches (600 mm) down both sides of walls and hold cover securely in place.

2. Where one wythe of multi-wythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches (600 mm) down face next to unconstructed wythe and hold cover in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.

2. Protect sills, ledges, and projections from mortar droppings.

3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.

4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

2.0 PART 2 – PRODUCTS

2.1 MASONRY UNITS, GENERAL

A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

B. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E 119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

2.2 CONCRETE MASONRY UNITS

A. See associated Specification Section 042200 Concrete Unit Masonry.

2.3 FACE BRICK

A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:

1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.

2. On Drawings, show details of special conditions and special shapes required.

3. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.

4. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.

5. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

B. Face Brick: Facing brick complying with ASTM C 216.

1. Products: Subject to compliance with requirements, provide products noted in this Section by Glen-Gery Brick or approved equal.

2. Grade: SW.

3. Type: FBS.

4. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 3000 psi (20.7 MPa).

5. Initial Rate of Absorption: Less than 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested per ASTM C 67.

6. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."

7. Size (Actual Dimensions): 3-5/8 inches (92 mm) wide by 2-1/4 inches (57 mm) high by 7-5/8 inches (194 mm) long.

   a. Size may vary based on field conditions. Field verify.

8. Application: Use where brick is exposed unless otherwise indicated.

9. **Where shown to "match existing,"** provide face brick matching color range, texture, and size of existing adjacent brickwork.

   a. Beldon Modular Belcrest 310.21-34, other, manufactured at Sugarcreek Plant #3 or equal.

2.4 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

B. Hydrated Lime: ASTM C 207, Type S.

C. Aggregate for Mortar: ASTM C 144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.

2. For joints less than 1/4 inch (6 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.

3. White-Mortar Aggregates: Natural white sand or crushed white stone.

4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

D. Aggregate for Grout: ASTM C 404.

E. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Euclid Chemical Company (The); Accelguard 80.

   b. Grace Construction Products, W. R. Grace & Co. - Conn.; Morset.

c. Sonneborn Products, BASF Aktiengesellschaft; Trimix-NCA.

F. Water: Potable.

2.5 REINFORCEMENT

A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60 (Grade 420).

B. Masonry Joint Reinforcement, General: ASTM A 951/A 951M.

1. Interior Walls: Hot-dip galvanized, carbon steel.

2. Exterior Walls: Hot-dip galvanized, carbon steel.

3. Wire Size for Side Rods: 0.148-inch (3.77-mm) diameter.

4. Wire Size for Cross Rods: 0.148-inch (3.77-mm) diameter.

5. Wire Size for Veneer Ties: 0.148-inch (3.77-mm) diameter.

6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches (407 mm) o.c.

7. Provide in lengths of not less than 10 feet (3 m), with prefabricated corner and tee units.

C. Masonry Joint Reinforcement for Single-Wythe Masonry: Either ladder or truss type with single pair of side rods.

D. Masonry Joint Reinforcement for Multi-wythe Masonry:

1. Adjustable (two-piece) type, either ladder design, with one side rod at each face shell of backing wythe and with separate adjustable ties with pintle-and-eye connections having a maximum adjustment of 1-1/4 inches (32 mm). Size ties to extend at least halfway through facing wythe but with at least 5/8-inch (16-mm) cover on outside face. Ties have double hooks with compressed legs to engage a continuous horizontal wire in the facing wythe. (Sized for cavity.)

a. Available Products:

1) Hohmann & Barnard, Inc.; #270-2X Ladder Eye Wire with Adjustable Reinforcement or approved equal.

2.6 TIES AND ANCHORS

A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.

1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M; with ASTM A 153/A 153M, Class B-2 coating.

2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.

B. Wire Ties, General: Unless otherwise indicated, size wire ties to extend at least halfway through veneer but with at least 5/8-inch (16-mm) cover on outside face. Outer ends of wires are bent 90 degrees and extend 2 inches (50 mm) parallel to face of veneer.

C. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches (100 mm) wide.

1. Z-shaped ties with ends bent 90 degrees to provide hooks not less than 2 inches (50 mm) long may be used for masonry constructed from solid units.

2. Where wythes do not align or are of different materials, use adjustable ties with pintle-and-eye connections having a maximum adjustment of 1-1/4 inches (32 mm).

3. Wire: Fabricate from 3/16-inch- (4.76-mm-) diameter, hot-dip galvanized steel wire.

D. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch- (6.35-mm-) diameter, hot-dip galvanized steel.

2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch (25 mm) of masonry face, made from 0.187-inch- (4.76-mm) diameter, hot-dip galvanized steel wire.

E. Partition Top anchors: Refer to structural drawings for details.

F. Rigid Anchors: Fabricate from steel bars 1-1/2 inches (38 mm) wide by 1/4 inch (6.35 mm) thick by 24 inches (610 mm) long, with ends turned up 2 inches (51 mm) or with cross pins unless otherwise indicated.

1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A 153/A 153M.

G. Adjustable Masonry-Veneer Anchors

1. General: Provide anchors that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, concrete or CMU and as follows:

a. Structural Performance Characteristics: Capable of withstanding a 200-lbf load in both tension and compression at maximum allowed offset of 1-1/4” while maintaining the ASTM A1064/1064M wire specification.

2. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie and a metal anchor section.

   a. Anchor Section: Single screw veneer tie with a dual diameter barrel with factory-installed EPDM washers to seal both the face of the insulation and the air/vapor barrier. Projecting thermal wings are of steel reinforced and coated with a flame resistance plastic creating a thermal break. Made of 5/16” hex head with Stainless Steel Type 304 finish..

   b. Wire Ties: Rectangular wire ties pintel fabricated from 3/16-inch-diameter, hot-dip galvanized steel wire. Compressed leg hook length based on cavity/insulation requirements. Vertical adjustability of 1-1/4”.

   c. Insulation Washer: 1-1/2” round washer of Type 304 stainless steel bonded with EPDM washer to keep insulation in-place.

   d. Installation Rate: One anchor every 16” x 16” spacing.

   e. Available Products:

      1) Hohmann & Barnard, Inc.; HB 2-Seal Wing Nut Anchor with 2X-Hook Adjustable Thermal Veneer Achnor (size per cavity) (Design Make) or approved equal.

2.7 MISCELLANEOUS ANCHORS

A. Anchor Bolts: Headed or L-shaped steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153/A 153M, Class C; of dimensions indicated.

B. Postinstalled Anchors: Torque-controlled expansion anchors or chemical anchors.

   1. Load Capacity: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

   2. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5 unless otherwise indicated.

   3. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 (A1) stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F 836M).

C. EMBEDDED FLASHING MATERIAL

   1. Elastomeric Thermoplastic Flashing: Composite flashing product consisting of a polyester-reinforced ethylene interpoly alloy.

a. Self-Adhesive Sheet: Elastomeric thermoplastic flashing, 0.025 inch thick, with a 0.015-inch thick coating of clear adhesive. Asphalt-free and UV resistant for up to 90 days.

1) Accessories: Provide preformed corners, end dams, other special shapes, and seaming materials produced by flashing manufacturer.

a. Color: White.

b. Basis of Design: Textro-flash by Hohmann & Barnard.

2) Miscellaneous Materials

2. EPDM Flashing: Sheet flashing product made from ethylene-propylene-diene terpolymer complying with ASTM D4637/D4627M, 0.040-inch thick.

1. Mastic/sealant: Standard product as produced and recommended by flashing manufacturer.

3. Termination bar: Manufacturer's standard 1" aluminum material bar with sealant lip.

4. Stainless Steel Drip Plate: Standard Type 304, Stainless Steel in 26 gauge.

a. Basis of Design: DP by Hohmann & Barnard.

5. Fasteners: Domestic manufactured fastener types and sizes recommended by flashing manufacturer for intended use.

2.8 MISCELLANEOUS MASONRY ACCESSORIES

A. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 or PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

B. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

C. Weep/Vent Products: Use one of the following unless otherwise indicated:

1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch (3 mm) less than depth of outer wythe, in color selected from manufacturer's standard.

a. Available Products:

1) Advanced Building Products Inc.; Mortar Maze weep vent.

2) Dayton Superior Corporation, Dur-O-Wal Division; Cell Vents.

3) Hohmann & Barnard, Inc.; Quadro-Vent.

4) Wire-Bond; Cell Vent.

5) Sandell Manufacturing Company, Inc.; Cell Vents

D. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

1. Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. Advanced Building Products Inc.; Mortar Break

b. Archovations, Inc.; CavClear Masonry Mat.

c. Dayton Superior Corporation, Dur-O-Wal Division; Polytite MortarStop.

d. Mortar Net USA, Ltd.; Mortar Net.

2. Provide one of the following configurations:

a. Strips, full-depth of cavity and 10 inches (250 mm) high, with dovetail shaped notches 7 inches (175 mm) deep that prevent clogging with mortar droppings.

2.9 MASONRY CLEANERS

A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Diedrich Technologies, Inc.

b. EaCo Chem, Inc.

c. ProSoCo, Inc.

2.10 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.

2. Use portland cement-lime mortar unless otherwise indicated.

3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.

1. For masonry below grade or in contact with earth, use Type M.

2. For reinforced masonry, use Type S.

3. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.

D. Pigmented Mortar: Use colored cement product[or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products].

1. Pigments shall not exceed 10 percent of portland cement by weight.

2. Pigments shall not exceed 5 percent of masonry cement or mortar cement by weight.

3. Insert materials and proportions used for sample in first subparagraph below if known.

4. Mix to match Architect's sample.

5. Application: Use pigmented mortar for exposed mortar joints with the following units:

a. Face brick.

b. Stone trim units.

E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.

1. Mix to match Architect's sample.

2. Application: Use colored aggregate mortar for exposed mortar joints with the following units:

a. Face brick.

b. Stone trim units.

F. Grout for Unit Masonry: Comply with ASTM C 476

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.16.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.

2. Provide grout with a slump of 8 to 11 inches (203 to 279 mm) as measured according to ASTM C 143/C 143M.

3. If the grout is not proportioned per Table 1 of ASTM C 476 the grout must achieve a minimum 28-day compressive strength of 2800 psi.

3.0 PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.

2. Verify that foundations are within tolerances specified.

3. Verify that reinforcing dowels are properly placed.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.

B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.

C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

D. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.

1. Mix units from several pallets or cubes as they are placed.

E. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch (12 mm) or minus 1/4 inch (6 mm).

2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch (12 mm).

3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch (6 mm) in a story height or 1/2 inch (12 mm) total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2 inch (12 mm) maximum.

2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.

3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch (12 mm) maximum.

4. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch (12 mm) maximum.

5. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2 inch (12 mm) maximum.

6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch (1.5 mm) except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm).

2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch (3 mm).

3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch (9 mm) or minus 1/4 inch (6 mm).

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in pattern matching the existing face brick; do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4-inches (100-mm). Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.

H. Fill cores in hollow CMUs with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

I. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.

1. Install compressible filler in joint between top of partition and underside of structure above.

2. Coordinate with Steel Erector for fastening of steel angle partition top anchors to structure above.

3. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078446 "Fire-Resistive Joint Systems."

3.5 MORTAR BEDDING AND JOINTING

A. Lay hollow brick and CMUs as follows:

1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.

2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.

3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.

4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.

B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.6 COMPOSITE MASONRY

A. Bond wythes of composite masonry together using one of the following methods:

1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 2.67 sq. ft. (0.25 sq. m) of wall area spaced not to exceed 16 inches (406 mm) o.c. horizontally and 16 inches (406 mm) o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches (305 mm) of openings and space not more than 36 inches (914 mm) apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches (610 mm) o.c. vertically.

a. Where bed joints of wythes do not align, use adjustable (two-piece) type ties.

2. Masonry Joint Reinforcement: Installed in horizontal mortar joints.

a. Where bed joints of both wythes align, use [ladder-type reinforcement extending across both wythes] [tab-type reinforcement].

b. Where bed joints of wythes do not align, use adjustable (two-piece) type reinforcement with continuous horizontal wire in facing wythe attached to ties.

3. Header Bonding: Provide masonry unit headers extending not less than 3 inches (76 mm) into each wythe. Space headers not over 8 inches (203 mm) clear horizontally and 16 inches (406 mm) clear vertically.

B. Bond wythes of composite masonry together using bonding system indicated on Drawings.

C. Corners: Provide interlocking masonry unit bond in each wythe and course at corners unless otherwise indicated.

1. Provide continuity with masonry joint reinforcement at corners by using prefabricated L-shaped units as well as masonry bonding.

D. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, bond walls together as follows:

1. Provide continuity with masonry joint reinforcement by using prefabricated T-shaped units.

3.7 CAVITY WALLS

A. Bond wythes of cavity walls together using one of the following methods:

1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 2.67 sq. ft. (0.25 sq. m) of wall area spaced not to exceed 16 inches (406 mm) o.c. horizontally and 16 inches (406 mm) o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches (305 mm) of openings and space not more than 36 inches (915 mm) apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches (610 mm) o.c. vertically.

a. Where bed joints of wythes do not align, use adjustable (two-piece) type ties.

b. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable (two-piece) type ties to allow for differential movement regardless of whether bed joints align.

2. Masonry Joint Reinforcement: Installed in horizontal mortar joints.

a. Where bed joints of both wythes align, use ladder-type reinforcement extending across both wythes.

b. Where bed joints of wythes do not align, use adjustable (two-piece) type reinforcement.

c. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable (two-piece) type reinforcement to allow for differential movement regardless of whether bed joints align.

3. Header Bonding: Provide masonry unit headers extending not less than 3 inches (76 mm) into each wythe. Space headers not over 8 inches (203 mm) clear horizontally and 16 inches (406 mm) clear vertically.

4. Masonry Veneer Anchors: Comply with requirements for anchoring masonry veneers.

B. Bond wythes of cavity walls together using bonding system indicated on Drawings.

C. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.

D. Apply air barrier to face of backup wythe to comply with Section 072726 "Fluid (Spray)-Applied Membrane Air Barriers."

E. Installing Cavity-Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches (300 mm) o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.

1. Fill cracks and open gaps in insulation with crack sealer compatible with insulation and masonry.

3.8 MASONRY JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).

1. Space reinforcement not more than 16 inches (406 mm) o.c.

2. Space reinforcement not more than 8 inches (203 mm) o.c. in foundation walls and parapet walls.

3. Provide reinforcement not more than 8 inches (203 mm) above and below wall openings and extending 12 inches (305 mm) beyond openings in addition to continuous reinforcement.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.9 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

A. Anchor masonry to structural steel and concrete where masonry abuts or faces structural steel or concrete to comply with the following:

1. Provide an open space not less than 1 inch (25 mm) wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.

2. Anchor masonry with anchors embedded in masonry joints and attached to structure.

3. Space anchors as indicated, but not more than 24 inches (610 mm) o.c. vertically and 36 inches (915 mm) o.c. horizontally.

3.10 ANCHORING MASONRY VENEERS

A. Anchor masonry veneers to wall framing and masonry backup with masonry-veneer anchors to comply with the following requirements:

1. Fasten screw-attached anchors through sheathing to wall framing and to masonry backup with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.

2. Insert slip-in anchors in metal studs as sheathing is installed. Provide one anchor at each stud in each horizontal joint between sheathing boards.

3. Embed tie sections in masonry joints. Provide not less than 2 inches (50 mm) of air space between back of masonry veneer and face of sheathing.

4. Locate anchor sections to allow maximum vertical differential movement of ties up and down.

5. Space anchors as indicated, but not more than 18 inches (458 mm) o.c. vertically and 24 inches (610 mm) o.c. horizontally, with not less than 1 anchor for each 2 sq. ft. (0.2 sq. m) of wall area. Install additional anchors within 12 inches (305 mm) of openings and at intervals, not exceeding 8 inches (203 mm), around perimeter.

3.11 CONTROL AND EXPANSION JOINTS

A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

B. Show locations of joints on Drawings.

C. Form control joints in concrete masonry using one of the following methods:

1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.

2. Install preformed control-joint gaskets designed to fit standard sash block.

3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.

4. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.

D. Form expansion joints in brick as follows:

1. Build flanges of metal expansion strips into masonry. Lap each joint 4 inches (100 mm) in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints if any.

2. Build flanges of factory-fabricated, expansion-joint units into masonry.

3. Build in compressible joint fillers where indicated.

4. Form open joint full depth of brick wythe and of width indicated, but not less than 3/8 inch (10 mm) for installation of sealant and backer rod specified in Section 079200 "Joint Sealants."

E. Provide horizontal, pressure-relieving joints by either leaving an air space or inserting a compressible filler of width required for installing sealant and backer rod specified in Section 079200 "Joint Sealants," but not less than 3/8 inch (10 mm).

1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

3.12 LINTELS

A. Install steel lintels where indicated.

B. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.13 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.

B. Install flashing as follows unless otherwise indicated:

1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.

2. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of 8 inches (200 mm), and through inner wythe to within 1/2 inch (13 mm) of the interior face of wall in exposed masonry. Where interior face of wall is to receive furring or framing, carry flashing completely through inner wythe and turn flashing up approximately 2 inches (50 mm) on interior face.

3. At masonry-veneer walls, extend flashing through veneer, across air space behind veneer, and up face of sheathing at least 8 inches (200 mm); with upper edge tucked under building paper or building wrap, lapping at least 4 inches (100 mm).

4. At lintels and shelf angles, extend flashing a minimum of 6 inches (150 mm) into masonry at each end. At heads and sills, extend flashing 6 inches (150 mm) at ends and turn up not less than 2 inches (50 mm) to form end dams.

5. Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than 1-1/2 inches (38 mm) or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.

6. Install metal drip edges and sealant stops with ribbed sheet metal flashing by interlocking hemmed edges to form hooked seam. Seal seam with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.

7. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch (13 mm) back from outside face of wall and adhere flexible flashing to top of metal drip edge.

8. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch (13 mm) back from outside face of wall and adhere flexible flashing to top of metal flashing termination.

9. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.

C. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

D. Install weep holes in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:

1. Use specified weep/vent products to form weep holes.

2. Space weep holes 24 inches (600 mm) o.c. unless otherwise indicated.

E. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.

F. Install vents in head joints in exterior wythes at spacing indicated. Use specified weep/vent products to form vents.

1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

3.14 REINFORCED UNIT MASONRY INSTALLATION

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.

1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar

and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.

2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

B. Wall Construction:

1. Comply with Building Code of New York State and reference standards ACI 530 and ACI 530.1

2. Do not wet concrete masonry units (CMU).

3. Lay CMU units with full-face shell mortar beds. Fill vertical head joints (end joints between units) solidly with mortar from face of unit to a distance behind face equal to not less than the thickness of longitudinal face shells. Solidly bed cross-webs of starting courses in mortar. Maintain head and bed joint widths shown, or if not shown, provide 3/8" joints.

4. Where solid CMU units are shown, lay with full mortar head and bed joints.

5. Pattern Bond: Lay CMU wall units in 1/2 - running bond with vertical joints in each course centered on units in courses above and below, unless otherwise indicated. Bond and interlock each course at corners and intersections. Use special-shaped units where shown, and as required for corners, jambs, sash, control joints, lintels, bond beams and other special conditions.

6. Maintain vertical continuity of core or cell cavities, which are to be reinforced and grouted, to provide minimum clear dimension indicated and to provide minimum clearance and grout coverage for vertical reinforcement bars. Keep cavities free of mortar. Solidly bed webs in mortar where adjacent to reinforced cores or cells.

7. Where horizontal reinforced beams (bond beams) are shown, place small mesh expanded metal lath or wire screening in mortar joints under bond beam courses over cores or cells of non-reinforced vertical cells. Units with solid bottoms shall be used only over openings.

C. Grouting

1. General

a. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.16.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.

b. At Contractor's option, use either low lift or high lift grouting techniques subject to requirements that follow

c. "Puddling" of grout acceptable for grout lifts 12" or less in height only.

d. Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

e. Place and consolidate grout without displacing reinforcing.

f. Vibrate each grout lift during pouring operation.

2. Low-lift Grouting

a. Provide minimum clear dimension of 2 inches and clear area of 8 square inches in vertical cores to be grouted.

b. Place vertical reinforcement prior to laying of CMU. Extend above elevation of maximum pour height as required for splicing. Support in position at vertical intervals not exceeding 192 bar diameters nor 8 feet.

c. Lay CMU to maximum pour height. Do not exceed 5 foot height, or if bond beam occurs below 5 foot height, stop pour at course below bond beam.

d. Pour grout using chute or container with spout. Rod or vibrate grout during placing. Place grout continuously; do not interrupt pouring of grout for more than one hour. Terminate grout pours 1-1/2 inches below top course of pour.

e. Bond Beams: Stop grout in vertical cells 1-1/2 inches below bond beam course. Place horizontal reinforcement in bond beams; lap at corners and intersections as shown. Place grout in bond beam course before filling vertical cores above bond beam.

3. High-lift Grouting

a. Do not use high-lift grouting technique for grouting of CMU unless minimum cavity dimension and area is 3 inches and 10 square inches, respectively.

b. Provide clean out holes in first course at all vertical cells which are to be filled with grout. Use units with one face shell removed and provide temporary supports for units above, or use header units with concrete brick supports, or cut openings in one face shell, or use clear plastic window such as made by Smart Masonry Systems (800/858-5995) to cover clean-out opening.

c. Construct masonry to full height of maximum grout pour specified, prior to placing grout. Limit grout lifts to a maximum height of 5 feet and grout pour to a maximum height of 24 feet, for single wythe hollow concrete masonry walls, unless otherwise indicated.

d. Prior to grouting, inspect and clean grout spaces. Remove dust, dirt,

mortar droppings, loose pieces of masonry and other foreign materials from grout spaces. Clean reinforcement and adjust to proper position. Clean top surface of structural members supporting masonry to ensure bond. After final cleaning and inspection, close clean out holes and brace closures to resist grout pressures.

e. Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist displacement of masonry units and breaking of mortar bond. Install shores and bracing, if required, before starting grouting operations.

f. Place grout by pumping into grout spaces unless alternate methods are acceptable to the Architect/ Engineer.

g. Limit grout pours to sections which can be completed in one working day with not more than one hour interruption of pouring operation. Allow not less than 30 minutes, nor more than one hour between lifts of a given pour.

h. Place grout in lintels or beams over openings in one continuous pour.

i. Where bond beam occurs more than one course below top of pour, fill bond beam course to within 1 inch of vertically reinforced cavities, during construction of masonry.

j. When more than one pour is required to complete a given section of masonry, extend reinforcement beyond masonry as required for splicing. Pour grout to within 1-1/2 inches of top course of first pour. After grouted masonry is cured, lay masonry units and place reinforcement for second pour section before grouting. Repeat sequence if more pours are required.

D. Reinforcement:

1. General:

a. Clean reinforcement of loose rust, mill scale, earth, ice or other materials which will reduce bond to mortar or grout. Do not use reinforcement bars with kinks or bends not shown on drawings or final shop drawings, or bars with reduced cross section due to excessive rusting or other causes.

b. Position reinforcement accurately at the spacing indicated, prior to placement of concrete. Embed reinforcing dowels for masonry walls into concrete footings and match size and spacing of dowels with vertical bars. Support and secure vertical bars against displacement. Maintain position within 1/2 inch of dimensioned position. Horizontal reinforcement may be placed as the masonry work progresses. Where vertical bars are shown in close proximity, provide a clear distance between bars of not less than the nominal bar diameter or 1" (whichever is greater).

c. Splice reinforcement bars where shown; do not splice at other points unless acceptable to the Architect/ Engineer. Provide lapped splices, unless otherwise indicated. In splicing vertical bars or attaching to dowels, lap ends, place in contact and wire tie. Provide not less than minimum lap indicated, or if not indicated, as required by governing code.

d. Where lateral ties are shown in contact with vertical reinforcement bars, embed additional lateral tie reinforcement in mortar joints. Place as shown, or if not shown, provide as required to prevent grout blowout or rupture of CMU face shells, but provide not less than No. 2 bars or 8-gage wire ties spaced 16 inches o.c. for members with 20 inches or less side dimensions, and 8 inches o.c. for members with side dimensions exceeding 20 inches.

e. Anchor reinforced masonry work to supporting structure as indicated. Anchor reinforced masonry walls to non-reinforced masonry where they intersect.

f. Place vertical reinforcement before grouting. Place before or after laying masonry units, as required by job conditions. Tie vertical reinforcement to dowels at base of masonry where shown and thread CMU over or around reinforcement. Support vertical reinforcement at intervals not exceeding 192 bar diameters nor 8 feet.

g. Where individual bars are placed after laying masonry, place wire loops extending into cells as masonry is laid and loosen before mortar sets. After insertion of reinforcement bar, pull loops and bar to proper position and tie free ends.

3.15 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

1. Refer to Section 014533 “Special Inspections” for specific requirements.

3.16 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.

3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.

4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.

5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.

6. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

3.17 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042000

SECTION 042200 – CONCRETE UNIT MASONRY

1.0 PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to work in this Section.

B. Requirements of Section "Unit Masonry" apply to work of this section.

1.2 SUMMARY

A. Extent of each type of reinforced concrete unit masonry work is indicated on the drawing and in schedules.

1.3 SUBMITTALS

A. Shop Drawings: Submit shop drawings for fabrication, bending and placement of reinforcement bars. Comply with ACI Detailing Manual, Latest Edition. Show bar schedules, diagrams of bent bars, stirrup spacing, lateral ties and other arrangements and assemblies as required for fabrication and placement or reinforcement for unit masonry work. Show special reinforcement required at openings, control joints and end walls. Show elevations of concrete masonry walls with openings, ledges, beam pockets and bond beams. Show dowels into other work. Show arrangement of concrete masonry units for masonry columns.

B. Prepare design mixes for each type of grout, submit written reports to Owner's Representative of each proposed mix for each type of grout at least 15 days prior to start of work. Do not begin production until mixes have been reviewed by Architect.

2.0 PART 2 – PRODUCTS

2.1 CONCRETE MASONRY UNITS

A. Regional Materials: CMUs shall be manufactured within 500 miles (800km) of Project site from aggregates and cement that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles (800km) of Project site.

B. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise noted.

1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
2. Provide square-edged units for outside corners unless otherwise indicated.

C. CMUs: ASTM C90

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength (f'm) of 1,900 psi (13.1 MPa).
2. Density Classification: Normal weight unless otherwise noted.
3. Size (width): Manufactured to dimensions 3/8 inch (10mm) less than nominal dimensions.
   a) 4-inch nominal; 3-5/8 inches actual
   b) 6-inch nominal; 5-5/8 inches actual
   c) 8-inch nominal; 7-5/8 inches actual

d) 10-inch nominal; 9-5/8 inches actual
e) 12-inch nominal; 11-5/8 inches actual

4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.

2.2 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150, Type I or II, except Type III may be used for cold weather construction. Provide natural color or white cement as required to produce mortar color indicated.
B. Hydrated Lime: ASTM C207, Type S
C. Portland Cement Lime Mix: Packaged blend of Portland cement complying with ASTM C150, Type I or Type III, and hydrated lime complying with ASTM C207, Type S.
D. Aggregate for Mortar: ASTM C144
   1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
   2. White Mortar Aggregates: Natural white sand or crushed white stone.
   3. Colored Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
E. Aggregate for Grout: ASTM C404
F. Cold Weather Admixture: Non-chloride, non-corrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommend by manufacturer for use in mortar of composition indicated.
G. Water: Potable, free of harmful amounts of acids, alkalis, and organic materials.

2.3 REINFORCEMENT

A. Uncoated Steel Reinforcing Bars: Provide deformed bars complying with ASTM A615, grade 60 (A616 for English units) except otherwise indicated.
   1. Shop-fabricate reinforcement bars which are shown to be bent or hooked.
B. Weldable Reinforcing Steel: ASTM A706, Grade 60
C. Masonry Joint Reinforcement, General: Provide horizontal joint reinforcement complying with ASTM A951.

2.4 MISCELLANEOUS ANCHORS

A. Anchor Bolts: Headed steel anchors complying with ASTM A307, Grade A; with ASTM A563 hex nuts; hot dip galvanized to comply with ASTM A153/A153M, Class C; of dimensions indicated.

2.5 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air entraining agents, accelerators, retarders, anti-freeze compounds or other admixtures, unless otherwise indicated.
   1. Do not use calcium chloride in mortar or grout.
   2. Limit cementitious materials in mortar for exterior and reinforced masonry to Portland cement and lime.
   3. Add cold weather admixture (if used) at same rate for all mortar exposed to view, regardless of weather conditions, to ensure mortar color is consistent.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C 270 and BIA Technical Notes 8A, Property Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.

1. For masonry below grade or in contact with earth, use Type M, f'c = 2,500psi.
2. For reinforced masonry, use Type S, f'c = 1,800psi.

D. Grout for Unit Masonry: Comply with ASTM C476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
2. Provide grout with slump of 8 to 11 inches as measured according to ASTM C143/C143M.
3. Provide grout with minimum compressive strength, f'c = 2,000psi.

2.6 SOURCE QUALITY CONTROL

A. Owner shall engage qualified independent testing and inspecting agency to perform source quality control testing.

B. Concrete Masonry Unit Test: For each type of unit furnished, per ASTM C140.

3.0 PART 3 – EXECUTION

3.1 PLACING REINFORCEMENT

A. General – Clean reinforcement of loose rust, mill scale, earth, ice or other materials which will reduce bond to mortar or grout. Do not use reinforcement bars with kinks or bends not shown on drawings or final shop drawings, or bars with reduced cross section due to excessive rusting or other causes.

1. Position reinforcement accurately at the spacing indicated. Support and secure vertical bars against displacement. Horizontal reinforcement may be placed as the masonry work progresses. Where vertical bars are shown in close proximity, provide a clear distance between bars of not less than the nominal bar diameter or 1" (whichever is greater)
2. Splice reinforcement bars where shown; do not splice at other points unless acceptable to the Owner's Representative. Provide lapped splices, unless otherwise indicated. In splicing vertical bars or attaching to dowels, lap ends, place in contact and wire tie.
3. Provide not less than minimum lap splice length of 48 bar diameter unless noted otherwise.
4. Embed metal ties in mortar joints as work progresses, with a minimum mortar cover of 5/8" on exterior face of walls and ½" at other locations.
5. Embed prefabricated horizontal joint reinforcement as the work progresses, with a minimum cover of 5/8" on exterior face of walls and 1/2" at other locations. Lap units not less than 6" at ends. Use prefabricated "L" and "T" units or cut and bend corners with minimum 6" overlay to provide continuity at corners and intersections. Cut and bend units as recommended by manufacturer for continuity at returns,

offsets, column fire-proofing, pipe enclosures and other special conditions.

6. Anchor reinforced masonry walls to non-reinforced masonry where they intersect.

3.2 INSTALLATION OF REINFORCED CONCRETE UNIT MASONRY

A. General
   1. Do not wet concrete masonry units (CMU).
   2. Lay CMU units with full-face mortar beds. Fill vertical head joints (end joints between units) solidly with mortar from face of unit to a distance behind face equal to not less than the thickness of longitudinal face shells. Solidly bed.
   3. Where solid CMU units are shown, lay with full mortar head and bed joints.

B. Walls
   1. Pattern Bond Lay CMU wall units in 1/2-running bond with vertical joints in each course centered on units in courses above and below, unless otherwise indicated. Bond and interlock each course at corners and intersections. Use special-shaped units where shown, and as required for corners, jambs, sash, control joints, lintels, bond beams and other special conditions.
   2. Maintain vertical continuity of core or cell cavities, which are to be reinforced and grouted to provide minimum clear dimensions indicated and to provide minimum clearance and grout coverage for vertical reinforcement bars. Keep cavities free of mortar. Solidly bed webs in mortar where adjacent to reinforced cores or cells.
   3. Where horizontal reinforced beams (bond beams) are shown, use special units or modify regular units to allow for placement of continuous horizontal reinforcement bars. Place small mesh expanded metal lath or wire screening in mortar joints under bond beam courses over cores or cells of non reinforced vertical cells, or provide units with solid bottoms.

C. Columns, Piers and Pilasters
   1. Use CMU units if the size, shape and number of vertical core spaces shown. If not shown, use units which provide minimum clearances and grout coverage for number and size of vertical reinforcement bars shown.
   2. Provide pattern bond shown, or if not shown, alternate head joints in vertical alignment.

D. Use bonded pilaster construction unless noted otherwise.
   1. Lay wall and pilaster units together to maximum pour height specified.

E. Provide cleanouts in all cells to be grouted.

F. Grouting
   1. Use “Coarse grout” unless noted otherwise.
   2. Use “Fine Grout” per ASTM C 476 for filling spaces less than 4” in one or both horizontal directions.

G. Grouting Technique – Use low-lift grouting techniques subject to requirements which follow.
   1. Provide minimum clear dimension of 2” and clear area of 8 sq. in. in vertical cores to be grouted.
   2. Place vertical reinforcement prior to laying of CMU. Extend above elevation of maximum pour height as required for splicing. Support in position at vertical intervals not exceeding 192 bar diameters nor 10 ft.

3. Lay CMU to maximum pour height. Do not exceed 4-foot height, or if bond beam occurs below 4-foot height stop pour at course below bond beam.
4. Place grout continuously. If grouting is to be stopped for one hour or longer, horizontal construction joints shall be formed by stopping grout pour not less than 1-1/2 below the top of the uppermost unit grouted.
5. Terminate grout pours 1-1/2 inch below top course of pour.
6. Place grout, wait 5 minutes to allow excess water to be absorbed by concrete masonry units, and consolidate by vibration or puddling; do not use trowels to consolidate.

H. Do not use High-Lift Grouting unless approved in writing by Engineer.

I. Bond Beams – Stop grout in vertical cells 1-1/2" below bond beam course. This space is to be grouted at the same time the bond beam is grouted. Modify bottom of bond beam at grouted vertical cells to allow grout flow into vertical cells and vertical reinforcement to be continued through the bond beam. Place horizontal reinforcement in bond beams; lap at corners and intersections as shown. Place grout in bond beam course before filling vertical cores above bond beam.

J. Preparation of Grout Spaces – Prior to grouting, inspect and clean grout spaces. Remove dust, dirt, mortar droppings, loose pieces of masonry and other foreign materials from grout spaces. Clean reinforcement and adjust to proper position. Clean top surface of structural members supporting masonry to ensure bond. After final cleaning and inspection, close cleanout holes and brace closures to resist grout pressures.
1. Do not place grout until height of masonry to be grouted has attained sufficient strength to resist displacement of masonry units and breaking or mortar bond. Install shores and bracing, if required, before starting grouting operations.
2. Place grout by pumping into grout spaces unless alternate methods are acceptable to the Owner's Representative.
3. Place grout in lintels or beams over openings in one continuous pour.

3.3 FIELD QUALITY CONTROL

A. Inspectors: Owner shall engage qualified independent testing and inspecting agency to perform tests, inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform inspections.
1. Place grout only after inspectors have verified compliance of grout spaces and grades, sizes, and locations of reinforcement.

B. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.

C. Concrete Masonry Unit Test: For each type of unit provided, per ASTM C140.

D. Mortar Test: For each mix provided, per ASTM C780. Test mortar air content and compressive strength for consistency. ASTM does not publish minimum compressive strength requirements for field-prepared mortar.
1. Standard compression cubes to be made by testing laboratory, not by the Contractor:
a) 2" square compression cubes (ASTM C780) in sets of nine, moist cured. Break three at 7 days, three at 28 days, and three at 56 days.

E. Grout Test: For each mix provided, per ASTM C1019. Test grout for compressive strength.

1. Standard compression cylinders to be made by testing laboratory, not by the Contractor:
   a) 6" x 12" compression cylinders (ASTM C39) in sets of five, moist cured. Break two at 7 days, two at 28 days, and one at 56 days.
   b) 4” x 8” compression cylinders (ASTM C39) in sets of seven, moist cured. Break three at 7 days, three at 28 days, and one at 56 days.

END OF SECTION 042200

SECTION 047200 - CAST STONE MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Cast-stone trim including the following:

a. Window sills.
b. Door sills / Water tables.

B. Related Sections:

1. Section 042000 "Unit Masonry" for installing cast-stone units in unit masonry.
2. Section 079200 “Joint Sealants”

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. For cast-stone units, include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Show fabrication and installation details for cast-stone units. Include dimensions, details of reinforcement and anchorages if any, and indication of finished faces.

1. Include building elevations showing layout of units and locations of joints and anchors.

C. Samples: Submit samples of for each color and texture of cast-stone required using the same sand and mortar ingredients to be used on the Project.
1. Sample size to be approximately 2 inches by 4 inches or manufacturer’s standard size.

D. Warranty: Submit manufacturer’s standard warranty.

1.4 INFORMATIONAL SUBMITTALS

A. Material Test Reports: For each mix required to produce cast stone, based on testing according to ASTM C1364**,** including test for resistance to freezing and thawing.

1. Provide test reports based on testing within previous two years.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer of cast-stone units similar to those indicated for this Project, that has sufficient production capacity to manufacture required units, and is a plant certified by the Architectural Precast Association.

B. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.

C. Mockups: If required by Architect, furnish cast stone for installation in mockups specified in Section 042000 "Unit Masonry."

1. Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

D. Manufacturer's responsibility includes providing professional engineering services needed to assume responsibility for product performance.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Coordinate delivery of cast stone with unit masonry work to avoid delaying the Work and to minimize the need for on-site storage.

B. Pack, handle, and ship cast-stone units in suitable packs or pallets.

1. Lift with wide-belt slings; do not use wire rope or ropes that might cause staining. Move cast-stone units if required, using dollies with wood supports.
2. Store cast-stone units on wood skids or pallets with non-staining, waterproof covers, securely tied. Arrange to distribute weight evenly and to prevent damage to units. Ventilate under covers to prevent condensation.

C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

D. Store mortar aggregates where grading and other required characteristics can be maintained, and contamination can be avoided.

E. Protect cast stone units, including corners and edges, during storage, handling, and installation to prevent chipping, cracking, staining, or other damage. Handle long units at center and both ends simultaneously to prevent cracking. Do not use pry bars or other equipment in a manner that could damage units.

1.7 PROJECT CONDITIONS

A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Comply with cold-weather construction requirements in TMS 602/ACI 530.1/ASCE 6.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until cast stone has dried, but no fewer than seven days after completing cleaning.

B. Hot-Weather Requirements: Comply with hot-weather construction requirements in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Cast Stone: Obtain cast-stone units from single source from single manufacturer.
   1. Subject to compliance with requirements, provide products by one of the following; or approved equal:
      a. Steps Plus, Inc. Syracuse, NY
      b. Southside Precast Products, Buffalo, NY
      c. Sun Precast Co., Inc. Beaver Springs, PA

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

2.2 CAST-STONE MATERIALS

A. General: Comply with ASTM C1364.

B. Portland Cement: ASTM C150/C150M, Type I or Type III, containing not more than 0.60 percent total alkali when tested according to ASTM C114. Provide natural color or white cement as required to produce cast-stone color indicated.

C. Coarse Aggregates: Granite, quartz, or limestone complying with ASTM C33/C33M; gradation and colors as needed to produce required cast-stone textures and colors.

D. Fine Aggregates: Natural sand or crushed stone complying with ASTM C33/C33M, gradation and colors as needed to produce required cast-stone textures and colors.

E. Color Pigment: ASTM C979/C979M, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, nonfading, and resistant to lime and other alkalis.

F. Admixtures: Use only admixtures specified or approved in writing by Architect.

   1. Do not use admixtures that contain more than 0.1 percent water-soluble chloride ions by mass of cementitious materials. Do not use admixtures containing calcium chloride.
   2. Use only admixtures that are certified by manufacturer to be compatible with cement and other admixtures used.
   3. Air-Entraining Admixture: ASTM C260/C260M.
   4. Water-Reducing Admixture: ASTM C494/C494M, Type A.
   5. Water-Reducing, Retarding Admixture: ASTM C494/C494M, Type D.

6. Water-Reducing, Accelerating Admixture: ASTM C494/C494M, Type E.

G. Reinforcement: Deformed steel bars complying with ASTM A615/A615M, Grade 60. Use galvanized or epoxy-coated reinforcement when covered with less than 1-1/2 inches of cast-stone material.

1. Epoxy Coating: ASTM A775/A775M.
2. Galvanized Coating: ASTM A767/A767M.

H. Embedded Anchors and Other Inserts: Fabricated from steel complying with ASTM A36/A36M and hot-dip galvanized to comply with ASTM A123/A123M.

2.3 CAST-STONE UNITS

A. Cast-Stone Units: Comply with ASTM C1364.

1. Units shall be manufactured using the wet-cast method.
2. Units shall be resistant to freezing and thawing as determined by laboratory testing according to ASTM C666/C666M, Procedure A, as modified by ASTM C1364.

B. Fabricate units with sharp corners and accurately reproduced details, with indicated texture on all exposed surfaces unless otherwise indicated.

1. Slope exposed horizontal surfaces 1:12 to drain unless otherwise indicated.
2. Provide raised fillets at backs of sills and at ends indicated to be built into jambs.
3. Provide drips on projecting elements unless otherwise indicated.

C. Fabrication Tolerances:

1. Variation in Cross Section: Do not vary from indicated dimensions by more than 1/8 inch.
2. Variation in Length: Do not vary from indicated dimensions by more than 1/360 of the length of unit or 1/8 inch, whichever is greater, but in no case by more than 1/4 inch.
3. Warp, Bow, and Twist: Not to exceed 1/360 of the length of unit or 1/8 inch, whichever is greater.
4. Location of Grooves, False Joints, Holes, Anchorages, and Similar Features: Do not vary from indicated position by more than 1/8 inch on formed surfaces of units and 3/8 inch on unformed surfaces.

D. Cure Units as Follows:

1. Cure units in enclosed, moist curing room at 95 to 100 percent relative humidity and temperature of 100 deg F for 12 hours or 70 deg F for 16 hours.
2. Keep units damp and continue curing to comply with one of the following:
   a. No fewer than seven days at mean daily temperature of 50 deg F (10 deg C) or above.

E. Acid etch units after curing to remove cement film from surfaces to be exposed to view.

F. Colors and Textures: As selected by Architect from manufacturer's full range.

2.4 MORTAR MATERIALS

A. Provide mortar materials that comply with Section 042000 "Unit Masonry."

B. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

C. Hydrated Lime: ASTM C207, Type S.

D. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

E. Masonry Cement: ASTM C91/C91M.

F. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C979/C979M. Use only pigments with a record of satisfactory performance in masonry mortar.

G. Colored Cement Product: Packaged blend made from portland cement and hydrated lime and mortar pigments, all complying with specified requirements, and containing no other ingredients.

1. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.
2. Pigments shall not exceed 10 percent of portland cement by weight.

H. Aggregate for Mortar: ASTM C144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
3. White-Mortar Aggregates: Natural white sand or crushed white stone.
4. Colored Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

I. Water: Potable.

2.5 ACCESSORIES

A. Anchors: Type and size indicated, fabricated from steel complying with ASTM A36/A36M and hot-dip galvanized to comply with ASTM A123/A123M.

B. Dowels: 1/2-inch-diameter round bars, fabricated from steel complying with ASTM A36/A36M and hot-dip galvanized to comply with ASTM A123/A123M.

C. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by

cast-stone manufacturer and expressly approved by cleaner manufacturer for use on cast stone and adjacent masonry materials.

2.6 MORTAR MIXES

A. Comply with requirements in Section 042000 "Unit Masonry" for mortar mixes.

B. Do not use admixtures including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
2. Use portland cement-lime mortar unless otherwise indicated.

C. Comply with ASTM C270, Proportion Specification.

1. For setting mortar, use Type N.
2. For pointing mortar, use Type N.

D. Pigmented Mortar: Use colored cement product or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products.

1. Pigments shall not exceed 10 percent of portland cement by weight.
2. Application: Use pigmented mortar for exposed mortar joints.

E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.

1. Mix to match Architect's sample.
2. Application: Use colored-aggregate mortar for exposed mortar joints.

2.7 SOURCE QUALITY CONTROL

A. Engage a qualified independent testing agency to sample and test cast-stone units according to ASTM C1364.

1. Include one test for resistance to freezing and thawing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SETTING CAST STONE IN MORTAR

A. Install cast-stone units to comply with requirements in Section 042000 "Unit Masonry."

B. Set cast stone as indicated on Drawings. Set units accurately in locations indicated, with edges and faces aligned according to established relationships and indicated tolerances.

1. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units in place.
2. Coordinate installation of cast stone with installation of flashing specified in other Sections.

C. Wet joint surfaces thoroughly before applying mortar or setting in mortar.

D. Set units in full bed of mortar with full head joints unless otherwise indicated.

1. Set units with joints 3/8 to 1/2 inch wide unless otherwise indicated.
2. Build anchors and ties into mortar joints as units are set.
3. Fill dowel holes and anchor slots with mortar.
4. Fill collar joints solid as units are set.
5. Build concealed flashing into mortar joints as units are set.
6. Keep head joints in copings and between other units with exposed horizontal surfaces open to receive sealant.
7. Keep joints at shelf angles open to receive sealant.

E. Rake out joints for pointing with mortar to depths of not less than 3/4 inch. Rake joints to uniform depths with square bottoms and clean sides. Scrub faces of units to remove excess mortar as joints are raked.

F. Point mortar joints by placing and compacting mortar in layers not greater than 3/8 inch. Compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.

G. Tool exposed joints slightly concave when thumbprint hard. Use a smooth plastic jointer larger than joint thickness.

H. Rake out joints for pointing with sealant to depths of not less than 3/4 inch. Scrub faces of units to remove excess mortar as joints are raked.

I. Point joints with sealant to comply with applicable requirements in Section 079200 "Joint Sealants."

1. Prime cast-stone surfaces to receive sealant and install compressible backer rod in joints before applying sealant unless otherwise indicated.

J. Provide sealant joints at head joints of copings and other horizontal surfaces; at expansion, control, and pressure-relieving joints; and at locations indicated.

1. Keep joints free of mortar and other rigid materials.
2. Build in compressible foam-plastic joint fillers where indicated.
3. Form joint of width indicated, but not less than 3/8 inch.

4. Prime cast-stone surfaces to receive sealant and install compressible backer rod in joints before applying sealant unless otherwise indicated.
5. Prepare and apply sealant of type and at locations indicated to comply with applicable requirements in Section 079200 "Joint Sealants."

3.3 SETTING ANCHORED CAST STONE WITH SEALANT-FILLED JOINTS

A. Set cast stone as indicated on Drawings. Set units accurately in locations indicated, with edges and faces aligned according to established relationships and indicated tolerances.

1. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units in place.
2. Shim and adjust anchors, supports, and accessories to set cast stone in locations indicated with uniform joints.

B. Keep cavities open where unfilled space is indicated between back of cast-stone units and backup wall; do not fill cavities with mortar or grout.

C. Fill anchor holes with sealant.

1. Where dowel holes occur at pressure-relieving joints, provide compressible material at ends of dowels.

D. Set cast stone supported on clip or continuous angles on resilient setting shims. Use material of thickness required to maintain uniform joint widths. Hold shims back from face of cast stone a distance at least equal to width of joint.

E. Keep joints free of mortar and other rigid materials. Remove temporary shims and spacers from joints after anchors and supports are secured in place and cast-stone units are anchored. Do not begin sealant installation until temporary shims and spacers are removed.

1. Form open joint of width indicated, but not less than 3/8 inch.

F. Prime cast-stone surfaces to receive sealant and install compressible backer rod in joints before applying sealant unless otherwise indicated.

G. Prepare and apply sealant of type and at locations indicated to comply with applicable requirements in Section 079200 "Joint Sealants."

3.4 INSTALLATION TOLERANCES

A. Variation from Plumb: Do not exceed 1/8 inch in 10 feet maximum.

B. Variation from Level: Do not exceed 1/8 inch in 10 feet maximum.

C. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 36 inches or one-fourth of nominal joint width, whichever is less.

D. Variation in Plane between Adjacent Surfaces (Lipping): Do not vary from flush alignment with adjacent units or adjacent surfaces indicated to be flush with units by more than 1/16 inch, except where variation is due to warpage of units within tolerances specified.

3.5 ADJUSTING AND CLEANING

A. Remove and replace stained and otherwise damaged units and units not matching approved Samples. Cast stone may be repaired if methods and results are approved by Architect.

B. Replace units in a manner that results in cast stone matching approved Samples, complying with other requirements, and showing no evidence of replacement.

C. In-Progress Cleaning: Clean cast stone as work progresses.

1. Remove mortar fins and smears before tooling joints.
2. Remove excess sealant immediately, including spills, smears, and spatter.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed cast stone as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample; leave one sample uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of cast stone.
3. Protect adjacent surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
4. Wet surfaces with water before applying cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
5. Clean cast stone by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
6. Clean cast stone with proprietary acidic cleaner applied according to manufacturer's written instructions.

END OF SECTION 047200

SECTION 051200 – STRUCTURAL STEEL

1.0 PART 1 – GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. Concrete reinforcing steel
B. Miscellaneous and ornamental ironworks
C. Steel anchors for work of other trades.
D. Setting anchor bolts in concrete.
E. Grouting base or leveling plates for columns, beams, and/or joists.
F. Erecting loose lintels.
G. Metal deck
H. Steel joists
I. Field painting, except as required in this section for touch-up.

1.2 RELATED WORK FURNISHED BUT NOT INSTALLED

A. Loose base or leveling plates for column, beams, and/or joists.
B. Exterior and interior loose lintels.
C. Anchor bolts for structural steel only.

1.3 DESCRIPTION OF WORK: Work covered by this section shall include all labor, material, equipment, and services necessary to complete the job as shown or called for on Architectural and Structural Drawings. Also included, but not limited to, shall be:

A. Structural steel beams, girders, and columns
B. Miscellaneous and connecting material
C. Hung and clipped lintels
D. Roof frames for all Mechanical and Architectural openings and roof drains.
E. Continuous angles

1.4 SUBMITTALS: Submit for review an electronic copy of all erection plans and detailed shop drawings checked by the Fabricator. Unchecked shop drawings will not be reviewed. Reproduction of Contract Drawings are not to be substituted for erection drawings. Revise as necessary. Review of shop drawings does not relieve Fabricator of responsibility for fit, detail design of connections, or for supplying all necessary materials. Supply reviewed prints for field use as necessary. Drawings shall be submitted early enough to allow adequate time for proper review.

1.5 STANDARDS: Structural steel framing is to conform to codes, standards, and specifications of the following (latest date):

A. American Society for Testing and Materials (ASTM)
B. American Welding Society (AWS)
C. American Institute of Steel Construction (AISC)
D. Occupational Safety and Health Standards (OSHA).
E. New York State Building Code.

1.6 INSPECTIONS: Work may be inspected both at the shop and in the field by the Engineer, or the testing authority, for the following:

A. Shop inspection for workmanship only.
B. Responsibility for accuracy of fit and soundness of connections rests solely with the Contractor.
C. Final inspection for workmanship and fit made in the field after work has been fitted in place.
D. Material accepted in shop shall not prevent final rejection at the site or after erection if it fails to conform to drawings and specifications.
E. All major field and/or shop butt welded splices shall be checked and certified by an independent testing laboratory accepted by the Engineer. All costs for such testing shall be paid by this Contractor. Such testing shall be non-destructive radiographic. All butt welds shall have 100% penetration and fusion.

1.7 FABRICATION: Structural steel fabrication shall conform to the following:

A. Workmanship and details shall conform to AISC "Specifications for Fabrication and Erection of Structural Steel for Buildings", latest edition. Fabricator/Erector shall be AISC certified unless noted otherwise on plans.
B. Shop connections are welded unless noted otherwise on plan or section.
C. Substitution of shapes and/or modification of details by the Fabricator must be accepted by the Engineer in writing.
D. Mill bearing surfaces to true planes. Fit abutting surfaces closely.
E. Details of lintel and other steel requiring accurate alignment shall provide for slotted holes and/or washers for truing up steel as required.
F. Provide any special details shown on plans.
G. Punch as required for nailers. Check locations where punching is required by referring to Architectural details.
H. All Architectural clearances must be maintained.
I. Minimum bolt size is 3/4" diameter.
J. Provide bearing plates and anchors for all beams bearing on masonry where other detail is not specified.
K. All connections shall be properly designed for standard end loads of the member connected unless noted otherwise on the plans. Shop connections shall be welded and performed by operators who have been qualified previously by tests as per American Welding Society's "Standard Qualification Procedure" to perform the type of work required. Use equipment supplying the proper current, electrodes suitable for positions and other conditions of intended use. Appearance, quality of welds made, and methods of correcting defective work shall meet the American Welding Society's "Code for Arc Welding in Building Construction".
L. Field connections shall be bolted in standard framed connections as shown in the AISC manual and designed for loads as indicated in paragraph 1.07 K above.
M. All high-strength bolts are to be designed in accordance with AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts".

2.0 PART 2 – PRODUCTS

2.1 STRUCTURAL STEEL SHAPES: shall be manufactured from material conforming to ASTM A992 with sizes as shown on the drawings. No second-hand material permitted. Submit two each of all certified mill test reports.

2.2 STRUCTURAL STEEL CHANNELS, PLATES, AND ANGLES: shall be manufactured from material conforming to ASTM A36 with sizes and thicknesses as shown on the drawings. No secondhand material permitted. Submit two each of all certified mill test reports.

2.3 WELDING RODS: shall conform to E60 or E70 series of ASTM A233, manual shielded arc welding and shall be suitable to the position and condition of intended use.

2.4 BOLTS: shall conform to the following:

A. High-strength bolts - ASTM A325 N in bearing type connections, except where noted otherwise.
B. Common bolts - ASTM A307

2.5 FINISH: Apply one thorough and complete coat of #10-1009 Gray Primer, Tnemec Company, Inc. All moisture, scale, rust, grease, or mud shall be removed before painting. Wire brush or sandblast if necessary. Shop coat is not to be omitted at piece marks. Shop coat is to be omitted at areas to be field welded, contact surfaces within friction type connections, welded shear studs and all surfaces to be permanently embedded in concrete or covered by sprayed-on fire proofing. Note: Minimum thickness per coat of paint shall not be less than 2 mil. Paint thickness shall be verified by an independent testing laboratory accepted by the Engineer and paid for by this Contractor. Exterior lintels and other exposed members shall be hot dipped galvanized at the rate of 1.25 oz. per square foot of surfacing in compliance with ASTM A-123 or A-153 as applicable.

2.6 SHEAR CONNECTOR STUDS: 3/4" diameter x 3-1/2" long headed solid flux shear connector studs, Nelson Division of TRW, Inc.

2.7 STRUCTURAL TUBING: ASTM A500 Grade B.

2.8 STRUCTURAL PIPE: ASTM A53 Grade B.

3.0 PART 3 – EXECUTION

3.1 WORKMANSHIP: Care shall be exercised at all times to avoid damage through careless handling during unloading, storing, and erecting. Dropping of steel will not be permitted. Damaged steel will be replaced at no cost to the General Contractor or the Owner. Provide adequate equipment to perform work without damage to construction and provide complete safety for public, personnel, and property.

3.2 INSTALLATION

A. Provide temporary cable bracing with turnbuckles in sufficient numbers to prevent distortion or damage to the framework due to wind or erection forces. These cables shall be used to plumb and line columns before final bolting and shall be left in place to insure the lateral stability of the building.

B. Field burning of holes is prohibited. Field correction of holes by drilling and reaming only.
C. Field weld all slotted connections after final adjustment.
D. All columns must be plumb before final bolting. After tightening anchor bolts, upset threads to lock.
E. Field painting of structural steel is not required, except for:
    1. Touch-up field welds, bolts, abrasions of shop coat, etc. to provide complete coverage.
    2. Touch-up paint is to be the same as the shop coat.
    3. All touch-up painting is to be completed before the Erector leaves the site.

END OF SECTION 051200

SECTION 052116 – LONGSPAN STEEL JOISTS

1.0 PART 1 GENERAL

1.01 Related Work Specified Elsewhere

A. Steel supports
B. Roof frames
C. Joist anchor plates cast in concrete or masonry
D. Metal deck

1.02 Description of Work: Work covered by this section shall include all labor, materials, equipment, and services necessary to complete the job as shown or called for on the Architectural or Structural Drawings. Also included, but not limited to, shall be:

A. Diagonal bridging: not less than L 1-1/4"x1-1/4"x1/8".
B. Ceiling extension bars: required for contact ceilings. Provide extension supported at outer end by a vertical member to the top chord of the joist.
C. Outrigger and extended top chords where required.
D. Bridging anchors and their connection to masonry where required.
E. Special bracing as required for hung loads. See details.
F. Special deep-end joist where required.
G. Top and bottom chords: 3/16" minimum thickness.

1.03 Submittals: Submit for review an electronic copy of all erection plans and detailed shop drawings checked by the Fabricator. Unchecked shop drawings will not be reviewed. Review of shop drawings does not relieve Fabricator of responsibility for fit, detail design of connections, or for supplying all necessary materials.

1.04 Standards: Joists are to conform to the "Specifications for Longspan Steel Joists" as published by the Steel Joist Institute and to these specifications. The joists are to be designed to develop the resisting moments and maximum end reactions shown in the standard load tables for open web steel joists, "LH" series.

2.0 PART 2 PRODUCTS

2.01 Open Web Steel Joists: ("LH" series) are to be standard welded trusses of sizes and spacing specified on the plans or sections. The joists are to conform to the Steel Joist Institute specifications. The joist supplier is to be a member of the Steel Joist Institute.

2.02 Joist Finish: The standard shop paint shall conform to the following:

A. Manufacturer's standard gray paint.

2.03 Joist Bridging: Shall consist of diagonal bridging with l/r ratio of not more than 200. The number of lines and the approximate location of the bridging are indicated on the Structural Drawings.

3.0 PART 3 EXECUTION

3.01 Workmanship: Care shall be exercised at all times to avoid damage through careless handling during unloading, storing, and erecting. Dropping of joists will not be permitted. Damaged joists are to be replaced at no cost to the Owner or the Contractor. All welding shall be done by competent, experienced welding mechanics. Field welding shall not damage the joist.

3.02 Installation

A. Joists are to bear 4" on steel and shall be welded thereto with (2)-1/4"x2" long fillet welds.

B. Joists supported by concrete or masonry shall bear on steel bearing plates and shall extend a distance of not less than 6" over the masonry or concrete and shall be welded to the bearing plate with (2)-1/4"x2" long fillet welds. Bearing plates are as shown on the Structural Drawings.

C. Joists with special anchorages will be indicated on the Structural Drawings.

D. As soon as joists are erected, all diagonal bridging and bridging anchors are to be completely installed. Anchorage of bridging shall be in accordance with The Steel Joist Institute recommendations.

E. All welds, bolts, or places where shop coat has been broken or omitted shall be field painted with the same paint as the shop coat.

END OF SECTION 052116

SECTION 053113 METAL FLOOR DECK

1.0 PART 1 – GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. Concrete
B. Concrete reinforcing steel

1.2 DESCRIPTION OF WORK: Work covered by this section shall include all labor, materials, equipment, and services necessary to complete the job as shown or called for on the Architectural or Structural Drawings. Also included, but not limited to, shall be:

A. Framing for all openings 12"x12" and smaller.
B. All flashings, end and side closures, screed angles (edge form) as required.
C. Welding washers
D. Closure strips as required.

1.3 SUBMITTALS: Submit for review an electronic copy of all erection plans and detailed shop drawings checked by the Fabricator. Unchecked shop drawings will not be reviewed. Review of shop drawings does not relieve Fabricator of responsibility for fit, detail design of connections, or for supplying all necessary materials.

1.4 SECTION PROPERTIES: Metal floor deck shall conform to the "Specification for the Design of Cold-Formed Steel Structural Members" as published by the American Iron and Steel Institute and to the specifications of the Steel Deck Institute.

2.0 PART 2 – PRODUCTS

2.1 METAL FLOOR DECK: shall be standard weight metal centering, United Steel Deck, Inc. "UFS" or an accepted equivalent. Deck shall have a minimum section modulus of .036 in.^{3} and a minimum weight of 1.0 lbs./s.f. with corrugations having a pitch of 2-1/2" and a depth of 9/16". Minimum Gage shall be 28 unless noted otherwise on Contract Drawings.

2.2 DECK FINISH: Metal deck shall be galvanized conforming to ASTM A653.

3.0 PART 3 – EXECUTION

3.1 INSTALLATION

A. The metal deck units shall be placed on the supporting steel frame with corrugation edges up and adjusted to final position before being permanently fastened. Each unit shall be brought to proper bearing on the supporting members. If the supporting members are not properly aligned or sufficiently level to permit proper bearing of the metal deck, the General Contractor shall take the appropriate corrective action. The metal deck is not to be placed until the necessary corrective actions have been made. The metal deck shall be placed in straight alignment for the entire length with a minimum side lap of one corrugation and a minimum end lap of 2”.

B. Metal deck shall be fastened to the steel framework at ends of deck and at intermediate supports by plug welding through welding washers, spaced not more than 12" across the width of the deck. Welds shall be made through all thicknesses of deck. Welds shall be free of sharp points or edges. In lieu of welding, powder actuated steel fasteners by Hilti Corporation may be used. Pin sizes and tools shall be as recommended by the manufacturer and by Factory Mutual. Spacing of fasteners shall, in no case, be less than that of welding.

C. Where possible, deck sheets shall extend over three or more spans.

3.2 FIELD CUTTING: The Erector of the steel floor units shall perform all skew cutting as well as the cutting of all deck openings.

3.3 WORKMANSHIP: All welding and/or powder actuated steel fastener installations shall be done by competent, experienced mechanics. All welds, promptly upon completion, shall be given a protective coating of galvanized paint.

END OF SECTION 053113

SECTION 053123 – METAL ROOF DECK

1.0 PART 1 – GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. Deck Supports
B. Insulation
C. Framing for roof openings

1.2 DESCRIPTION OF WORK: Work covered by this section shall include all labor, materials, equipment, and services necessary to complete the job as shown or called for on the Architectural or Structural Drawings. Also included, but not limited to, shall be:

A. Reinforced roof drain sump pans where required
B. Metal cants, ridge plates, valley plates, and rubber deck closures.
C. Sound insulation for acoustical deck

1.3 SUBMITTALS: Submit for review an electronic copy of all erection plans and detailed shop drawings checked by the Fabricator. Unchecked shop drawings will not be reviewed. Review of shop drawings does not relieve Fabricator of responsibility for fit, detail design of connections, or for supplying all necessary materials.

1.4 SECTION PROPERTIES: are to conform to the "Specification for the Design of Cold Formed Steel Structural Members" as published by the American Iron and Steel Institute and to the specifications of the Steel Deck Institute. Where possible, deck sheets shall extend over three or more supports.

2.0 PART 2 – PRODUCTS

2.1 METAL ROOF DECK: Shall be 1 ½" metal roof deck manufactured by a member of the Steel Deck Institute. Deck shall have a minimum positive section modulus of Sp = 0.198 in^3 and a minimum uncoated thickness of 0.0295. Gauge shall be determined by section modulus, minimum 22 GA. Type "B" or "BA" deck, wide rib, United Steel Deck, Inc. or accepted equal. See plans for deck locations.

2.2 DECK FINISH: Deck shall be galvanized and conform to the requirements of ASTM A525 coating class G60.

2.3 GYM METAL ROOF DECK: Shall be 2" acoustical metal roof deck "Epicore ER2RA" as manufactured by Epic Metals Corporation or accepted equal. Gage of deck as shown on plans.

2.4 DECK FINISH FOR GYM DECK: Steel sheets shall be cleaned, chemically treated, and galvanized. Deck shall then be shop painted with a 0.2 mil epoxy primer, followed by a 0.7 mil polyester oven baked and cured.

3.0 PART 3 – EXECUTION

3.1 INSTALLATION: The steel deck shall be plug welded to the supports at 12 inch centers at the ends of the sheets and at each interior support (36/4 pattern) unless noted otherwise on Structural Drawings. End welds and those occurring at laps shall be plug welded through all thicknesses. Installation shall be done in accordance with Factory Mutual "Loss Prevention Data", Sheet 1-28.

Alternate: Powder actuated fastening systems may be used in accordance with manufacturer's recommendations. Hilti or accepted equal.

Side laps for interlocking deck shall be button punched. Side laps for overlapping edge sheets shall be secured with minimum #10 Teks self-tapping screws. Welding shall not be used for side laps. Spacing between fasteners and supporting members shall not exceed (3) feet.

3.2 FIELD CUTTING: The Erector of the steel deck is to perform all skew cutting as well as the cutting of all deck openings 12 inches and larger.

3.3 WORKMANSHIP: All welding and/or steel fastener installations shall be done by competent, experienced mechanics. All welds, promptly upon completion, shall be given a protective coating compatible with the deck finish.

END OF SECTION 053123

SECTION 053600 – COMPOSITE METAL FLOOR DECK

1.0 PART 1 GENERAL

1.01 Related Work Specified Elsewhere

A. Concrete
B. Concrete reinforcing steel

1.02 Description of Work: Work covered by this section shall include all labor, materials, equipment, and services necessary to complete the job as shown or called for on the Architectural or Structural Drawings. Also included, but not limited to, shall be:

A. Framing for all openings 12"x12" and smaller.
B. All flashing, end and side closures, screed angles (edge form) as required.

1.03 Submittals: Submit for review an electronic copy of all erection plans and detailed shop drawings checked by the Fabricator. Unchecked shop drawings will not be reviewed. Review of shop drawings does not relieve Fabricator of responsibility for fit, detail design of connections, or for supplying all necessary materials.

1.04 Section Properties: Metal floor deck shall conform to the "Specification for the Design of Cold-Formed Steel Structural Members" as published by the American Iron and Steel Institute and to the specifications of the Steel Deck Institute.

1.05 Testing: Metal deck with lightweight or normal weight concrete shall have a 2-hour fire rating as determined by the Underwriter's Laboratories. Submit U.L. test data and number to Engineer for review.

2.0 PART 2 PRODUCTS

2.01 Metal Floor Deck: shall be 2" composite metal deck, United Steel Deck, Inc. "Lok-Floor" or an accepted equivalent as manufactured by a member of the Steel Deck Institute. Deck shall have a minimum section modulus of 0.367 in.^{3}. Gauge shall be determined by section modulus, minimum 20 or as shown on the Contract Drawings.

2.02 Deck Finish: Metal deck shall be galvanized conforming to Federal Specification QQ-S-775e Class E.

2.03 Screed Angles or pour stops shall be minimum 16 gage galvanized steel or heavier as required by conditions of use.

3.0 PART 3 EXECUTION

3.01 Installation

A. The metal floor deck units shall be placed on the supporting steel framework and adjusted to final position before being permanently fastened. Each unit shall be brought to proper bearing on the supporting members. If the supporting members are not properly aligned or sufficiently level to permit proper bearing of the steel floor units, the General Contractor shall take the appropriate corrective action. The steel floor units are not to be placed until the necessary corrective actions have been made. The floor units shall be placed in straight alignment for the entire length of run of cells and with close registration of the cells of one unit with those of the abutting unit and with minimum space between ends of abutting units.

B. Steel floor units shall be fastened to the steel framework at ends of units and at intermediate supports by welds not less than 3/4" diameter, spaced not more than 12" across width of floor unit. Where two units abut, each unit shall be fastened to the steel framework. Weld shall be free of sharp points or edges.

Alternate: Powder Actuated Fastening Systems may be used in accordance with manufacturers recommendations. Hilti or accepted equal.

C. The side laps of adjacent units shall be fastened between supports at intervals not exceeding three (3) feet between supporting beams. Button punch for interlocking units. Screw with minimum #14 Teks self-tapping screws for overlap edge units. Welding shall not be used for side laps.

D. Where possible, deck sheets shall extend over three or more spans.

3.02 Field Cutting: The Erector of the steel floor units shall perform all skew cutting as well as the cutting of all deck openings.

3.03 Workmanship: All welding shall be done by competent, experienced mechanics. All welds, promptly upon completion, shall be given a protective coating of galvanized paint.

END OF SECTION 053600

SECTION 054000 – COLD-FORMED METAL FRAMING

1.0 PART 1 – GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. Structural steel
B. Structural lintels
C. Decking

1.2 DESCRIPTION OF WORK: Work covered by this section shall include all labor, materials, equipment, and services necessary to complete the job as shown or called for on the Architectural or Structural Drawings. Also included, but not limited to, shall be:

A. Samples of metal studs for approval.
B. Load bearing studs including runner track.
C. Bridging - solid 16 gauge steel for studs.
D. Anchor bolts - 1/2" diameter @ 4'-0" c/c with a minimum of 2 bolts per piece.
E. Sills and headers.
F. Welding of structural steel members to lightgage metal framing.
G. Lightgage joists and trusses.
H. Bridging - V-bar 16 gauge steel for joists.
I. Lightgage lintels.

1.3 SUBMITTALS: Submit for review an electronic copy of all erection plans and detailed shop drawings checked by the Fabricator. Unchecked shop drawings will not be reviewed. Review of shop drawings does not relieve Fabricator of responsibility for fit, detail design of connections, or for supplying all necessary materials.

1.4 CODES AND STANDARDS: Lightgage metal framing is to conform to codes, standards, and specifications of the following:

A. American Society for Testing and Materials (ASTM)
B. American Iron and Steel Institute publications "Specification for the
C. Design of Light Gage Cold-Formed Steel Structural Members" and "Lightgage Steel Design Manual".
D. American Welding Society (AWS)
E. American Institute of Steel Construction (AISC)

1.5 QUALITY ASSURANCE: Contractor shall furnish in duplicate to the Engineer, an affidavit from the manufacturer certifying that the lightgage metal framing materials and the finished product delivered to the job site meet, in all respects, the specified requirements.

1.6 INSPECTION: Work shall be inspected both at the shop and in the field by the Engineer or his authorized representative.

A. Shop inspection for workmanship only.
B. Responsibility for accuracy of fit rests solely with the Contractor.
C. Final inspection for workmanship and fit made in the field, after work has been fitted into place.

D. Material accepted at the shop shall not prevent final rejection at site or after erection if it fails to conform to drawings and specifications.

1.7 FABRICATION

A. Workmanship equal to the best practice in modern structural shops.
B. All members straight and true, necessary flattening or straightening done by a process not injurious to the material.
C. All welding done by qualified operators in accordance with applicable AWS codes.
D. Finished members and panels, free form twist, bends, or open joints, members straight and true to line.
E. All studs welded to top and bottom track.
F. Top and bottom track continuous spliced and welded as required.
G. Provide headers for all openings, of proper size and section, securely welded to studs.

1.8 DELIVERY AND STORAGE

A. Members and panels are to be loaded and unloaded with derrick, in no case dumped from truck.
B. Members and panels bent, are to be returned to shop for proper straightening or replacement.
C. Handling at site, in sorting and piling, done with precaution to prevent abrasion of shop coat of members and panels

2.0 PART 2 – PRODUCTS

2.1 LOAD BEARING STUDS, JOISTS, AND TRUSSES: shall be manufactured from material conforming to ASTM A446 (latest date), Grade "A" with a minimum yield of 33,000 psi with sizes and gauges as shown on the drawings. Designations shown on the drawings are as manufactured by Dietrich Industries Inc. Equivalent sections may be used as approved in writing by the Engineer.

A. The maximum allowable ratio (l/r) for metal studs shall not exceed 200, except that during construction only, l/r shall not exceed 300.

2.2 FINISH: All members shall have a galvanized coating meeting the requirements of ASTM A525.

2.3 BRIDGING

A. Solid 16 gauge steel for studs.
B. V-bar 16 gauge steel for joists.
C. Number of rows of solid stud bridging shall not be less than two rows at approximately the third points.
D. Number of rows of V-bar bridging shall be as indicated on plans.

3.0 PART 3 – EXECUTION

3.1 INSPECTION: The Contractor is responsible for checking dimensions and assuring fit of all members and panels before erection begins. Report all discrepancies in plumb and level to the Engineer.

3.2 WORKMANSHIP: All light metal framing erected by approved methods, using equipment of adequate capacity to perform all work safely. Installation, design, and construction of light metal framing shall conform to the American Iron and Steel Institute Specifications (latest edition) for lightgage steel structural members.

3.3 INSTALLATION: The Contractor is to provide all necessary and incidental materials and labor to complete the job as required and as per manufacturer's standards.

A. Floor system of building is not to be used as support for any equipment in this work.
B. Any damage to concrete walls or other work during erection of lightgage metal framing, shall be repaired or replaced as required by the Engineer at the Contractor's expense.
C. All work erected plumb, level, and to dimensions and elevations indicated, using surveyor's instruments.
D. All discrepancies in plumb and level are to be corrected as required by approved methods.
E. All field connections are to be welded, unless specifically authorized in writing by the Engineer to be otherwise.
F. As soon as the joists have been erected, galvanized V-bar bridging shall be installed between joists before the application of construction loads. Bridging installed in accordance with manufacturer's standards.

3.4 FIELD PAINTING: Field painting of lightgage metal framing is not required except as follows:

A. Touch-up of field welds and abrasions of shop coat.
B. Touch-up paint shall be same as shop coat except galvanized members, aluminum paint can be used.
C. All touch-up painting is to be completed before placing wall sheathing, insulation, etc.

END OF SECTION 054000

SECTION 055000 – METAL FABRICATIONS

1.0 PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes, but is not limited to, the following metal fabrications:

1. Rough hardware.
2. Loose bearing and leveling plates.
3. Loose lintels.
4. Miscellaneous framing and supports for the following:

    a. Supports for wood blocking.

    b. Roof opening support angle framing.

    c. Miscellaneous clip angles.

    d. Applications where framing and supports are not specified in other sections.
5. Aluminum Ladders
6. Steel Railings

B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Section 061000 “Rough Carpentry.”
2. Divisions 22, 23 and 26 for equipment requiring support and roof penetrations.

1.3 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product data for nonslip aggregates and nonslip aggregate surface finishes, prefabricated building columns, cast nosings, treads and thresholds, steel floor plate, paint products, and grout.

C. Shop drawings detailing fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other Sections.

1. Coordinate shop drawing submittals with HVAC supplier of unit ventilator for sizing grille/louvers.

D. Samples representative of materials and finished products as may be requested by Architect.

E. Welder certificates signed by Contractor certifying that welders comply with requirements specified under the "Quality Assurance" Article.

F. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include a list of completed projects with project name, addresses, names of architects and owners, and other information specified.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Firm experienced in producing metal fabrications similar to those indicated for this Project with a record of successful in-service performance, and with sufficient production capacity to produce required units without delaying the Work.

B. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code--Steel," AWS D1.2 "Structural Welding Code--Aluminum," and AWS D1.3 "Structural Welding Code--Sheet Steel."

1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

1.5 PROJECT CONDITIONS

A. Field Measurements: Check actual locations of walls and other construction to which metal fabrications must fit by accurate field measurements before fabrication. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating products without field measurements. Coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions. Allow for trimming and fitting.

2.0 PART 2 – PRODUCTS

2.1 FERROUS METALS

A. Metal Surfaces, General: For metal fabrications exposed to view in the completed Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

C. Rolled Steel Floor Plates: ASTM A 786/A 786M.

D. Steel Tubing: Product type (manufacturing method) and as follows:

1. Cold-Formed Steel Tubing: ASTM A 500.
2. Hot-Formed Steel Tubing: ASTM A 501.

a. For exterior installations and where indicated, provide tubing with hot-dip galvanized coating per ASTM A 53.

E. Steel Pipe: ASTM A 53, standard weight (schedule 40), unless otherwise indicated, or another weight required by structural loads.

1. Black finish, unless otherwise indicated.
2. Galvanized finish for exterior installations and where indicated.

F. Gray-Iron Castings: ASTM A 48, Class 30.

G. Malleable-Iron Castings: ASTM A 47, Grade 32510 (ASTM A 47M, Grade 22010).

H. Cast-in-Place Anchors in Concrete: Anchors of type indicated below, fabricated from corrosion-resistant materials capable of sustaining, without failure, the load imposed within a safety factor of 4, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.

1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47 (ASTM A 47M) malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as required, hot-dip galvanized per ASTM A 153.

I. Welding Rods and Bare Electrodes: Select according to AWS specifications for the metal alloy to be welded.

2.2 ALUMINUM METALS

A. Extruded extension sills: 0.125-inch-thick aluminum 6063-T5 or T6 alloy extrusions, clear anodized finish, as selected.

B. Trim angles for unit ventilator louvers:

1. Structural aluminum shapes, extruded, 6063-T5 alloy.

C. Brake metal for attachment to storefront systems, 0.125” Thick, finish to match adjacent aluminum systems.

2.3 PAINT

A. Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements of FS TT-P-664, selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated, and capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.

B. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint 20.

C. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers.

D. Paint for Steel: Refer to Division 9 painting specifications.

2.4 FASTENERS

A. General: Provide plated fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating, for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.

B. Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A (ASTM F 568, Property Class 4.6), with hex nuts, ASTM A 563 (ASTM A 563M), and, where indicated, flat washers.

C. Machine Screws: ANSI B18.6.3.

D. Lag Bolts: ANSI B18.2.1 (ANSI B18.2.3.8M).

E. Wood Screws: Flat head, carbon steel, ANSI B18.6.1.

F. Plain Washers: Round, carbon steel, ANSI B18.22.1 (ANSI B18.22M).

G. Lock Washers: Helical, spring type, carbon steel, ANSI B18.21.1.

H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

I. Material: Carbon steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.

1. Material: Group 1 alloy 304 or 316 stainless-steel bolts and nuts complying with ASTM F 593 (ASTM F 738M) and ASTM F 594 (ASTM F 836M).

J. Toggle Bolts: FS FF-B-588, tumble-wing type, class and style as required.

2.5 GROUT

A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

B. Products: Subject to compliance with requirements, provide one of the following:

1. Nonshrink, Nonmetallic Grouts:

a. B-6 Construction Grout; W. R. Bonsal Co.

b. Five Star Grout; Five Star Products.

c. Sealtight 588 Grout; W. R. Meadows, Inc.

d. Sonogrout 14; Sonneborn Building Products--ChemRex, Inc.

2.6 CONCRETE FILL

A. Concrete Materials and Properties: Comply with requirements of Division 3 Section 035300 "Concrete Topping" for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 3000 psi (20 MPa), unless higher strengths are indicated.

2.7 FABRICATION, GENERAL

A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.

B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.

C. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.

1. Temperature Change (Range): 120 deg F.

D. Shear and punch metals cleanly and accurately. Remove burrs.

E. Ease exposed edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

F. Remove sharp or rough areas on exposed traffic surfaces.

G. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. At exposed connections, finish and grind smooth exposed welds and surfaces smooth and blended so that no roughness shows after finishing, and contour of welded surface matches those adjacent.

H. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

J. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

K. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

L. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

2.8 LOOSE STEEL LINTELS

A. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.

B. Weld adjoining members together to form a single unit where indicated.

C. Hot dip galvanize loose steel lintels located in exterior walls and in damp locations.

2.9 METAL LADDERS

A. General: Provide metal ladders that comply with ANSI A14.3. Ladder shall be able to withstand 1,500 lb. loading without failure. Individual treads tested to 3,000 lb. loading without failure.

B. Performance Stanard: Units designed and manufactured to meet or exceed ANSI A14.3, OSHA 1910.23, OSHA 1910.28 and OSHA 1910.29.

C. Aluminum Ladders: Fixed vertical or ships ladders designed to attach to a wall including ladder, cage, rest platforms, floor mounting brackets, walk-thru side rails and security gates.

1. Source Limitations: Obtain aluminum ladders from a single source from a single manufacturer.

a. Design Make: Precision Ladders, LLC, Heavy-Duty Fixed Aluminum Ladders – Model FLH

2. Space siderails 26 inches apart outside-to-outside for walk-thru ladders and 20 inches apart outside-to-outside for roof hatch ladders, unless otherwise indicated.

3. Siderails: Continuous heavy-duty extruded-aluminum tubes, not less than 3 inches deep, 1 inch wide, and 1/8 inch thick. Provide with 1/8” molded polyurethane safety caps at top.

4. Rungs: Extruded-aluminum tubes, not less than 2-1/4 inches wide, ¾ inch deep and not less than 3/8 inch thick, with deeply serrated tread surfaces for safety.

5. Fit rungs in centerline of siderails; fasten by riveting and welding to siderails.

6. Provide walk-thru and resting platforms as indicated fabricated from 1-1/4 inch extruded aluminum plank tubing, supported by extruded-aluminum framing. Limit openings in grating to no more than ½ inch in least dimension.

7. Support each ladder at top and bottom and not more than 60 inches o.c. with welded or bolted aluminum brackets.

   a. Wall bracket shall be 8 ½ inches by 4 ½ inches by 3 inches.

   b. Floor brackets where indicated shall be 2 ½ inches by 2 inches by 3 inches.

8. Provide ladder safety cage per ANSI A14.3 of ¼ inch x 2" flat bar hoops of primary and secondary framing where ladder height exceeds 20 feet. A rest platform is required so that no ladder segment exceeds 30 feet in height.

   a. Provide manufacturer's standard fall arrest system on all ladders exceeding 24'-0".

9. Finish: Ladder finish shall be powder coated as selected from the manufacturer's full range of standard colors.

2.10 STEEL RAILINGS

A. Source Limitations: Obtain each type of railing from single source from single manufacturer.

B. Tubing: ASTM A500/A500M (cold-formed).

C. Pipe: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.

D. Plates, Shapes, and Bars: ASTM A36/A36M.

2.11 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports for applications indicated that are not a part of structural steel framework as required to complete the Work.

B. Fabricate units to sizes, shapes, and profiles indicated and required to receive other adjacent construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.

   1. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.

      a. Except as otherwise indicated, space anchors 24 inches (600 mm) o.c. and provide minimum anchor units in the form of steel straps 1-1/4 inches (32 mm) wide by 1/4-inch (6 mm) thick by 8 inches (200 mm)

long.

C. Hot dip galvanize miscellaneous framing and supports in the following locations:

1. Exterior locations.
2. Interior locations in damp locations and where indicated.

2.12 STEEL AND IRON FINISHES

A. Hot dip galvanizing: For those items indicated for galvanizing, apply zinc coating by the hot-dip process complying with the following requirements:

1. ASTM A 153 for galvanizing iron and steel hardware.
2. ASTM A 123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip 0.0299 inch (0.76 mm) thick or thicker.

B. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:

1. Exteriors (SSPC Zone 1B): SSPC-SP 6 "Commercial Blast Cleaning."

2. Interiors (SSPC Zone 1A): SSPC-SP 3 "Power Tool Cleaning."

3. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes or to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with requirements of SSPC-PA 1 "Paint Application Specification No. 1" for shop painting.

4. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2.13 FINISHES FOR EXTRUDED ALUMINUM GRILLES/LOUVERS IN EXTERIOR WALLS

A. Fluoropon Kynar 500, 70% PVD resin, AAMA 605.2, (3) coat thermal cured, dry film thickness 1.0 mil, minimum.

3.0 PART 3 – EXECUTION

3.1 PREPARATION

A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installing anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

B. Center nosings on tread widths with noses flush with riser faces and tread surfaces.

C. Set sleeves in concrete with tops flush with finish surface elevations. Protect sleeves from water and concrete entry.

3.2 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction. Include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.

D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop-welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units that have been hot-dip galvanized after fabrication and are intended for bolted or screwed field connections.

E. Field Welding: Comply with the following requirements:

1. Comply with AWS code for procedures of manual shielded metal-arc welding, appearance and quality of welds made and methods used in correcting welding work.

2. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

3. Obtain fusion without undercut or overlap.

4. Remove welding flux immediately.

5. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing, and contour of welded surface matches those adjacent.

F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

3.3 SETTING LOOSE PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of bearing plates.

B. Set loose leveling and bearing plates on wedges or other adjustable devices. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the bearing plate before packing with grout.

1. Use non-shrink, metallic grout in concealed locations where not exposed to moisture; use non-shrink, nonmetallic grout in exposed locations, unless otherwise indicated.

2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.4 ADJUSTING AND CLEANING

A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of the shop paint on miscellaneous metal is specified in Division 9 Sections 099113 "Exterior Painting" and 099123 "Interior Painting."

B. For galvanized surfaces, clean welds, bolted connections, and abraded areas, and apply galvanizing repair paint to comply with ASTM A 780.

4.0 PART 4 – SCHEDULE OF ITEMS

4.1 GENERAL

A. This work in this section includes, but is not limited to, the items scheduled below.

B. Other items required may be shown on the drawings or in details, or that may otherwise be required for the project shall be provided as necessary.

4.2 ALUMINUM TRIM ANGLES

A. Provide various extruded aluminum angles around perimeters of unit ventilator louvers.

B. Provide extruded structural aluminum angles at heads and jambs of aluminum door frames and aluminum window frames, both inside and outside the frames.

4.3 LOOSE STEEL LINTELS

A. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.

B. Weld adjoining members together to form a single unit where indicated.

C. Hot-dip galvanize all loose steel lintels located in exterior walls.

4.4 ROOF OPENING SUPPORTS

A. Provide framing to support structural decks for new openings in existing roof decks where required for ductwork, roof drains, roof scuttles, skylights, ventilators, etc.

1. Fabricate to size required to suit equipment to be installed.

a. No existing structural members are to be altered without prior approval of the Architect.

2. Frames to consist of 4 pieces of 4 x 4 x 1/4-inch steel angles, similar to detail shown for new construction. Adjust to suit existing conditions,

END OF SECTION 055000

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.
2. Wood blocking and nailers.

1.2 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

B. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 15 percent.

C. Dimension Lumber Items: Construction or No. 2 grade lumber of any of the following species:

1. Hem-fir (north); NLGA.
2. Mixed southern pine or southern pine; SPIB.
3. Hem-fir; WCLIB or WWPA.

2.2 PLYWOOD

A. APA B C, Group 1, "Exterior Type" thickness as indicated on drawings for exterior use of where plywood will be subjected to moisture or high humidity. Uses: Roof decking/blocking and sheathing.

2.3 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat ONLY items in immediate direct contact with masonry or concrete.

E. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

F. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.4 FASTENERS

A. General: Fasteners shall be of size and type indicated on drawings and shall comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners of Type 304 stainless steel.

2. Expansion anchors: Meeting Federal Spec. FF-S-325, Group II Type 4 Class 1. Material to be Stainless steel. Use: Anchoring to cast in place concrete.

3. Sleeve Anchors: Meeting Federal Spec. FF-S-325, Group II, Type 3, Class 3. Material to be Stainless steel. Head type as appropriate for application. Use: Anchoring to masonry.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Where wood-preservative-treated lumber is installed adjacent to ferrous metal decking or structural components, install continuous membrane separator between wood and metal. (40 mil PVC, EPDM, polyethylene or asphaltic membrane is acceptable)

B. Builders Hardware: The contractor shall furnish all rough hardware such as nails, screws, bolts, etc. as required to complete the work.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install where indicated on drawings and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates as detailed on drawings. Generally, Generally anchor spacing to not be greater than 16” O.C. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Nailers, blocking or furring set to the deck, slab, or wall may be fastened with drive screws, except where bolting is indicated on the drawings.

D. Nailing: In accordance with industry standards of good practice.

3.3 PROTECTION

A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 061600 - SHEATHING

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Wall & soffit sheathing.

2. Sheathing joint and penetration treatment.

B. Related Requirements:

1. Division 06 Section "Rough Carpentry" for plywood backing panels.

2. Division 07 Section "Fluid(Spray)-Applied Membrane Air Barriers" for air/vapor barrier applied over wall sheathing.

3. Division 07 Section “Ethylene-Propylene-Diene-Monomer (EPDM) Roofing” for substrate board/sheathing associated with roof systems.

4. Division 09 Section “Gypsum Board” for exterior gypsum board sheathing for ceilings and soffits.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.

2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Include physical properties of treated materials.

3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.4 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For following products, from ICC-ES:

1. Preservative-treated plywood.

2. Fire-retardant-treated plywood.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

2.0 PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory."

2.2 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

C. Application: Treat items indicated on Drawings and plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.

2.3 FIRE-RETARDANT-TREATED PLYWOOD

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.

1. Use treatment that does not promote corrosion of metal fasteners.

2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.

C. Kiln-dry material after treatment to a maximum moisture content of 15 percent. Do not use material that is warped or does not comply with requirements for untreated material.

D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.

E. Application: Treat plywood indicated on Drawings, and the following:

1. Roof and wall sheathing within 48 inches (1220 mm) of fire walls (if any).

2.4 WALL/SOFFIT SHEATHING

A. Glass-Mat Gypsum Wall Sheathing: ASTM C 1177/1177M.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. CertainTeed Corporation; GlasRoc.

b. G-P Gypsum Corporation; Dens-Glass Gold.

c. National Gypsum Company; Gold Bond e(2)XP.

2. Type and Thickness: Type X, 5/8 inch (15.9 mm) thick.

3. Size: 48 by 96 inches (1219 by 2438 mm) for vertical installation.

2.5 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. For wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

E. Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.

1. For steel framing less than 0.0329 inch (0.835 mm) thick, use screws that comply with ASTM C 1002.

2. For steel framing from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick, use screws that comply with ASTM C 954.

2.6 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

A. Sealant for Glass-Mat Gypsum Sheathing: Silicone emulsion sealant complying with ASTM C 834, compatible with sheathing tape and sheathing and recommended by tape and sheathing manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.

1. Sheathing Tape: Self-adhering glass-fiber tape, minimum 2 inches (50 mm) wide, 10 by 10 or 10 by 20 threads/inch (390 by 390 or 390 by 780 threads/m), of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing and with a history of successful in-service use.

2.7 MISCELLANEOUS MATERIALS

A. Adhesives for Field Gluing Panels to Framing: Formulation complying with ASTM D 3498 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

3.0 PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.

2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."

D. Coordinate wall sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

F. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 GYPSUM SHEATHING INSTALLATION

A. Comply with GA-253 and with manufacturer's written instructions.

1. Fasten gypsum sheathing to cold-formed metal framing with screws.

2. Install boards with a 3/8-inch (9.5-mm) gap where non-load-bearing construction abuts structural elements.

3. Install boards with a 1/4-inch (6.4-mm) gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.

B. Apply fasteners so heads bear tightly against face of sheathing, but do not cut into facing.

C. Horizontal Installation: Install sheathing with V-grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent boards without forcing. Abut ends of boards over centers of studs, and stagger end joints of adjacent boards not less than one stud spacing. Attach boards at perimeter and within field of board to each steel stud.

1. Space fasteners approximately 8 inches (200 mm) o.c. and set back a minimum of 3/8 inch (9.5 mm) from edges and ends of boards.

2. For sheathing under stucco cladding, boards may be initially tacked in place with screws if overlying self-furring metal lath is screw-attached through sheathing to studs immediately after sheathing is installed.

D. Vertical Installation: Install board vertical edges centered over studs. Abut ends and edges of each board with those of adjacent boards. Attach boards at perimeter and within field of board to each stud.

1. Space fasteners approximately 8 inches (200 mm) o.c. and set back a minimum of 3/8 inch (9.5 mm) from edges and ends of boards.

2. For sheathing under stucco cladding, boards may be initially tacked in place with screws if overlying self-furring metal lath is screw-attached through sheathing to studs immediately after sheathing is installed.

E. Seal sheathing joints according to sheathing manufacturer's written instructions.

1. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing joints and apply and trowel silicone emulsion sealant to embed entire face of tape in sealant. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.

3.3 APPLYING EXTERIOR GYPSUM PANELS FOR SOFFITS

A. Apply panels perpendicular to supports, with end joints staggered and located over supports.

1. Install with 1/4-inch (6.4-mm) open space where panels abut other construction or structural penetrations.

2. Fasten with corrosion-resistant screws.

END OF SECTION 061600

SECTION 071326 - SELF-ADHERING SHEET WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sheet waterproofing, accessories, and drainage panels.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review waterproofing requirements including surface preparation, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, and tested physical and performance properties of waterproofing.
2. Include manufacturer's written instructions for evaluating, preparing, and treating substrate.

B. Samples: For each exposed product and for each color and texture specified, including the following products:

1. 8-by-8-inch square of waterproofing and flashing sheet.
2. 4-by-4-inch square of drainage panel.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Research Reports: For modified bituminous sheet waterproofing/termite barrier, showing compliance with ICC AC380.

C. Field quality-control reports.

D. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended in writing by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.

1. Do not apply waterproofing in snow, rain, fog, or mist.

B. Maintain adequate ventilation during preparation and application of waterproofing materials.

1.7 WARRANTY

A. Manufacturer's Warranty:

1. Waterproofing Warranty: Manufacturer agrees to furnish replacement waterproofing material for waterproofing that does not comply with requirements or that fails to remain watertight within specified warranty period.

a. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS.

A. Source Limitations for Waterproofing System: Obtain waterproofing materials and protection panel from single source from single manufacturer.

2.2 SHEET WATERPROOFING

A. Modified Bituminous Sheet Waterproofing: Minimum 60-mil nominal thickness, self-adhering sheet consisting of 56 mils of rubberized asphalt laminated on one side to a 4-mil- thick, polyethylene-film reinforcement, and with release liner on adhesive side[; formulated for application with primer or surface conditioner that complies with VOC limits of authorities having jurisdiction.

1. Henry/Carlisle: MiraDri 860/861or approved equal.

2. Physical Properties:

a. Tensile Strength, Membrane: 250 psi minimum; ASTM D412, Die C, modified.
b. Ultimate Elongation: 300 percent minimum; ASTM D412, Die C, modified.
c. Low-Temperature Flexibility: Pass at minus 20 deg F; ASTM D1970/D1970M.

d. Crack Cycling: Unaffected after 100 cycles of 1/8-inch movement; ASTM C836/C836M.
e. Puncture Resistance: 40 lbf minimum; ASTM E154/E154M.
f. Water Absorption: 0.2 percent weight-gain maximum after 48-hour immersion at 70 deg F (21 deg C); ASTM D570.
g. Water Vapor Permeance: 0.05 perm maximum; ASTM E96/E96M, Water Method.

B. Mastic, Adhesives, and Detail Tape: Liquid mastic and adhesives, and adhesive tapes recommended by waterproofing manufacturer.

2.3 ACCESSORIES

A. Furnish accessory materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.

1. Furnish liquid-type accessory materials that comply with VOC limits of authorities having jurisdiction.

B. Primer: Liquid waterborne primer recommended for substrate by sheet waterproofing material manufacturer.

C. Surface Conditioner: Liquid, waterborne surface conditioner recommended for substrate by sheet waterproofing material manufacturer.

D. Liquid Membrane: Elastomeric, two-component liquid, cold fluid applied, of trowel grade or low viscosity.

E. Substrate Patching Membrane: Low-viscosity, two-component, modified asphalt coating.

F. Metal Termination Bars: Aluminum bars, approximately 1 by 1/8 inch, predrilled at 9-inch centers.

2.4 MOLDED-SHEET DRAINAGE PANELS

A. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel with Polymeric Film: Composite subsurface drainage panel acceptable to waterproofing manufacturer and consisting of a studded, nonbiodegradable, molded-plastic-sheet drainage core; with a nonwoven, needle-punched geotextile facing with an apparent opening size not exceeding No. 70 (0.21 mm) sieve laminated to one side of the core and a polymeric film bonded to the other side; and with a vertical flow rate through the core of 21 gpm per ft..

1. Henry / Carlisle: CCW Miradrain 6200.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of waterproofing.

1. Verify that concrete has cured and aged for minimum time period recommended in writing by waterproofing manufacturer.
2. Verify that substrate is visibly dry and within the moisture limits recommended in writing by manufacturer. Test for capillary moisture by plastic sheet method in accordance with ASTM D4263.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.

B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.

C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

D. Remove fins, ridges, mortar, and other projections.

E. Fill form tie holes, honeycomb, aggregate pockets, holes, and other voids.

F. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks in accordance with ASTM D4258.

1. Install sheet strips of width according to manufacturer's written instructions.].

G. Bridge and cover isolation joints, expansion joints, and discontinuous deck-to-wall and deck-to-deck joints with overlapping sheet strips of widths according to manufacturer's written instructions.

H. Corners: Prepare, prime, and treat inside and outside corners in accordance with manufacturer's instructions.

1. Install membrane strips centered over vertical inside corners. Install 3/4-inch fillets of liquid membrane on horizontal inside corners and as follows:

a. At footing-to-wall intersections, extend liquid membrane in each direction from corner or install membrane strip centered over corner.

I. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions.

3.3 INSTALLATION OF SHEET WATERPROOFING

A. Install modified bituminous sheets according to waterproofing manufacturer's written instructions.

B. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.

C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch- minimum lap widths and end laps. Overlap and seal seams, and stagger end laps to ensure watertight installation.

1. When ambient and substrate temperatures range between 25 and 40 deg F, install self-adhering, modified bituminous sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F.

D. Seal edges of sheet waterproofing terminations with termination bar and sealant.

E. Install sheet waterproofing and accessory materials to tie into adjacent waterproofing.

F. Roll waterproofing membrane to firmly adhere to substrate. Roll seams and terminations.

G. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheet waterproofing extending 6 inches beyond repaired areas in all directions.

H. Immediately install protection course with butted joints over waterproofing membrane.

1. Molded-sheet drainage panels may be used in place of a separate protection course to vertical applications when approved by waterproofing manufacturer and installed immediately.

3.4 INSTALLATION OF MOLDED-SHEET DRAINAGE PANELS

A. Place and secure molded-sheet drainage panels, with geotextile facing away from wall or deck substrate, according to manufacturer's written instructions. Use adhesive or another method that does not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels during subsequent construction.

1. For vertical applications, install board insulation before installing drainage panels.

3.5 PROTECTION, REPAIR, AND CLEANING

A. Do not permit foot or vehicular traffic on unprotected membrane.

B. Protect waterproofing from damage and wear during remainder of construction period.

C. Protect installed insulation drainage panels from damage due to UV light, harmful weather exposures, physical abuse, and other causes. Provide temporary coverings where insulation is

subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

D. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

E. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended in writing by manufacturer of affected construction.

END OF SECTION 071326

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Foam-plastic board insulation.

2. Batt insulation.

3. Spray polyurethane foam insulation

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.

C. Submit manufacturer's shop drawings for approval. Shop drawings shall show complete layout of the system and shall comply with the drainage patterns required by each insulation type.

1. Wall Shop drawings shall include: method of insulation securement, incorporation and paths of drainage layers including thru-wall flashing, and interface details at terminations and corners.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company with minimum 10 years documented experience manufacturing products manufactured in this section.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. If stored outside, raise insulation above ground on pallets and cover with tarpaulin or other waterproof membrane. Factory plastic wrapping shall be slit to ventilate and shall not be considered sufficient protection from weather.

PART 2 - PRODUCTS

1.5 FOAM-PLASTIC BOARD INSULATION

A. Extruded-Polystyrene Board Insulation: (Below Grade Foundation / Below Slab/Masonry Cavity Wall) ASTM C 578, of type and minimum compressive strength indicated below,

with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. DiversiFoam Products.

    b. Dow Chemical Company (The).

    c. Owens Corning. (Foamular NGX 250) Design Make

2. Type IV, 25 psi (173 kPa).

3. Long-Term Thermal Resistance R-Value, hr ft2 F/ Btu (R-5.0 per inch)

1.6 BATT INSULATION

A. Exterior Wall (Stud Cavity) Mineral Fiber Batt Insulation.

1. Non-combustible, lightweight, mineral stone wool batt insulation to ASTM C655, Type 1, for exterior metal stud walls.

    a. Size 16.25 x 48 inches

    b. Thickness as indicated. (6” = R-24)

    c. Thermal resistance: To ASTM C518.

    d. Density: 1.8 lb/ft3 to ASTM C167.

    e. Design Make: Rockwool Comfortbatt or approved equal.

B. Unfaced Mineral Fiber Batt Insulation (Interior Acoustical / Fire Batts) -

1. Non-combustible, lightweight, mineral wool batt insulation to ASTM C665, Type 1, that provides fire resistance to ASTM E136 and sound control to ASTM E90 and ASTM C423.

    a. Size 16 x 48 inches.

    b. Thickness as indicated.

    c. Thermal resistance: To ASTM C518

    d. Design Make: Rockwool AFB or approved equal.

2. Free of Formaldehyde: Insulation manufactured with 100 percent acrylic binders and no added formaldehyde.

C. Exterior Cavity Wall / Rainscreen Mineral Fiber Semi-Rigid Block and Board Insulation.

1. Non-combustible, lightweight, mineral wood semi-rigid block and board insulation to ASTM 612, Type IVB Compliant.

    a. Size 16” x 48 inches. (May vary with cavity anchor spacing.)

    b. Thickness as indicated.

    c. Thermal resistance: To ASTM C518. (R = 4.2 per inch)

    d. Design Make: Rockwool Cavityrock.

D. INSULATION FOR MISCELLANEOUS VOIDS

1. Closed-Cell Spray Polyurethane Foam Insulation: ASTM C1029, Type II, closed cell, with maximum flame-spread and smoke-developed indexes of 25 and 400, respectively, per ASTM E84.

    a. Design Make: Dow Froth-Pak Foam Insulation

    b. BASF Corporation.

    c. Two-component.

    d. Class A Rating.

    e. Nominal Density, ASTM D1622, lb/ft^3 – 1.75.

    f. Thermal Resistance per inch, ASTM C518, Initial – 6.6.

    g. Air Leakage ASTM E283, cfm/ft^2 @ 1.57 psf – 0

    h. Compressive Strength, ASTM D1621, lb/in^2, parallel – 17.2.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.3 INSTALLATION OF BELOW-GRADE INSULATION

A. On vertical surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.

B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.

3.4 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.

2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.

3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.

4. For metal-framed wall cavities where cavity heights exceed 96 inches support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.

5. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation.

a. Exterior Walls: Set units with facing placed toward interior of construction.

3.5 INSTALLATION OF MISCELLANEOUS VOID INSULATION

A. Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Loose-Fill Insulation: Compact to approximately 40 percent of normal maximum volume.

2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

3.6 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 072713 – SELF-ADHERED AIR BARRIER MEMBRANE

1.0 PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

A. General Conditions, Supplementary Conditions, Instructions to Bidders and Division One General Requirements shall be read in conjunction with and govern this section.

B. This Specification shall be read as a whole by all parties concerned. Each Section may contain more or less than the complete Work of any trade. The Contractor is solely responsible to make clear to the Subcontractors the extent of their Work.

1.2 DESCRIPTION

A. Supply labor, materials and equipment to complete the Work as shown on the Drawings and as specified herein to bridge and seal the following air leakage pathways and gaps:

1. Connections of the walls to the roof air barrier.
2. Connections of the walls to the foundations.
3. Seismic and expansion joints.
4. Openings and penetrations of window and door frames, store front, curtain wall.
5. Piping, conduit, duct and similar penetrations.
6. Masonry ties, screws, bolts and similar penetrations.
7. All other air leakage pathways in the building envelope.

B. Materials and installation methods of the primary air/vapor barrier membrane system and accessories.

C. Materials and installation methods of through-wall flashing membranes.

1.3 ALTERNATES

A. Refer to Specifications Section “123000 – Alternates” to determine changes, substitutions, additions or deletions affecting the work required under this Section.

1.4 RELATED SECTIONS

A. Concrete Section 033000

B. Masonry Section 042000

C. Gypsum Board Section 092900

1.5 REFERENCES

A. The following standards are applicable to this section:

1. ASTM E2178: Standard Test Method for Air Permeance of Building Materials.

2. 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.

3. E1677 Specification for Air Retarder (AR) Material or System for Low-Rise Framed Building Walls

4. ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

5. ASTM E331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference

6. ASTM E96: Water Vapor Transmission of Materials.

7. CGSB 37-GP-56M: Membrane, Modified, Bituminous, Prefabricated, and Reinforced.

1.6 SUBMITTALS

A. Submit documentation from an approved independent testing laboratory certifying the air leakage and vapor permeance rates of the air barrier membranes, including primary membrane and transition sheets, exceed the requirements of the Massachusetts Energy Code and in accordance with ASTM E2178.

1. Test report submittals shall include test results on porous substrate and include sustained wind load and gust load air leakage results.

B. Submit copies of manufacturers' current ISO certification.

C. Submit manufacturers' current product data sheets for the air barrier membrane system

1.7 QUALITY ASSURANCE

A. Submit document stating the applicator of the primary air/vapor barrier membranes specified in this section is qualified by the manufacturer as suitable for the execution of the Work.

B. Perform Work in accordance with manufacturer's written instructions and this specification.

C. Maintain one copy of manufacturer's written instructions on site.

D. Allow access to Work site by the air barrier membrane manufacturer's representative.

E. Components used shall be sourced from one manufacturer, including sheet membrane, air barrier sealants, primers, mastics, and adhesives.

F. Single-Source Responsibility:

1. Obtain air barrier materials from a single manufacturer regularly engaged in manufacturing the product.

2. Provide products that comply with all state and local regulations controlling use of volatile organic compounds (VOCs).

1.8 MOCK-UP

A. Construct mock-up in accordance with Section 01 43 39 – Mock-ups.

B. Provide mock-up of air/vapor barrier materials under provisions of Section 01 33 23 - Shop Drawings, Product Data and Samples.

C. Where directed by [engineer] [architect] [consultant], construct typical exterior wall panel, 6 foot long by 6 foot wide, incorporating substrate, window frame, attachment of insulation and showing air barrier membrane application details.

D. Allow 48 hours for inspection of mock-up by [engineer] [architect] [consultant] before proceeding with air barrier work. Mock-up may remain as part of the Work.

E. Test mock-up for air and water infiltration to conform with Section 01400 - Quality Control, in accordance with ASTM E 783 and ASTM E1105.

1.9 PRE-INSTALLATION CONFERENCE

A. Contractor shall convene [one] week prior to commencing Work of this section.

B. Ensure all contractors responsible for creating a continuous plane of air tightness are present.

1.10 DELIVERY, STORAGE AND HANDLING

A. Refer to current Product MSDS for proper storage and handling.

B. Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.

C. Store role materials on end in original packaging. Protect rolls from direct sunlight until ready for use.

D. Store air barrier membranes, adhesives and primers at temperatures of 40 degrees F and rising.

E. Keep solvent away from open flame or excessive heat.

1.11 COORDINATION

A. Ensure continuity of the air seal throughout the scope of this section.

1.12 WARRANTY

A. Provide manufacturer's standard 1-year material warranty and 12-year assembly warranty.

2.0 PART 2 – PRODUCTS

2.1 MATERIALS

A. Air/vapor barrier membrane components and accessories must be obtained as a single-source from the membrane manufacturer to ensure total system compatibility and integrity.

1. Acceptable Manufacturer: Henry Company.
   909 N Sepulveda Blvd, Suite 650
   El Segundo, CA 90245
   (800) 598-7663
   Web Site: www.Henry.com

2.2 MEMBRANES (Basis-of-Design)

A. Self-adhered vapor permeable, water resistive barrier consisting of a reinforced, modified polyolefin tri-laminate film surface and permeable adhesive technology with split-back poly-release film; having the following physical properties:

1. Basis of Design: Henry Blueskin VP160 Self-Adhered Water Resistive Air Barrier.

2. Color: Blue

3. Air leakage of Air Barrier Assemblies (ASTM E2357): Pass

4. Water Vapor Permeance: (ASTM E96) 29 Perms

5. Membrane Thickness: 23 mils (0.58mm)

6. Air Permeance (ASTM E2178): Pass

7. Nail Sealability (ASTM D1970): Pass

8. Low Application Temperature: 20 degrees F

9. Surface Burning Characteristics (ASTM E84)

   a. Flame Spread: Class A

   b. Smoke Developed: Class A

10. Auxillary Assembly Materials:

    a. Manufacturer's Standard VOC adhesive, primers, sealants, and liquid-applied flashing where required to maintain a continuous envelop.

B. Through-wall flashing membrane (Self-Adhering) shall be Blueskin® TWF manufactured by Henry; an SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film. Membrane shall have the following physical properties:

1. Membrane Thickness: 0.0394 inches (40 mils)

2. Film Thickness: 4.0 mils

3. Flow (ASTM D5147): Pass @ 212 degrees F

4. Puncture Resistance: 134 lbf to ASTM E154

5. Tensile Strength (film): 5723 psi ASTM D882

6. Tear Resistance: 13lbs. MD to ASTM D1004

7. Low temperature flexibility: -22 degrees F to CGSB 37-GP-56M

2.3 PRIMER

A. Primer for self-adhering membranes at temperatures above 25 degrees F shall be LVC Spray Primer manufactured by Henry; a polymer emulsion based adhesive, quick setting. Primer shall have the following physical properties:

1. As recommended by the air membrane manufacturer.

2.4 PENETRATION & TERMINATION SEALANT

A. Termination Sealant shall be HE925 BES Sealant manufactured by Henry; a moisture cure, medium modulus polymer modified sealing compound having the following physical properties:

1. Compatible with sheet air barrier, roofing and waterproofing membranes and substrate,

2. Complies with Fed. Spec. TT-S-00230C, Type II, Class A

3. Complies with ASTM C 920, Type S, Grade NS, Class 25

4. Elongation: 450 – 550%

5. Remains flexible with aging

6. Seals construction joints up to 1 inch wide

2.5 INSULATION ADHESIVE

A. Insulation adhesive shall be Air-Bloc 21 Insulation Adhesive manufactured by Henry; a synthetic, trowel applied, rubber based adhesive, having the following physical properties:

1. Compatibility: With air barrier membrane, substrate and insulation

2. Air leakage: 0.0026 CFM/ft2 @ 2.1 lbs/ft2 to ASTM E283

3. Water vapor permeance: 0.03 perms to ASTM E96

4. Long term flexibility: CGSB 71-GP-24M

3.0 PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that surfaces and conditions are ready to accept the Work of this section. Notify engineer, architect, and consultant in writing of any discrepancies. Commencement of the work or any parts thereof shall mean acceptance of the prepared substrates.

B. All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill spalled areas in substrate to provide an even plane. Strike masonry joints flush.

C. Where curing compounds are used they must be clear resin based without oil, wax or pigments.

D. Do not proceed with application of air barrier membrane when rain is expected within 24 hours.

E. Condition materials to room temperature prior to application to facilitate handling.

3.2 SURFACE PREPARATION

A. Surfaces must be sound, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill spalled areas in substrate to provide an even plane.

B. New concrete should be cured for a minimum of 14 days and must be dry before air/vapor barrier membranes are applied.

C. Ensure all preparatory Work is complete prior to applying primary air/vapor barrier membrane.

D. Mechanical fasteners used to secure sheathing boards or penetrate sheathing boards shall be set flush with sheathing and fastened into solid backing.

E. Apply primer at rate recommended by manufacturer to all areas to receive self-adhering sheet air/vapor barrier membrane and or through-wall flashing membrane as indicated on drawings by roller or spray and allow minimum 30 minute open time. Primed surfaces not covered by self-adhering membrane or self-adhering through-wall flashing membrane during the same working day must be re-primed.

3.3 INSTALLTION OF AIR BARRIER SYSTEM

A. INSIDE AND OUTSIDE CORNERS

1. Seal inside and outside corners of sheathing boards with a strip of self-adhering air/vapor barrier membrane extending a minimum of 3 inches on either side of the corner detail.

    a. Prime surfaces as per manufacturers' instructions and allow to dry.

b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.

c. Roll all laps and membrane with a counter top roller to ensure seal.

B. TRANSITON AREAS

1. Tie-in to structural beams, columns, floor slabs and intermittent floors, parapet curbs, foundation walls, roofing systems and at the interface of dissimilar materials as indicated in drawings with self-adhering air/vapor barrier membrane.

a. Prime surfaces as per manufacturers' instructions and allow to dry.

b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Provide minimum 3 inch lap to all substrates.

c. Ensure minimum 2 inch overlap at all end and side laps of membrane.

d. Roll all laps and membrane with a counter top roller to ensure seal.

C. WINDOWS AND ROUGH OPENINGS

1. Wrap rough openings with self-adhered air/vapor barrier membrane as detailed.

a. Prime surfaces as per manufacturers' instructions and allow to dry.

b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inch overlap at all end and side laps of membrane.

c. Roll all laps and membrane with a counter top roller to ensure seal.

D. THROUGH-WALL FLASHING MEMBRANE

1. Apply through-wall flashing membrane along the base of masonry veneer walls and over shelf angles as detailed.

a. Prime surfaces and allow to dry, press membrane firmly into place, over lap minimum 2 inches at all end and side laps. Promptly roll all laps and membrane to ensure the seal.

b. Applications shall form a continuous flashing membrane and shall extend up a minimum of 8 inches up the back-up wall.

c. Seal the top edge of the membrane where it meets the substrate using termination sealant. Trowel-apply a feathered edge to seal termination to shed water.

d. Install through-wall flashing membrane and extend 1/2 inch from outside

edge of veneer. Provide “end dam” flashing as detailed.

E. PRIMARY AIR BARRIER

1. Apply self-adhering air/vapor barrier membrane complete and continuous to prepared and primed substrate in an overlapping shingle fashion and in accordance with manufacturer's recommendations and written instructions. Stagger all vertical joints.

   a. Prime surfaces as per manufacturers' instructions and allow to dry.

   b. Align and position self-adhering air/vapor barrier membrane, remove protective film and press firmly into place. Ensure minimum 2 inch overlap at all end and side laps of membrane.

   c. Roll all laps and membrane with a counter top roller to ensure seal.

   d. At the end of each days work seal the top edge of the membrane where it meets the substrate with termination sealant. Trowel apply a feathered edge to seal termination and shed water.

3.4 FIELD QUALITY CONTROL

A. Make notification when sections of Work are complete to allow review prior to covering air/vapor barrier system.

3.5 INSTALLATION OF INSULATION

A. Coordinate with Cavity Wall Insulation Section 072100 for insulating materials.

B. Apply insulation adhesive in a serpentine pattern over the air/vapor barrier membrane.

C. Immediately embed insulation into the adhesive and press firmly into place to ensure full contact. Apply additional adhesive if allowed to skin over.

3.6 PROTECTION

A. Damp substrates must not be inhibited from drying out. Do not expose the backside of the substrate to moisture or rain.

B. Cap and protect exposed back-up walls against wet weather conditions during and after application of membrane.

C. Air/vapor barrier membrane is not designed for permanent exposure. Good practice calls for covering as soon as possible.

END OF SECTION 072713

SECTION 072714 – UNDERSLAB VAPOR BARRIERS

1.0 PART 1 – GENERAL

1.1 SUMMARY

A. Products supplied under this Section:

1. Vapor barrier, seam tape, mastic, pipe boots, detail strip for installation under concrete slabs.

B. Related Sections:

1. Section 033000 "Concrete."

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM E 1745-97 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.

2. ASTM E 154-88 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs.

3. ASTM E 96-95 Standard Test Methods for Water Vapor Transmission of Materials.

4. ASTM E 1643-98 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

B. American Concrete Institute (ACI):

1. ACI 302.1R-96 Vapor Barrier Component (plastic membrane) is not less than 10 mils thick.

1.3 DEFINITIONS

A. Vapor Barrier: A material or assembly of materials used to prevent the passage of vapor or moisture into a structure or another material, thus preventing condensation within them.

1.4 SUBMITTALS

A. Submit samples under provisions of Section 013300 "Submittals":

1. Vapor barrier sheet.
2. Tape/mastic.
3. Pipe boots.

B. Product Data: Provide data indicating material characteristics, performance criteria, limitations and perms.

C. Manufacturer's Installation Instructions: Indicate preparation and installation requirements, techniques.

D. Manufacturer's recommended adhesives, sealant tapes.

E. Material Safety Data Sheets for all products to be used.

F. Quality Control / Assurance:

1. Independent laboratory test results showing compliance with ASTM & ACI Standards.

1.5 SEQUENCING

A. Sequence work to permit installation of materials in conjunction with other work in area.

B. Do all preparatory work as indicated on Drawings and as noted in this Specification before installing vapor barrier.

C. Do not install vapor barrier until new items penetrating it are in place.

2.0 PART 2 – PRODUCTS

2.1 MATERIALS

A. Vapor Barrier:

1. Vapor Barrier must have the following qualities:

a. Water Vapor Permeance: No less than 0.008 PERMS as tested by ASTM F1249.
b. Underslab Retarders: ASTM E 1745 Class A, B & C (Plastics).
c. Puncture Resistance ASTM D1709 no less than 2266 grams.
d. Roll Width: 14'
e. Thickness: 15 mil.

2. Vapor Barrier Products:

a. Stego Wrap (15 mil) Vapor Barrier by STEGO INDUSTRIES LLC, San Juan Capistrano, CA (877) 464-7834.

b. W.R. Meadows Pre-molded Membrane with Plasmatic Core.

2.2 ACCESSORIES

A. Seam Tape:

1. Tape must have the following qualities:

a. Water Vapor Transmission Rate ASTM E 96: 0.3 perms or lower.

2. Seam Tape:

a. Stego Tape by STEGO INDUSTRIES LLC, San Juan Capistrano, CA (877) 464-7834.

B. Vapor Proofing Mastic:

1. Mastic must have the following qualities:

a. Water Vapor Transmission Rate ASTM E 96: 0.3 perms or lower.

2. Mastic:

a. Stego Mastic by STEGO INDUSTRIES LLC, San Juan Capistrano, CA (877) 464-7834.

C. Pipe Boots:

1. Construct pipe boots from vapor barrier material, pressure sensitive tape and/or mastic per manufacturer's instructions.

3.0 PART 3 – EXECUTION

3.1 PREPARATION

A. Remove all loose debris from area; do not bury. Remove any sharp materials and debris that may puncture material.

B. Remove rocks and stones greater than 3" in any dimension ("fist" sized) and rake any voids to a reasonably smooth surface.

C. Clean surfaces of vapor barrier sheets to receive tape in accordance with manufacturer's directions.

3.2 INSTALLATION

A. Install Vapor Barrier/Retarder:

1. Installation shall be in accordance with manufacturer's instructions and ASTM E 1643-98.

a. Unroll Vapor Barrier/Retarder with the longest dimension parallel with the direction of the pour.

b. Lap Vapor Barrier/Retarder over footings and seal to foundation walls.

c. Overlap joints minimum of 6 inches and seal with manufacturer's tape.

d. Seal all penetrations (including pipes) per manufacturer's instructions.

e. No penetration of the Vapor Barrier/Retarder is allowed except for reinforcing steel and permanent utilities.

f. Repair damaged areas by cutting patches of Vapor Barrier/Retarder,

overlapping damaged area 6 inches and taping all four sides with tape.

g. At wall surfaces, turn sheet up face of wall and carry to height of two inches below finish floor slab and tape to wall. Tape shall not be visible above slab elevation.

h. Vapor barrier shall be un-punctured. Inspect entire surface for punctures or gaps before placing concrete. Repair same in accordance with manufacturer's recommendation, using materials recommended or specified by the manufacturer.

END OF SECTION 072714

SECTION 074233- EXTERIOR SOLID PHENOLIC RAIN SCREEN 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. The Work of this Section includes all labor, materials, equipment, and services necessary to complete the solid phenolic rainscreen panels and accessories as shown on the drawings and/or specified herein, including, but not necessarily limited to, the following:

1. High-pressure laminate panels with solid phenolic polyurethane resin faces used at walls and soffits.
2. Supporting substructure which is part of the rainscreen system design.
3. Accessories, including anchors and attachments.

1.3 RELATED SECTIONS

A. Cold-Formed Metal Framing - Section 054000.

B. Rough Carpentry – Section 061000 for in wall blocking as needed.

C. Thermal Insulation - Section 072100.

D. Fluid Applied Membrane Air Barriers - Section 072726.

1.4 SYSTEM DESCRIPTION

A. Exterior Rainscreen Assembly: Solid phenolic core, fire retardant exterior grade rainscreen wall panels, aluminum substructure, attachment system components, air/vapor barrier membrane, continuous exterior insulation, and all accessories necessary for a complete rear-ventilated, weathertight exterior rainscreen wall system. Furnish fastenings and flashings as required to complete rainscreen system.

1.5 PERFORMANCE CRITERIA

A. Performance Requirements: Provide panels that have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer, without defects, damage or failure.

B. Structural Design: Design calculations certified by a registered professional engineer licensed in the State of New York State shall be submitted to verify load carrying capability of panel system using performance requirements and design criteria as indicated. Panel system shall be capable of resisting a minimum positive and negative wind load per ASCE-7 or building code, whichever is greater.

C. Deflection Limits: Aluminum support structure and exterior phenolic rainscreen panel system shall be designed in accordance with the Manufacturer's recommended maximum deflection when tested under positive and negative design wind gust loads and shall withstand wind gust loads with horizontal deflections no greater than the Manufacturer's allowable span, based on current wind load tables.

D. Thermal Movements: Exterior solid phenolic rainscreen panel system shall allow for thermal movements from ambient air, surface temperature changes and relative humidity preventing buckling, opening of joints, over-stressing of components, failure of connections and other detrimental effects. Base calculations on surface temperature changes of materials due to both solar heat gain and nighttime sky heat loss.

1. Panel shall remain stable for temperature Change (Range): -112 deg. F, ambient: 356 deg. F, material surfaces.

E. Support Structure: Provide aluminum support structure capable of the following:

1. Design and install aluminum support structure to accommodate expected construction tolerances and misalignment, deflection of building structural components, and openings in the building enclosure as designed.

F. Vertical and Lateral Fire Propagation Test Characteristics: The exterior wall assembly may be required to comply with NFPA 285 "Standard Method of Test for the Evaluation of Flammability Characteristics of Exterior Nonload-bearing Wall Assemblies Containing Combustible Components." The base wall, stud cavity insulation, wall sheathing, air barrier, continuous insulation and exterior cladding are components that are required to be to be evaluated as part of this specific assembly test. The basis of design product listed herein is a component of the design test assembly selected by the Architect.

1.6 SUBMITTALS

A. Product Data: For each type of product indicated. Include Manufacturer's written installation instructions, including recommendations for evaluating, preparing, and treating substrate, rainscreen panel technical data, material descriptions, and finishes and tested physical and performance properties.

B. Shop Drawings: Show fabrication and installation layouts of solid phenolic exterior rainscreen panel, details of aluminum support structure attachment and wall structure conditions, anchorages for aluminum support structure, attachment system for panels, allowances for thermal expansion, trim, closures, flashings, corner conditions, and accessories as required or specified by the architect, and all special job specific details.

C. Samples: Submit selection and verification samples for finishes, colors and textures of panel material. For exposed fastening systems submit color matched exterior stainless steel Torx head fasteners for each color specified. If riveted fastening is selected by architect provide color matched rivets for each panel color specified.

D. Quality Assurance: Submit the following:

1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics and physical properties.

a. Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

2. Manufacturer's Instructions: Manufacturer's installation instructions.

3. Manufacturer's Field Reports: Manufacturer's field reports specified herein.

E. Closeout Submittals: Submit the following:

1. Operation and Maintenance Data: Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

2. Warranty: Warranty documents specified herein.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Installer shall be approved by the manufacturer and have a minimum of five (5) years of experience in performing work of similar type and scope.

B. Solid phenolic rainscreen panels are to be installed and fabricated by an installation contractor that has been approved by the Manufacturer and has followed the recommended guidelines of the Manufacturer.

C. Fabricator Qualifications: A shop that employs skilled workers who custom fabricate solid phenolic or similar exterior rainscreen wall panel systems to those specified herein and is approved by the manufacturer. If shop drawings are required for the project the shop drawings are to be drawn and coordinated by the approved fabrication company.

D. Pre-Installation Conference: Conduct pre-installation conference at Project site prior to commencing construction of mock-up specified herein to verify Project requirements.

1. Review solid phenolic rainscreen panel installation requirements including substrate surface preparation, environmental or site limitations, typical details including attachment and trims, Manufacturer's recommended installation procedures, coordination with adjacent trades, testing and inspection procedures (if any), protection of work and repair procedures.

2. Ensure all sub-trades interfacing with or affected by the construction of the solid phenolic rainscreen wall panel system are present, including Architect, General Contractor, solid phenolic panel Manufacturers Representative, mockup and commissioning testing agencies, air barrier installation contractor, exterior insulation installer, electrical installer and any other installer whose work interfaces with or affects the solid phenolic rainscreen wall panels.

E. Source Limitations: Obtain solid phenolic rainscreen wall panels and all auxiliary materials from a single source Manufacturer who has a minimum of 25 years of experience in the manufacturing of exterior high pressure phenolic rainscreen panels or an accessory Manufacturer who is certified by the solid phenolic rainscreen panel Manufacturer. Panels to be manufactured by a Manufacturer with ISO9001 and ISO14001 certification of standards.

1.8 MOCK UP

A. Before construction of the exterior rainscreen envelope, construct a mock-up to verify selections made under approved submittals and to demonstrate typical joints, surface finish, texture, tolerances, attachments to building structure, methods of installation, connections to adjacent building enclosure materials, and standard and quality of workmanship. Build mock-up to comply with the following requirements using materials indicated for completion of the Work:

1. Mock-up shall be a minimum of 36 square feet and shall demonstrate substrate surface preparation, air barrier membrane joint and crack treatment, solid phenolic rainscreen panel attachment, penetration sealing, connection to window and other adjacent building envelope materials, attachment method to wall substrate, and standard of workmanship.

2. Demonstrate continuity, air, and water tightness of air and water barrier and installation and attachment of continuous exterior insulation.

3. If Architect determines that the field constructed mock-up does not meet Project requirements, reinstall mock-up until approved.

4. Retain and maintain the approved field mockup during construction in an undisturbed condition as a standard for judging the completed exterior solid phenolic rainscreen panel system. At the architect's discretion, the mock-up may be part of the completed Work.

1.9 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Storage and Protection: Store materials protected from exposure to harmful weather conditions, at temperature and humidity conditions recommended by manufacturer. Comply with manufacturer's written handling and storage guidelines.

1.10 PROJECT CONDITIONS

A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.11 WARRANTY

A. Submit Manufacturer's standard 10 year limited warranty covering defects in material or manufacturing quality, including color fastness warranty. Warranty to include labor for removal, replacement and reinstallation of defective material.

PART 2 PRODUCTS

2.1 SOLID PHENOLIC WALL PANELS

A. Basis of Design: Provide "Max Compact Exterior F-Quality" panels as manufactured by FunderMax GmBH / FunderMax North America, 9401-P Southern Pine Blvd, Charlotte NC 28273. List of local fabricators or installers that comply with this specification section to be obtained from product Manufacturer.

1. Material: Fire-retardant solid phenolic panels with standard brown core comprised of kraft paper harvested from FSC certified forests and thermosetting resins. Dry Formed (DF) or Natural Fiber Core (NFC) products will not be accepted.

    a. Rainscreen Panel Surface: NT
    b. Modulus of Elasticity: 1,300,000-psi minimum.
    c. Weight: 8mm 2.4 lbs./SF; 10mm, 3 lbs./SF; 12mm, 3.9 lbs./SF
    d. Tensile Strength: 11,000-PSI, minimum.
    e. Flexural Strength: 13,000-PSI, minimum.
    f. Surface Impact Resistance: < 8 per EN ISO 178
    g. Scratch Resistance: > 3 /4 N per EN 438:6
    h. Optical Properties: Color Stability Gray Scale > 4 per ISO 4892-2, EN 20105-A02.
    i. Panels shall be hail impact resistant with no breakage per Austrian APBIC Standard, Association of Public Building Insurance Companies. Equivalent test standard 70mm ice ball at a velocity of 30 meters/second (67.10 mph) without breakage, tearing or discoloration.
    j. Panels shall be FSC Certified
    k. Panels shall have an Environmental Product Declaration (EPD) Report.
    l. Panels shall have a Health Product Declaration (HPD)

1. Colors: Submit manufacturer's standard colors for selection by Architect and or individual Décor option.

    a. Color: Solid
    b. As selected by Architect from Manufacturer's standard color range and shown on drawings

2. Panel Core: Brown

3. Rainscreen Panel Thickness: 10 mm

B. Panel Tolerance:

1. Thickness: 1/32", maximum.

2. Length: ¼", maximum.

3. Width: ¼", maximum.

4. Non-porous homogenous surface and edges which do not require sealing after cutting or drilling.

2.2 SUPPORT STRUCTURE

A. Basis of Design: KWS Thermazee Cladding Support as manufactured by Knight Wall Systems, 2401 East 6th Street, Deer Park, WA 99006. List of local fabricators or installers that comply with this specification section to be obtained from product Manufacturer.

B. Comply with ANSI/ASHRAE 90.1.

1. Primary Horizontal Girts:

a. Profile: ThermaZee; z-channel, front and back flanges of equal length, with attachment holes.
b. Thickness: Minimum 18 gauge.
c. Web perforations: Minimum 50 percent open area
d. Depth: as indicated on drawings
e. Thermal isolation:
   1). Located between back flange and substrate; continuous along length of channel
   2). Minimum 0.25-inch thickness.
   3). Thermal conductivity: Less than 0.18 Watts per Meter Kelvin.
   4). Designed to prevent accumulation of water on upper edge.
f. Finish: Black rails that are visible through joints. Visible mill finish rails will not be accepted.

2. Primary Vertical Rails:

a. Profile: PanelRail; square hat channel with stiffening lips, with weep drains and attachment hole.
b. Thickness: Minimum 18 gauge.
c. Web perforations: 0.75-inch diameter holes at maximum 4 inches on center.
d. Fastening face width: 2 inches
e. Depth: .75”
f. Finish: Black rails that are visible through joints. Visible mill finish rails will not be accepted.

3. Secondary Vertical Rail

a. Profile: RevealRail; square hat channel with stiffening lips.
b. Thickness: Minimum 18 gauge.
c. Dimensions: 2.0-inches at web, 1.625-inches at each flange, with 0.25-inch stiffening lips.
d. Depth**:** .75”
e. Finish: Black rails that are visible through joints. Visible mill finish rails will not be accepted.

2.3 ROOF EDGE RAINSCREEN ATTACHMENT/SUPPORT FRAMING SYSTEM

A. Coating Material: ASTM A-653, Zinc Hot-Dip Galvanized steel.

B. Spacing: Comply with manufacturer’s Professional Engineers calculations.

C. Brackets: pre-punched attachment holes, directly attached on top of roof membrane at regular spacing with engineered fasteners.

1. Steel Thickness: 0.054-inch thick (16 gauge).

2. Profile Length: 5.0 inches.

3. Profile Width: 3.0 inches.

4. Basis of Design: PanelPlate Standard Bracket by PanePlate.

5. Or approved equal.

D. Primary Rail: Nominal 0.054-inch thick (16 gauge) cold-formed steel.

1. Profile: L-Angles designated as upper and lower supports for rainscreen panels.

2. Profile Depth: 1.5 inches.
3. Girt Fastening Face: 2.0 inches.
4. Finish: mill finish
5. Basis of Design: PanelPlate Upper and Lower rails by Panel Plate.
6. Or approved equal.

E. Fasteners:

1. Sufficient length to provide solid attachment through roof membrane into wood blocking as required by manufacturer.
2. Self-tapping Phillips-head SAE C1022, heat treated steel with Tru-Kote™ Epoxy E-Coating.
   a. Embedment depth: 1.5 inches minimum.
   b. Minimum ultimate pull-out capacity from SPF #2: 700 pounds.

2.4 ACCESSORIES

A. Wall anchors: Corrosion resistant coated steel; thermally isolated with minimum .125-inch thick polymer washer.

B. Bracing, Furring, Bridging, Plates, Gussets and Clips: Formed sheet steel, thickness to meet structural requirements.

C. MoveKlip: Attachment accessory for vertical framing to cross over floor line deflection joints on multi-story structure by creating a sliding connection between vertical.

D. Galvanic Protection: Utilize tapes and other methods to separate and prevent contact between dissimilar metals.

2.5 SOURCE QUALITY CONTROL:

A. Panels shall be specifically designed for exterior rainscreen wall applications. Fabricated panels shall comply with all current codes and regulations for the Project. Panels shall have uniform thickness (+0.03”) and flatness (maximum difference of 0.03”) for a 10 foot span.

B. Flame Spread: Panels to conform to ASTM E-84 for Class A fire rating with a Flame spread index of less than 10 and Smoke development index of less than 450.

C. NFPA-268 Surface Ignition test, pass.

D. Ignition Temperature: Greater than 650 degrees Fahrenheit above ambient, ASTM D-1929

E. UV stable surface of Acrylic-PUR resin coating of 100 micron thickness or greater with color stability > 4 on Gray Scale.

F. When required by code, the assembly shall meet the performance requirements of NFPA 285. Exposed fastening assemblies listed in ICC ESR #3340 or Concealed fastening assemblies with

Engineering Evaluation report(s) from a nationally recognized fire protection consulting firm. Any variations must be approved by the local code official.

2.6 FABRICATION

G. Fabricate solid phenolic wall panels and accessory items in accordance with manufacturer's written recommendations and approved submittals.

H. Fabricate panels with a minimum of 1mm micro bevel on the exposed face.

I. Comply with indicated profiles and within dimensional and structural requirements. Fabricator shop drawings to comply with manufacturer’s written guidelines for ventilation of the rainscreen façade.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer’s product data, including product technical bulletins, product installation instructions and published technical guidelines.

3.2 EXAMINATION

A. Site Verification of Conditions: Verify that substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

B. Verify that air and weather resistant barrier has been installed over structural sheathing in accordance with air barrier Manufacturer’s recommended installation instructions and terminated properly at openings to prevent air infiltration or water penetration.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

A. Install wall panels plumb and level and accurately spaced in accordance with manufacturer’s recommendations and approved submittals and Shop Drawings.

B. Fasten solid phenolic wall panels to supporting aluminum substructure with fasteners approved for use by solid phenolic rainscreen manufacturer for use with adjoining construction and in accordance with approved Shop Drawings.

C. Place girts at spacings indicated. Friction fit thermal insulation tight to girts.

D. Minimum length of installed cut girt is 24-inches and shall be attached with at least two (2) fasteners per attachment location.

E. Accessory Items: Install corner profiles, gaskets and trim with fasteners and adhesive appropriate for use with adjoining construction as indicated on approved Shop Drawings and as recommended by manufacturer.

F. Do not apply sealant to solid phenolic rainscreen panel joinery unless otherwise indicated on approved Shop Drawings or in accordance with the Manufacturer’s recommended installation instructions.

3.4 CLEANING

A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of off site.

3.5 PROTECTION

A. Protection: Protect installed product and finish surfaces from damage during construction.

END OF SECTION

SECTION 074249 - ULTRA-COMPACT WALL PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Manufactured sintered ceramic wall panels system and support assembly.

1.2 RELATED DOCUMENTS

A. Section 061000 - Rough Carpentry

B. Section 072100 - Thermal Insulation

C. Section 072713 – Self-Adhering Air Barrier Membrane

D. Section 079200 - Joint Sealants

1.3 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 C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2014 (Reapproved 2019).

C. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2023.

1.4 COORDINATION

A. Coordinate with installations of other wall mounted items, such as equipment, mechanical and electrical devices, so that their installation does not negatively affect wall panel system.

B. Coordinate size and locations of wall panel penetrations on shop drawings with approval from wall panel manufacturer before starting on-site work.

C. Coordinate interfaces, transitions, lappings, flashings, and compatibility of membranes as required for wall panel system installation.

1.5 PREINSTALLATION MEETING

A. Preinstallation Meeting: Conduct a preinstallation meeting two weeks prior to start of work within this section; require attendance by other affected installers.

B. Attendees: Architect, Owner's Representative, wall panel Manufacturer's Representative, and other effected installers.

1.6 ACTION SUBMITTALS

A. See Section 013000 for general submittal procedures.

B. Product Data: Provide manufacturer's data on panel support framing system and wall panels and adhesion system; showing compliance with requirements, including:

1. Physical characteristics of components shown on shop drawings.
2. Storage and handling requirements and recommendations.
3. Installation instructions and recommendations.

C. Shop Drawings: Submit the following information from professional engineer licensed in the State in which the Project is located and responsible for engineering calculations necessary for this work:

1. Identify location of different installation systems on walls and canopies, finish, type and thickness of wall panel system components.
2. Size, spacing, and location of support framing, sub-girts, support clips, connections, types and locations of fasteners.
3. Indicate necessary provisions for structural and thermal movement between wall panel system and adjacent materials.
4. Indicate location and sizes of any penetrations through wall panel system for Architect's approval.
5. Provide reinforcement details of exterior wall panel penetrations of size greater than 12 by 12 inches (305 by 305 mm).

D. Samples: Only required if not Basis of Design - Submit two samples of each color selected, 12 by 12 inches (305 by 305 mm) in size and illustrating finish color, sheen, and texture.

E. Installer's qualification statement.

F. Maintenance Data: Provide maintenance data describing panel finishes and required cleaning procedures.

G. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

H. 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.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in installing products of type specified within this section with at least ten years of documented experience, and approved as well as certified by manufacturer.

B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.8 MOCK-UPS

A. See Section 014000 - Quality Requirements for additional requirements.

B. Erect integrated exterior mock-up, approximately 12 feet (3658 m) long by 12 feet (2438 m) wide, as fitting with designed joint layout; including wall panel system components, attachments to building frame or supporting substrate, associated air/vapor barrier material on sheathing or substrate, weep drainage system, sealants and seals, and board insulation within mock-up assembly.

C. Locate where directed by Architect.

D. Mock-up may remain as part of the work.

1.9 DELIVERY, STORAGE, AND HANDLING

A. See Section 017419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Store sintered ceramic panels and installation system materials in a dry location; handle in a manner to prevent chipping or breakage.

C. Store sintered ceramic panels in an upright position supported along their long side.

D. Protect exposed side of panels using wooden crating, cardboard or polystyrene.

1.10 FIELD CONDITIONS

A. Do not install panels when air temperature or relative humidity are outside manufacturer's limits.

1.11 WARRANTY

A. See Section 017800 - Closeout Submittals for additional warranty requirements.

B. Finish Warranty: Provide 25 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 MANUFACTURERS

A. Products: Subject to compliance with the requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. Basis of Design: Cosentino North America; Dekton Facades: www.cosentino.com.

2.02 PANEL MATERIALS

A. Description: Factory fabricated, prefinished ultra-compact wall panel system, and site assembled.
   1. Applications: Provide ultra-compact facade panels for exterior walls and fascia.
   2. Provide exterior wall panel assembly with sub girt framing assembly, related flashing, and accessory components.
   3. 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.
   4. Design Pressure: In accordance with applicable codes.
   5. Maximum Allowable Deflection of Panel: L/180 for length(L) of span.
   6. Structural and Thermal Movements: 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. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.
   8. Panel Joints: 5/16” with ±1/8” tolerance

B. Wall Panels: Consist of ceramic and other raw, natural materials that have been run through a press and exposed to pressures of approximately 5,800 psi (40 MPa), placed within oven and heated to at least 2,192 degrees F (1,200 degree C), and fiberglass reinforcing mesh on backside embedded in two-component polyurethane adhesive system to provide additional stability and impact resistance.
   1. Profile: As indicated on drawings.
   2. Panel Thickness: 12 mm, nominal.
   3. Panel Width: Refer to drawings for wall panel layout and size information.
   4. Panel Height: Refer to drawings for wall panel layout and size information.
   5. Panel Texture: Matte.
   6. Panel Color: Selected from Manufacturer’s Group 0,1, or 2 by Architect.
   7. Moisture Expansion: 0.02 percentage average, tested to ASTM C370
   8. Breaking Strength: 3963 lbf average, tested to ASTM C648
   9. Flexural Strength: 10,828 psi average, tested to ASTM C674
   10. Water Absorption: 0.03 percent average, tested to ASTM C373

11. Resistance to Wear: 182.2 average wear index, tested to ANSI A137.1
12. Thermal Shock Resistance: No defects, tested to ASTM C484
13. Bond Strength: 423 psi average, tested to ASTM C482
14. Humidity Resistance: No formation of blisters when subjected to condensing water fog at 100% relative humidity and 100 degree F (38 degree C) for 3000 hours, ASTM D2247
15. Salt Spray Resistance: At the completion of a 300 hour ASTM B117 test, results indicate no deleterious effects as defined by the test standard.
16. Weather Exposure: Minimum 5000 hours in Q-Sun accelerated weathering type weatherometer using cycle of 90 minutes light and 30 minutes diminished light and demineralized water with a minimum color change of 1 Delta E units.
17. Adjustable Angles, Bars, and Channels: Provide to accommodate expansion and contraction, dynamic movements, and design loads as required.

C. Expansion Joints: Provide from same material, thickness and finish as exterior wall panels; manufacturer's standard profile.

2.03 FABRICATION

A. Factory fabricate panels in a controlled environment.

B. Verify and coordinate field dimensions affecting work of this section, and ensure acceptability of adjacent building components relating to this work.

C. Fabricate sintered ceramic slabs with multi-axis wet bridge saw to ensure cutting accuracy and smooth edge quality.

D. Fabricate slabs square to difference of diagonal measurements of 0.2 percent, maximum.

E. Scoring and cracking sintered ceramic slab using dry rail tile scorer method, and creating rough edges, is not permitted.

F. Fabricate to profiles and sizes as indicated on approved shop drawings and confirmed field dimensions, complete with trims, flashings and filler components as required for interface with other work, and allowing for thermal and structural movements.

2.04 ACCESSORIES

A. Support for Cladding and Continuous Insulation for exterior wall panels:

1. Fasteners: Provide support system and cladding attachment fasteners as recommended by system manufacturer and determined by Dekton in accordance with requirements.

B. All aluminum flashings required to seal the wall behind, drain the facade, close gaps, as indicated on the drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that framing substrate members and other related work are ready to receive wall panel system.

B. Verify that water-resistive barrier has been installed over wall panel substrate completely and correctly; see Section 072500.

C. Report unsatisfactory conditions to Architect in writing, and do not start this work until these conditions have been corrected.

3.02 PREPARATION

A. Protect surrounding areas and adjacent surfaces during execution of this work.

B. Install supporting framework as indicated, ensure that it is securely fastened to substrates, shimmed and leveled to uniform plane.

1. Spacing: Locate as required by delegated engineering.

3.03 INSTALLATION

A. Install wall panels and components in accordance with manufacturer's written instructions, plumb, with intersecting components joined together and providing accurately fitted joints with adjoining surfaces in plane with each other.

B. Attach components using system that does not restrict structural and thermal movement.

C. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint; allow time for coatings to properly dry prior to installation.

D. Fasten panels to structural supports; aligned, level, and plumb.

E. Provide mounting hardware compatible with sintered ceramic wall panel manufacturer's standard profiles, joint closures and perimeter trim as required for complete installation.

F. Attach thermal-break supports to substrate using appropriate fasteners as required for substrate, and confirm spacing and type of fastener as required for appropriate attachment method with designated project structural Engineer.

1. Maintain seal within water-resistive barrier upon penetration with fasteners.

G. Locate joints over supports.

H. Provide expansion and control joints as indicated on drawings and detailed by the manufacturer.

I. Align wall panels end-to-end providing accurate fit with adjacent panels; ensure adjacent panels are parallel and straight at joints.

J. Install wall sheathing, air/vapor or water-resistive barrier, insulation, and other necessary assembly components in accordance with manufacturer's instructions for locations indicated.

3.04 TOLERANCES

A. Offset in Line Over Entire Area: For locations as shown on plan and continuous lines, do not exceed offset by 1:500 of length, or 9/16 inch (15 mm), whichever is less.

B. Offset in Plumb Over Entire Area: Vertical lines, external corners and other vertical lines, do not exceed 1:500 of length.

C. Offset in Level From Panel to Panel: Horizontal bands, horizontal grooves, and other horizontal lines, do not exceed 1:500 of length.

D. Offset in Panel Joint Width: 0.118 inch (3 mm), maximum.

E. Offset in Plane Between Adjacent Panels (Lipping or Step-in-Face): 0.039 inch (1 mm), maximum.

F. Offset in Alignment of Adjacent Panel Edges: 0.039 inch (1 mm), maximum.

3.05 CLEANING

A. See Section 017000 - Execution and Closeout Requirements for additional requirements.

B. Remove protective material from wall panel surfaces.

C. Clean and wash exposed surfaces with mild soap and water and rinse with clean water, in accordance with manufacturer's written instructions.

3.06 PROTECTION

A. Protect installed products until Date of Substantial Completion.

B. Touch-up, repair, or replace damaged products before Date of Substantial Completion.

END OF SECTION 074249

SECTION 075323 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Adhered ethylene-propylene-diene-terpolymer (EPDM) roofing system.
2. Substrate board.
3. Vapor retarder.
4. Roof insulation.
5. Cover board.
6. Miscellaneous roof system accessories.

B. Related Requirements:

1. Section 061053 "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking and for wood-based, structural-use roof deck panels.
2. Section 072100 "Thermal Insulation" for insulation beneath the roof deck.
3. Section 076200 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.

1.3 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D1079 and glossary of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to work of this Section.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Construction Manager, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, air barrier Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

4. Examine deck substrate conditions and finishes, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. For insulation and roof system component fasteners, include copy of FM Approvals' listing.

B. Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the following: Photocopies of Architect's drawings or manufacturer's standard details are NOT acceptable. Include determined height of roof edge(s) as part of Shop Drawings.

1. Layout and thickness of flat and tapered insulation with slopes indicated.
2. Roof edge condition indicating project specific flashing and blocking requirements.
3. Base flashings and membrane terminations.
4. Flashing details at penetrations.
5. Roof plan showing orientation of steel roof deck and orientation of roof membrane and fastening spacings and patterns for mechanically fastened roofing system.
6. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
7. Clearly identify vapor/air barrier continuity across each joint, including materials and accessories to securely secure membrane and to provide enough flexibility at joint to accommodate movement capability expected at joint.
8. Tie-in with air barrier.

C. Samples for Verification: ONLY if requested by Architect, for the following products:

1. Roof membrane and flashings of color required.
2. Aggregate surfacing material in gradation and color required.
3. Roof paver in each color and texture required.
4. Walkway pads or rolls, of color required.

D. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer. Signed by the roofing system manufacturer on company letterhead, certifying that the Installer is approved, authorized, and licensed by the manufacturer to install roofing system.

B. Manufacturer Certificates:

1. Performance Requirement Certificate: Signed by roof membrane manufacturer on company letterhead, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

   a. Submit evidence of complying with performance requirements.

2. Special Warranty Certificate: Signed by roof membrane manufacturer on company letterhead, certifying that all materials supplied under this Section are acceptable for special warranty.

C. Product Test Reports: For components of roof membrane and insulation, for tests performed by a qualified testing agency, indicating compliance with specified requirements.

D. Evaluation Reports: For components of roofing system, from ICC-ES.

1. Field Test Reports:
2. Concrete internal relative humidity test reports.
3. Fastener-pullout test results and manufacturer's revised requirements for fastener patterns.

E. Field quality-control reports.

F. Sample Warranties: For manufacturer's special warranties.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

B. Certified statement from existing roof membrane manufacturer stating that existing roof warranty has not been affected by Work performed under this Section, where applicable.

C. Manufacturer’s Inspection Report: Copy of roofing manufacturer’s inspection report of completed roofing installation, following the final inspection.

1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed and Factory Mutual Global (FMG) for roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty. Unless otherwise noted in this specification, the roofing contractor must strictly comply with the manufacturer’s current specifications and details.

C. Source Limitations: Obtain components for membrane roofing system from same manufacturer as roofing membrane or company approved by roofing membrane manufacturer.

D. Proximity: Roofing contractors must have a working office and warehouse location within 200 miles of project location to ensure prompt service of any potential issues or emergencies.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

E. Retain delivery tickets and one each of roofing system component labels with manufacturer’s name, part number, description, and dates of manufacturer and delivery for future reference if warranty claims are required. Such labels should be kept with warranty papers in safe location in Owner’s possession.

1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

B. Material Safety Data Sheets (MSDS) must be on location at all times during the transportation, storage and application of materials.

C. Proceed with work so new roofing materials are not subject to construction traffic. When traffic is unavoidable, the contractor shall protect new roof sections and inspect upon completion for possible damage.

1.11 WARRANTY

A. Special Warranty: Manufacturer’s standard form, with “No Dollar Limit” (NDL), in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks that must be responded to within twelve hours by original roofer or Owner shall engage the services of available roofer to make necessary repairs that shall be back-charged to roofer who originally installed the roof system.

1. Special warranty includes roof membrane, base flashings, roof insulation, fasteners, cover boards, substrate board, walkway products, and other roof accessories or components of roofing system.
2. Warranty Period: Thirty (30) year, 90 mph measured at 10 meters above ground level, NDL, Total Systems Warranty covering both labor and material from the Date of Substantial Completion.
   a. Include the membrane manufacturer's standard puncture and hail resistant warranty.
   b. Include a forty (40) year non-prorated membrane material warranty on the field membrane.
   c. Certification is required with submittals indicating the manufacturer has reviewed and agreed to such wind coverage. All products, accessories, and edgings must be manufactured and/or supplied by the roofing system manufacturer and covered by the warranty.

B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system such as roof membrane, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, walkway products, and other roof accessories or components for the following warranty period:

1. Warranty Period: Two (2) years from Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing system and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and flashings shall remain watertight.

1. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746, ASTM D4272, or the Resistance to Foot Traffic Test in FM Approvals 4470.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

C. Wind Uplift Resistance: Design roofing system to resist the following wind uplift pressures when tested according to FM Approvals 4474, UL 580, or UL 1897.

D. FM Approvals' RoofNav Listing: Roof membrane, base flashings, and component materials shall comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and shall be listed in FM Approvals' RoofNav for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals Certification markings.

1. Fire/Windstorm Classification: Class 1A-90.
2. Hail-Resistance Rating: FM Global Property Loss Prevention Data Sheet 1-34 - SH.

E. SPRI's Directory of Roof Assemblies Listing: Roof membrane, base flashings, and component materials shall comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and shall be listed in SPRI's Directory of Roof Assemblies for roof assembly identical for that specified for this Project.

F. Exterior Fire-Test Exposure: ASTM E108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

G. Fire-Resistance Ratings: Comply with ASTM E 119 fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.2 MANUFACTURERS

A. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include:

1. Carlisle SynTec Incorporated.
2. Firestone Building Products Company.

2.3 ETHYLENE-PROPYLENE-DIENE-TERPOLYMER (EPDM) ROOFING

A. EPDM Sheet: ASTM D4637/D4637M, Type I, nonreinforced, EPDM sheet with factory-applied seam tape.
1. Thickness: 90 mils, nominal.
2. Exposed Face Color: Black.
3. Source Limitations: Obtain components for roofing system from roof membrane manufacturer or manufacturers approved by roof membrane manufacturer.
4. The following is a listing of ASTM Minimum Requirements for EPDM membrane:
   a. Tolerance on Nominal Thickness per D412 is +/- 10 percent.
   b. Tensile Strength per D412 is 1600psi for 90 mil.
   c. Factory Seam Strength per Modified ASTM D816 Membrane Rupture.
   d. Elongation, Ultimate per D412 is 465 percent.
   e. Tearing Strength per D624 is 200 lbf/in.
   f. Ozone Resistance per D1149 No Cracks.
   g. Properties after Heat Aging per D-573/751 pass.
   h. Resistance to Water Absorption Maximum per D471 is +/-2 percent of mass.
   i. Water Vapor Permeance per E96 shall be 0.03 or less.
   j. Fungi Resistance per ASTM G21 shall be 0.

2.4 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.

1. Adhesive and Sealants: Comply with VOC limits of authorities having jurisdiction.

B. Sheet Flashing: 60-mil-thick, pressure-sensitive, uncured EPDM w clear poly release liner, width according to application.

C. Protection Sheet: Epichlorohydrin or neoprene nonreinforced flexible sheet, 55 to 60 mils thick, recommended by EPDM manufacturer for resistance to hydrocarbons, non-aromatic solvents, grease, and oil.

D. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer, pressure-sensitive, cured, pre-molded EPDM flashing with manufacturer's tape applied to undersize of deck flange, in size appropriate for the penetration.

E. Bonding Adhesive: Manufacturer's standard, low-VOC high-strength solvent-based contact adhesive.

F. Low-Rise, Urethane, Membrane Adhesive: Roof system manufacturer's standard spray-applied, low-rise, two-component urethane adhesive formulated for compatibility and use with membrane roofing.

G. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 6-inch- wide minimum, butyl splice tape with release film. Factory-applied 6-inch-wide seam tape, as recommended by manufacturer.

H. Lap Sealant: Manufacturer's standard, single-component heavy-bodied gun-consistency sealant, colored to match membrane roofing.

I. Primer: Manufacturer's standard, low-VOC solvent-based primer for one-step cleaning and priming of membrane surfaces.

J. Water Cutoff Mastic: Manufacturer's standard one-component, low-viscosity, self-wetting butyl blend mastic sealant.

K. Metal Termination Bars: Manufacturer's standard, 6063-T6 extruded aluminum bar with top-edge designed for application of sealant, approximately 1 by 1/8-inch thick; pre-punched at 6: on center for anchors.

L. Miscellaneous Accessories: Provide pressure-sensitive inside/outside corner sheet flashing, pressure-sensitive T-joint covers and joint tape, pourable sealers, preformed cone and vent sheet flashings, reinforced EPDM securement strips, in-seam sealants, termination reglets, cover strips, and other accessories.

2.5 SUBSTRATE BOARDS (THERMAL BARRIER)

A. Substrate Board: ASTM C1278, impact resistant, non-structural, fiber-reinforced gypsum board manufactured with a 95% certified recycled content, with moisture and mold resistance throughout the panel core and surface. Tested in accordance with ASTM E-84, non-combustible when tested in accordance with ASTM E-136, and UL Classified when tested in accordance with ASTM E-119.
   1. Thickness: Type X, 1/2 inch.

B. Product: Subject to compliance with requirements, provide “Securock” by Carlisle Syntec, or Architect approved equal.

C. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate panel to roof deck.

2.6 COVER BOARDS

A. Substrate Board: ASTM C1278, impact resistant, non-structural, fiber-reinforced gypsum board manufactured with a 95% certified recycled content, with moisture and mold resistance throughout the panel core and surface. Tested in accordance with ASTM E-84, non-combustible when tested in accordance with ASTM E-136, and UL Classified when tested in accordance with ASTM E-119.
   1. Thickness: Type X, 1/2 inch.

B. Product: Subject to compliance with requirements, provide “Securock” by Carlisle Syntec, or Architect approved equal.

2.7 VAPOR RETARDER / TEMPORARY ROOF

A. Self-Adhering-Sheet Vapor Retarder: ASTM D1970/D1970M, 5-mil woven polyethylene film laminated to 35 mils self-adhering rubberized asphalt, for a 40-mil-total thickness; cold applied, with a slip-resisting surface and release silicone release liner/backing. Provide standard solvent-based, high-tack adhesive primer recommended by vapor retarder manufacturer.
   1. Tensile Strength: ASTM D412 is 250 psi.
   2. Elongation: ASTM D412 is 250%.
   3. Peel Adhesion: ASTM D903 is 5 lbs/in.
   4. Puncture Resistance: ASTM E154 is 60 lbs.
   5. Permeability: ASTM D1970 is 0.015 perms.
   6. Air Permeance: ASTM E2178 is 0.000 L*m^2@75 Pa

B. Product: Subject to compliance with requirements, provide “VapAir Seal 725TR” by Carlisle Syntec, or Architect approved equal.

2.8 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by EPDM roof membrane manufacturer, approved for use in FM Approvals'.

B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
   1. Compressive Strength: 20 psi.
   2. Size: 48 by 48 inches.
   3. Long Term Thermal Resistance, R-value: 5.7 per inch.
   4. Thickness:

      a. Base Layer: 3-inches unless otherwise indicated.

b. Upper Layer: Thickness indicated in plan but at no point shall system result in an R-value less than 30.

C. Tapered Insulation: Provide factory-tapered insulation boards.

1. Material: Match roof insulation.
2. Minimum Thickness: 1/4 inch.
3. Slope:

a. Roof Field: 1/4 inch per foot unless otherwise indicated on Drawings.
b. Saddles and Crickets: 1/2 inch per foot unless otherwise indicated on Drawings.

D. Product: Subject to compliance with requirements, provide "HP-H Polyiso" by Carlisle Syntec, or Architect approved equal.

2.9 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.

B. Fasteners: Factory-coated steel fasteners and metal plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening components to substrate, and acceptable to roofing system manufacturer.
1. Metal Deck: To attach insulation to metal deck (thru thermal barrier and vapor barrier) using no. 12 diameter, no 3 hex-head, self-tapping screw with 3x3 inch square galvalume plate per Federal Specification 4470.

C. Insulation Cold Adhesives: Manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
1. Full-spread, spray-applied, low-rise, two-component polyurethane expanding foam adhesive to preserve full warranty.
2. Apply adhesive in full-coverage spray or ribbon method at four (4) inches on center maximum in the field, perimeter, and corners.

D. Provide preformed sumps, saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated

2.10 WALKWAYS

A. Flexible Walkways: Factory-formed, pressure-sensitive, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads, approximately 3/8-inch thick and acceptable to roofing system manufacturer.

1. Size: Approximately 30 by 30 inches.
2. Color: Manufacturer's standard.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 "Steel Decking."
4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
5. Verify that concrete substrate is visibly dry and free of moisture, and that minimum concrete internal relative humidity is not more than 75 percent, or as recommended by roofing system manufacturer when tested according to ASTM F2170.

    a. Test Frequency: One test probe per each 1000 sq. ft., or portion thereof, of roof deck, with not less than three test probes.
    b. Submit test reports within 24 hours of performing tests.

6. Verify that concrete-curing compounds that will impair adhesion of roofing components to roof deck have been removed.
7. Verify any damaged sections of cementitious wood-fiber decks have been repaired or replaced.
8. Verify adjacent cementitious wood-fiber panels are vertically aligned to within 1/8 inch at top surface.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing system installation according to roofing system manufacturer's written instructions. Remove sharp projections.

1. Metal decking, including flutes shall be cleaned of all dirt, materials of any kind or debris, with existing roofing fasteners removed.
2. All decks shall be broom cleaned and blown-off with compressed-air to be free of dust and debris.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Perform fastener-pullout tests according to roof system manufacturer's written instructions.

1. Submit test result within 24 hours of performing tests.

    a. Include manufacturer's requirements for any revision to previously submitted fastener patterns required to achieve specified wind uplift requirements.

3.3 INSTALLATION OF ROOFING, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions, FM Approvals' assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

C. Install roof membrane and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition and to not void warranty for existing roofing system.

D. Coordinate installation and transition of roofing system component serving as an air barrier with air barrier specified under Section 07.

E. Any damage to interior and/or contents of building being re-reroof, due to temporary seal or faulty workmanship shall be the responsibility of roofing installer. Roof shall remain free of leaks throughout installation period, until Substantial Completion, at which time the Warranty period shall commence.

3.4 INSTALLATION OF SUBSTRATE BOARD (THERMAL BARRIER)

A. Install substrate board with long joints in continuous straight lines, with end joints staggered not less than 24 inches in adjacent rows.

1. At steel roof decks, install substrate board at right angle to flutes of deck.

    a. Locate end joints over crests of steel roof deck.

2. Tightly butt substrate boards together.
3. Cut substrate board to fit tight around penetrations and projections, and to fit tight to intersecting sloping roof decks.
4. Mechanically fasten substrate board to wood decks and top flanges of steel deck according to recommendations in FM Approvals' listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29.
    a. Fasten substrate board to deck to resist uplift pressure at corners, perimeter, and field of roof according to roofing system manufacturers' written instructions but no less than 1 ever 2 square feet in the field and perimeter and 1 every square foot in the cornerns.

3.5 INSTALLATION OF VAPOR RETARDER / TEMPORARY ROOF

A. Self-Adhering-Sheet Vapor Retarder: Prime all surfaces to receive the vapor barrier with NYS VOC OTC compliant primer. Apply the primer with long nap roller at the recommended coverage rate. Install self-adhering-sheet vapor retarder in a shingle fashion over area to receive vapor retarder, side and end lapping each sheet a minimum of 3-1/2 and 6 inches, respectively.

   1. Extend vertically up parapet walls and projections to a minimum height equal to height of insulation and cover board, unless indicated otherwise.
   2. Immediately after installation, roll with a 100-150 pound weighted steel roller. There shall be no gaps in the vapor barrier application.

B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system. Apply compatible sealant acceptable to the manufacturer where required to maintain an air/water tight seal.

C. Apply self-adhering/self-healing vapor retarder over the side and top of wood blocking or other support systems forming roof curbs.

D. Apply self-adhering/self-healing vapor barrier at thru-wall flashing locations to maintain continuity of roof air barrier with wall air barrier. Provide for design movement and deflection joints.

E. In order to preserve the integrity of the building envelope, overhang the edge of vapor retarder 24-inches minimum, without removing release paper. Fold down and temporarily secure to wall or underside of deck without removing release paper for future adhesion by Roofing Contractor over air barrier applied to the wall below.
   1. Vapor barrier shall be continuous around the entire perimeter of the building.
   2. Follow the wall air barrier manufacturer’s instructions for length of exposure to the elements.
   3. Once walls are erected and the wall air barrier is in place, roofing contractor shall unroll previously secured 24-inch remnant of roofing self-adhered vapor barrier and install it in shingle-fashion over wall air barrier to establish a continuous air-tight seal.

3.6 INSTALLATION OF INSULATION

A. Coordinate installing roofing system components, so insulation is not exposed to precipitation or left exposed at end of workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Installation Over Metal, Wood, or Cementitious Wood-fiber Decking:

   1. Following installation of substrate board and vapor retarder, install base layer of insulation with joints staggered not less than 24 inches in adjacent rows and end joints staggered not less than 12 inches adjacent rows and with long joints continuous at right angle to flutes of (metal) decking.

2. Where overall insulation thickness is 4-inches or greater, install 2 or more layers with joints of each succeeding layer staggered as described. Strict care must be taken to make sure that all insulation and coverboards lay flat and are in an even plane with adjacent boards. Boards out of plane must be replaced or reset.
   a. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks. Insulation shall be set and trimmed so that water flow is unrestricted.
   b. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.

   c. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.

   d. Fill gaps exceeding 1/4 inch with spray insulation.
   e. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
   a. Adhere base layer of insulation to substrate using two-component, low-rise, expanding polyurethane adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
      1) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive <u>or</u> maximum 4" on-center ribbon bead of adhesive, firmly pressing and maintaining insulation in place.

3. Install upper layers of insulation and tapered insulation where indicated with joints of each layer offset not less than 12 inches from previous layer of insulation.

   a. Staggered end joints within each layer not less than 24 inches in adjacent rows.
   b. Install with long joints continuous and with end joints staggered not less than 12 inches in adjacent rows.
   c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks. Insulation shall be set and trimmed so that water flow is unrestricted.
   d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
   e. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.
   f. Fill gaps exceeding 1/4 inch with insulation.
   g. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
   h. Adhere each layer of insulation to substrate using two-component, low-rise, expanding polyurethane adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
      1) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive <u>or</u> maximum 4" on-center ribbon bead of adhesive, firmly pressing and maintaining insulation in place.

4. Strict care must be taken to ensure that all insulation and cover boards lay flat and are in an even plane with adjacent boards. Apply adhesive per manufacturer's recommendations. Walk the boards into the adhesive <u>and</u> roll using a 30" wide, 150 pound weighted steel roller to ensure full embedment.

D. Installation Over Concrete and Gypsum Decks:

1. Following installation of vapor retarder (substrate board not required), install base layer of insulation with joints staggered not less than 24 inches in adjacent rows and end joints staggered not less than 12 inches adjacent rows and with long joints continuous at right angle to flutes of (metal) decking.

2. Where overall insulation thickness is 4-inches or greater, install 2 or more layers with joints of each succeeding layer staggered as described. Strict care must be taken to make sure that all insulation and coverboards lay flat and are in an even plane with adjacent boards. Boards out of plane must be replaced or reset.
   a. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks. Insulation shall be set and trimmed so that water flow is unrestricted.
   b. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.

   c. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.

   d. Fill gaps exceeding 1/4 inch with insulation.
   e. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
   f. Adhere base layer of insulation to substrate using two-component, low-rise, expanding polyurethane adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
      1) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive <u>or</u> maximum 4” on-center ribbon bead of adhesive, firmly pressing and maintaining insulation in place.

3. Install upper layers of insulation and tapered insulation where indicated with joints of each layer offset not less than 12 inches from previous layer of insulation.

   a. Staggered end joints within each layer not less than 24 inches in adjacent rows.
   b. Install with long joints continuous and with end joints staggered not less than 12 inches in adjacent rows.
   c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks. Insulation shall be set and trimmed so that water flow is unrestricted.
   d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
   e. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.
   f. Fill gaps exceeding 1/4 inch with insulation.
   g. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
   h. Adhere each layer of insulation to substrate using two-component, low-rise, expanding polyurethane adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
      1) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive <u>or</u> maximum 4” on-center ribbon bead of adhesive, firmly pressing and maintaining insulation in place.

3.7 INSTALLATION OF COVER BOARDS

A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction.

1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks. Trim cover so that water flow is unrestricted.
2. At internal roof drains, conform to slope of drain sump.

3. Cut and fit cover board tight to nailers, projections, and penetrations.
4. Loosely lay cover board over substrate.
5. Adhere cover board to substrate using adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
   a. Set cover board in a uniform coverage of full-spread insulation adhesive <u>or</u> maximum 4” on-center ribbon bead of adhesive, firmly pressing and maintaining insulation in place.

3.8 INSTALLATION OF ADHERED ROOF MEMBRANE

A. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.

B. Unroll membrane roof membrane and allow to relax before installing.

C. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer, and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.

E. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeters.

F. Apply roof membrane with side laps shingled with slope of roof deck where possible.

G. Membrane Splicing: Factory <u>6-inch</u> Pre-Applied Splice Tape is required. All details and splice procedures as per the specified warranty. No exceptions or deviations.

1. Overlap adjacent sheets, mark line, clean the dry splice area of membrane with primer as required by the membrane manufacturer.

2. Apply primer to the membrane and press membrane and tape onto the sheet using hand pressure. Remove the release film and press the top sheet onto the tape using hand pressure. Roll the seam toward the splice edge with steel roller.

3. Splice intersections are to be overlaid with a layer of 6”x6” <u>and</u> a 12”x12” pressure-sensitive flashing.

H. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.

I. Spread sealant or mastic bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.9 INSTALLATION OF BASE FLASHING

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.10 INSTALLATION OF WALKWAYS

A. Flexible Walkways: Install walkway products according to manufacturer's written instructions.

1. Install flexible walkways at the following locations:

    a. Perimeter of each rooftop unit where indicated.
    b. Top and bottom of each roof access ladders, doors, and hatch.
    c. Other locations indicated on Drawings.
    d. As required by roof membrane manufacturer's warranty requirements.

2. Provide 6-inch clearance between adjoining pads.
3. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.11 FIELD QUALITY CONTROL

A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on an interim basis and at completion, and to prepare inspection report for submission to the Architect.

B. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.

C. On Phased roofing, when the completion of flashings and terminations is not achieved by the end of the workday, a daily seal must be performed to temporarily close the membrane to prevent water infiltration.

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.12 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

D. Provide daily clean-up to collect all wrappings, empty containers, paper, and other debris from the project site. Upon completion, all debris must be disposed of in a legally acceptable manner.

E. Provide a fine broom final cleaning of all roofing membrane, flashing, and metal surfaces prior to final inspection. Additional stain removal, spot-cleaning, or shop-vacuuming of surfaces may be required as determined by the Architect.

3.13 ROOFING INSTALLER'S WARRANTY

A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

1. Owner: <**Insert name of Owner**>.
2. Address: <**Insert address**>.
3. Building Name/Type: <**Insert information**>.
4. Address: <**Insert address**>.
5. Area of Work: <**Insert information**>.
6. Acceptance Date: _____.
7. Warranty Period: <**Insert time**>.
8. Expiration Date: _____.

B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period Roofing Installer will, at Roofing Installer's own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:

   a. lightning;
   b. peak gust wind speed exceeding <**Insert mph**>;
   c. fire;
   d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
   e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
   f. vapor condensation on bottom of roofing; and
   g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work

according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.

1. Authorized Signature: _____.
2. Name: _____.
3. Title: _____.

END OF SECTION 075323

SECTION 076200 - SHEET METAL FLASHING AND TRIM

1.0 PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pre-manufactured formed low slope sheet metal fabrications.

2. Pre-manufactured reglets with counterflashing.

1.2 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies as indicated shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Install roof edge flashing and copings capable of resisting wind uplift forces indicated.

C. Thermal Movements: Provide sheet metal flashing and trim that allows for thermal movements from ambient and surface temperature changes.

1.3 SUBMITTALS

A. Shop Drawings: Show manufacturer's cut sheets and installation layouts of pre-manufactured components including plans, elevations, expansion-joint locations, and keyed details. Include the following:

1. Identification of material, thickness, weight, and finish for each item and location in Project.

2. Details of termination points and assemblies, including fixed points.

3. Details of control joint covers, including direction of slope.

4. Details of connections to adjoining work.

B. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Pre-manufactured components: 6x6 inch material sample of same material thickness and color as is to be used for each component within the assembly. Labeled for clarity.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing, trim, and accessories to include in maintenance manuals.

B. Special Warranty.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Employee skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose projects have a record of successful in-service performance.

B. Metal Edge Quality Assurance: High performance gravel stop, coping, and other terminations shall be CERTIFIED by the gravel stop manufacturer to comply with ANSI/SPRI Standard ES-1-98. Roof edge gravel stop, coping, and other terminations shall meet performance design criteria according to the following test standards:

1. ANSI/SPRI ES-1-98 Test Method RE-2 Pull-Off Test for Fascia: The fascia system shall be tested in accord with the ANSI/SPRI ES-1-98 Test Method RE-2. Use the current edition of ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.

2. FMRC Loss Prevention Data Sheet 1-49 "Perimeter Flashing." The fascia product shall be listed in current Factory Mutual Research Corporation Approval Guide.

C. Mockups: Build mockups to verify selections made, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Build mockup of typical roof edge, including built-in gutter, fascia, fascia trim, coping, approximately 10 feet long, including supporting construction cleats, seams, attachments, and accessories.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Owner specifically approves such deviations in writing.

3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to the extent necessary for the period of sheet metal flashing and trim installation.

1.7 WARRANTY

A. All metal roof edge sheet metal and trim shall be included in and part of the Roof System Manufacturer's Total System Warranty covering both labor and material with no dollar limitation as described in roof membrane specification.

B. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.

b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.

c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from the date of Substantial Completion.

1.8 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Aluminum Sheet: ASTM B209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surfaces.

1. Exposed Coil-Coated Finish:

1. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2.0 PART 2 - PRODUCTS

2.1 PRE-MANUFACTURED ROOF EDGE

A. Provide roof system manufacturer’s pre-manufactured roof edge w/ drip edges and components with manufacturer’s fluoropolymer coating system.

1. Roof edge system: Minimum .050 aluminum fascia cover with 20-gauge continuous galvanized steel retainer. The system shall be watertight with concealed splice plates and no exposed fasteners. Easy snap-on installation with no need to crimp the drip edge.

a. Provide factory fabricated and formed water dams at fascia ending against walls. Seal watertight with silicone sealant.

b. ANSI/SPRI/FM 4435/ES-1 compliant with test pressure up to 381 psf.

c. Design Make: SecurEdge Snap-On Fascia System (Carlisle Syntec)

2. Fasteners to be stainless steel ring shank nails 1.5” in length.

3. Component lengths to be 12’-0” typical.

4. Provide factory fabricated mitered and welded fascia corners (inside/outside); typical corners are 90 degrees with others as shown on plans.

5. Provide factory fabricated scuppers and accessories where indicated shall match fascia systems and as shown on plans.

6. Color: As Selected by Architect from manufacturer’s full range of standard color selections.

   a. Minimum of 26 color selections.

B. Fasteners:

1. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating.

2. Fasteners for Aluminum Sheet: Series 300 stainless steel.

3. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.

2.2 MANUFACTURED REGLETS WITH COUNTER FLASHING

A. Provide 2-piece manufactured reglet-type wall counterflashing system as follows:

1. Design Make: Metal-Era Model CFR-525.

2. Material: .040-inch thick aluminum.

3. Height: 5-1/4-inch unless indicated otherwise.

4. Fabricate continuous in minimum 144-inch long sections. Fabricate discontinuous lintel, sill and similar flashings to extend 6” beyond each side of wall openings; and form with 2” high end dams.

   a. Prenotched Lap Joints: 3 inches.

5. Color: As selected by Architect from manufacturer’s full range of standard color selections.

2.3 FABRICATION, GENERAL

A. General: Custom fabrication of sheet metal flashing and trim may be done by an Authorized fabricator listed with NRCA’s ANSI/SPRI ES-1 Certification.

B. Sealed Joints: Form movable joints in metal to accommodate elastomeric sealant.

C. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.

D. Fabricate continuous cleats not less than thickness of metal being secured and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

E. Do not use graphite pencils to mark metal surfaces.

3.0 PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.

2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

B. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.

2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

3. Fabricated cleats shall be continuous. Cleats shall be the same or greater thickness than the face metal. Anchor cleats with stainless steel ring shank nails at 6” O.C.

4. Fascia metal deeper than 7.5” shall be increased to .060.

5. Torch cutting of sheet metal flashing and trim is not permitted.

6. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by SMACNA.

1. Coat back side of uncoated aluminum sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.

2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection.

D. Seal splice plate joints with (2) beads of sealant on each side of the joint.

E. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches, except reduce pre-tinning where pre-tinned surface would show in completed Work.

1. Stainless-Steel Soldering: Tin edges of uncoated sheets using solder recommended for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.

2. Copper Soldering: Tin edges of uncoated copper sheets using solder for copper.

3. Rivets: Rivet joints in aluminum where necessary for strength.

3.3 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with manufacturer's written installation instructions, FMG Loss Prevention Data Sheet 1-49, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

B. Continuous Cleats: To be anchored to substrate at 3-inch centers.

C. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending a minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.

D. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints a minimum of 4 inches and bed with sealant. Secure in a waterproof manner by means of snap-in installation and sealant.

3.4 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of

wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Reglet-type Wall Flashing: Refer to specification 045000 – Masonry Restoration.

C. Counterflashing: Coordinate installation of counterflashing with installation of base flashing.

1. Insert counterflashing in reglets or receivers and fit tightly to base flashing.

2. Extend counterflashing 4 inches (100 mm) minimum over base flashing.

3. Lap counterflashing joints minimum of 3 inches (100 mm).

1) Secure in waterproof manner by means of interlocking folded seam or blind rivets and sealant,unless otherwise indicated.

3.5 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

3.6 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, remove unused materials and clean finished surfaces. Maintain in a clean condition during construction.

E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 076200

SECTION 077200 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Factory-fabricated roof hatches for ladder access.

B. Related Requirements:

1. Division 05 Section "Metal Fabrications" for metal vertical ladders to access roof hatches.
2. Division 07 Section "Sheet Metal Flashing and Trim" for pre-manufactured, shop- and field-formed metal flashing, roof-drainage systems, roof expansion-joint covers, and miscellaneous sheet metal trim and accessories.

1.3 COORDINATION

A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.

B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of roof accessory.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For roof accessories.

1. Include plans, elevations, keyed details, and attachments to other work. Indicate dimensions, loadings, and special conditions. Distinguish between plant- and field-assembled work.

C. Samples: When requested by the architect, for each exposed product and for each color and texture specified, prepared on Samples of size to adequately show color.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items. Show the following:

1. Size and location of roof accessories specified in this Section.
2. Method of attaching roof accessories to roof or building structure.
3. Other roof-mounted items including mechanical and electrical equipment, ductwork, piping, and conduit.
4. Required clearances.

B. Sample Warranties: For manufacturer's standard warranties.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For roof accessories to include in operation and maintenance manuals.

1.7 WARRANTY

A. Manufacturer’s Warranty: Provide manufacturer's standard warranty stating that materials shall be free of defects in material and workmanship for a period of five (5) years from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Roof accessories shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

2.2 ROOF HATCHES

A. Roof Hatches: Metal roof-hatch units with lids and insulated double-walled curbs, welded or mechanically fastened and sealed corner joints, continuous lid-to-curb counterflashing and weathertight perimeter gasketing, straight sides, and integrally formed deck-mounting flange at perimeter bottom.

B. Basis of Design: The Bilco Company, Model #E-50-TB or approved equal.

C. Type and Size: Single-leaf lid, 36 by 36 inches.

1. Material: Aluminum.
2. Thickness: Manufacturer's standard thickness for hatch size indicated but not less than 11 gauge.
3. Finish: Mill.
4. Color: As indicated by manufacturer's designations.

D. Loads: Minimum 40-lbf/sq. ft. (1.9-kPa) external live load and 20-lbf/sq. ft. (0.95-kPa) internal uplift load.

E. Construction:

1. Insulation: 3-inch- (75-mm-) thick, polyisocyanurate board.

   a. R-Value: 20.3 according to ASTM C1363.

2. Construction: Thermally Broken.
3. Nailer: Factory-installed wood nailer continuous around hatch perimeter.
4. Hatch Lid: Opaque, insulated, and double walled, with manufacturer's standard metal liner of same material and finish as outer metal lid.
5. Curb Liner: Manufacturer's standard, of same material and finish as metal curb.
6. On ribbed or fluted metal roofs, form flange at perimeter bottom to conform to roof profile.
7. Fabricate curbs to minimum height of 12 inches (305 mm) above roofing surface unless otherwise indicated.

F. Hardware: Spring operators, hold-open arm, Zinc plated/Chromate sealed spring latch with turn handles, Zinc plated/Chromate sealed butt- or pintle-type hinge system, and padlock hasps inside and outside.

2.3 METAL MATERIALS

A. Aluminum Sheet: ASTM B209 (ASTM B209M), manufacturer's standard alloy for finish required, with temper to suit forming operations and performance required.

1. Mill Finish: As manufactured.
2. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

B. Aluminum Extrusions and Tubes: ASTM B221 (ASTM B221M), manufacturer's standard alloy and temper for type of use, finished to match assembly where used; otherwise mill finished.

C. Stainless Steel Sheet and Shapes: ASTM A240/A240M or ASTM A666, Type 304.

D. Steel Shapes: ASTM A36/A36M, hot-dip galvanized according to ASTM A123/A123M unless otherwise indicated.

E. Steel Tube: ASTM A500/A500M, round tube.

F. Steel Pipe: ASTM A53/A53M, galvanized.

2.4 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Polyisocyanurate Board Insulation: ASTM C1289, thickness and thermal resistivity as indicated.

C. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium**,** and complying with AWPA C2; not less than 1-1/2 inches (38 mm) thick.

D. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

E. Underlayment:
   1. Polyethylene Sheet: 6-mil- (0.15-mm-) thick polyethylene sheet complying with ASTM D4397.

F. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:
   1. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
   2.

G. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.

H. Elastomeric Sealant: ASTM C920, elastomeric polyurethane polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

2.5 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

C. Verify dimensions of roof openings for roof accessories.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install roof accessories according to manufacturer's written instructions.

1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Coat concealed side of uncoated aluminum roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of underlayment and cover with manufacturer's recommended slip sheet.
3. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof accessories for waterproof performance.

C. Roof-Hatch Installation:

1. Verify that roof hatch operates properly. Clean, lubricate, and adjust operating mechanism and hardware.

D. Seal joints with elastomeric sealant as required by roof accessory manufacturer.

3.3 REPAIR AND CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A780/A780M.

B. Touch up factory-primed surfaces with compatible primer ready for field painting according to Section 099113 "Exterior Painting."

C. Clean exposed surfaces according to manufacturer's written instructions.

D. Clean off excess sealants.

E. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 077200

SECTION 078413 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Penetrations in fire-resistance-rated walls.
2. Penetrations in horizontal assemblies.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Sustainable Design Submittals:

1. Product Data: For sealants, indicating VOC content.
2. Laboratory Test Reports: For sealants, indicating compliance with requirements for low-emitting materials.

C. Product Schedule: For each penetration firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

1. Engineering Judgments: Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping system, submit illustration, with modifications marked, approved by penetration firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Obtain approval of authorities having jurisdiction prior to submittal.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each penetration firestopping system, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install penetration firestopping system when ambient or substrate temperatures are outside limits permitted by penetration firestopping system manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.

B. Install and cure penetration firestopping materials per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.8 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be installed according to specified firestopping system design.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping systems.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics:

1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:

a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.

1) UL in its "Fire Resistance Directory."
2) Intertek Group in its "Directory of Listed Building Products."
3) FM Global in its "Building Materials Approval Guide."

2.2 PENETRATION FIRESTOPPING SYSTEMS

A. Penetration Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. 3M Fire Protection Products.
   b. Hilti, Inc.
   c. Tremco, Inc.

B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).

1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.

C. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).

1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.

D. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E84.

1. Sealant shall have a VOC content of 250 g/L or less.

E. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping system manufacturer and approved by qualified testing and inspecting agency for conditions indicated.

1. Permanent forming/damming/backing materials.
2. Substrate primers.
3. Collars.
4. Steel sleeves.

2.3 FILL MATERIALS

A. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer sleeve lined with an intumescent strip, a flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.

B. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.

C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.

D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced intumescent elastomeric sheet bonded to galvanized-steel sheet.

E. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.

F. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.

G. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.

H. Pillows/Bags: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.

I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.

2.4 MIXING

A. Penetration Firestopping Materials: For those products requiring mixing before application, comply with penetration firestopping system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Before installing penetration firestopping systems, clean out openings immediately to comply with manufacturer's written instructions and with the following requirements:

1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping materials.
2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping materials. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.3 INSTALLATION

A. General: Install penetration firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications.

B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings.

1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.

C. Install fill materials by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items to achieve required fire-resistance ratings.
2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

A. Wall Identification: Permanently label walls containing penetration firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than 3 inches (76 mm) high and with minimum 0.375-inch (9.5-mm) strokes.

1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 feet (4.57 m) from end of wall and at intervals not exceeding 30 feet (9.14 m).

B. Penetration Identification: Identify each penetration firestopping system with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of penetration firestopping system edge so labels are visible to anyone seeking to remove penetrating items or firestopping systems. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:

1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Designation of applicable testing and inspecting agency.
4. Date of installation.
5. Manufacturer's name.
6. Installer's name.

3.5 FIELD QUALITY CONTROL

A. Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E2174.

B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.

C. Proceed with enclosing penetration firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping material and install new materials to produce systems complying with specified requirements.

END OF SECTION 078413

SECTION 078443 - JOINT FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Joints in or between fire-resistance-rated constructions.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Sustainable Design Submittals:

1. Product Data: For sealants, indicating VOC content.
2. Laboratory Test Reports: For sealants, indicating compliance with requirements for low-emitting materials.

C. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.

1. Engineering Judgments: Where Project conditions require modification to a qualified testing agency's illustration for a particular joint firestopping system condition, submit illustration, with modifications marked, approved by joint firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each joint firestopping system, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

A. Installer Certificates: From Installer indicating that joint firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install joint firestopping systems when ambient or substrate temperatures are outside limits permitted by joint firestopping system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Install and cure joint firestopping systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.8 COORDINATION

A. Coordinate construction of joints to ensure that joint firestopping systems can be installed according to specified firestopping system design.

B. Coordinate sizing of joints to accommodate joint firestopping systems.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics:

1. Perform joint firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
2. Test per testing standards referenced in "Joint Firestopping Systems" Article. Provide rated systems complying with the following requirements:

a. Joint firestopping systems shall bear classification marking of a qualified testing agency.

1) UL in its "Fire Resistance Directory."
2) Intertek Group in its "Directory of Listed Building Products."

2.2 JOINT FIRESTOPPING SYSTEMS

A. Joint Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which joint firestopping systems are installed. Joint firestopping systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.

B. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined per ASTM E1966 or UL 2079.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. 3M Fire Protection Products.
b. Hilti, Inc.
c. Tremco, Inc.

2. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.

C. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E84.

1. Sealant shall have a VOC content of 250 g/L or less.

D. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials, that are needed to install elastomeric fill materials and to maintain ratings required. Use only components specified by joint firestopping system manufacturer and approved by the qualified testing agency for conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Before installing fire-resistive joint systems, clean joints immediately to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:

1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of elastomeric fill materials or compromise fire-resistive rating.
2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with elastomeric fill materials. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. Prime substrates where recommended in writing by joint firestopping system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.3 INSTALLATION

A. General: Install fire-resistive joint systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming materials and other accessories of types required to support elastomeric fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing elastomeric fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.

C. Install elastomeric fill materials for fire-resistive joint systems by proven techniques to produce the following results:

1. Elastomeric fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
2. Apply elastomeric fill materials so they contact and adhere to substrates formed by joints.
3. For elastomeric fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

A. Joint Identification: Identify joint firestopping systems with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of joint edge so labels are visible to anyone seeking to remove or joint firestopping system. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:

1. The words "Warning - Joint Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Designation of applicable testing agency.
4. Date of installation.
5. Manufacturer's name.
6. Installer's name.

3.5 FIELD QUALITY CONTROL

A. Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E2393.

B. Where deficiencies are found or joint firestopping systems are damaged or removed due to testing, repair or replace joint firestopping systems so they comply with requirements.

C. Proceed with enclosing joint firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

A. Clean off excess elastomeric fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by joint firestopping system manufacturers and that do not damage materials in which joints occur.

B. Provide final protection and maintain conditions during and after installation that ensure joint firestopping systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated fire-resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

3.7 JOINT FIRESTOPPING SYSTEM SCHEDULE

A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHBN or Category XHDG.

B. Head-of-Wall, Fire-Resistive Joint Firestopping Systems.

1. UL-Classified Systems: HW-D 1069.
2. Assembly Rating: 1 hour or 2 hours- Refer to Drawings.
3. Nominal Joint Width: As indicated.
4. Movement Capabilities: Class II percent compression.
5. L-Rating at Ambient: Less than 1 cfm/ft. (cu. m/s x m).
6. L-Rating at 400 Deg F (204 Deg C): Less than 1 cfm/ft. (cu. m/s x m).
7. F-Rating: 2 hours.

END OF SECTION 078443

SECTION 079100 - PREFORMED JOINT SEALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Preformed, foam joint seals.

B. Related Requirements:

1. Section 079200 "Joint Sealants" for liquid sealants applied over preformed seals in dual seal systems.

1.3 ACTION SUBMITTALS

A. Product Data: For each preformed joint seal product.

B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each type and color of preformed joint seal required, provide Samples with joint seals in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint seals.

D. Preformed Joint Seal Schedule: Include the following information:

1. Joint seal location and designation.
2. Joint width and movement capability.
3. Joint seal manufacturer and product name.
4. Joint seal color.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each preformed joint seal for tests performed by manufacturer and witnessed by a qualified testing agency.

B. Warranties: For special warranties.

1.5 QUALITY ASSURANCE

A. Mockups: Install mockups of assemblies specified in other Sections that are indicated to receive preformed joint seals specified in this Section. Use materials and installation methods specified in this Section.

1.6 WARRANTY

A. Special Warranty: Installer agrees to repair or replace preformed joint seals that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish preformed joint seals to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PREFORMED, FOAM JOINT SEALS

A. Preformed, Foam Joint Seals: Manufacturer's standard joint seal manufactured from urethane or EVA (ethylene vinyl acetate) foam with minimum density of 10 lb/cu. ft. and impregnated with a nondrying, water-repellent agent. Factory produce in precompressed sizes in roll or stick form to fit joint widths based on design criteria indicated, with factory- or field-applied adhesive for bonding to substrates.

1. Basis of Design Products:
   a. Colorseal as manufactured by Emseal.
   b. Fire rated joints: Emshield WFR2 as manufacturered by Emseal

2. Design Criteria:

   a. Nominal Joint Width: 1”.
   b. Movement Capability: -50 percent/+50 percent.

3. Joint Seal Color: As selected by Architect from full range of industry colors.

2.2 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by preformed-joint-seal manufacturer for joint substrates indicated.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to preformed joint seal manufacturer, free of oily residues or other substances capable of staining or harming joint

substrates and adjacent nonporous surfaces, and formulated to promote best adhesion to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with preformed joint seals and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive preformed joint seals, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting preformed-joint seal performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing preformed joint seals to comply with preformed joint seal manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of preformed joint seal, including dust, paints (except for permanent protective coatings tested and approved for seal adhesion and compatibility by seal manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimal bond with preformed joint seals. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Concrete.
    b. Masonry.
    c. Unglazed surfaces of ceramic tile.
    d. Exterior insulation and finish systems.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint seals. Nonporous joint substrates include the following:

    a. Metal.
    b. Glass.
    c. Porcelain enamel.
    d. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by preformed joint seal manufacturer or as indicated by tests or prior experience. Apply primer to comply with joint seal manufacturer's written instructions. Confine primers to areas of joint seal bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of adhesive or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION

A. General: Comply with preformed joint seal manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.

B. Installation of Preformed, Foam Joint Seals:

1. Install each length of seal immediately after removing protective wrapping.
2. Firmly secure compressed joint seals to joint gap side to obtain full bond using exposed pressure-sensitive adhesive or field-applied adhesive as recommended by manufacturer.
3. Do not pull or stretch material. Produce seal continuity at splices, ends, turns, and intersections of joints.
4. For applications at low ambient temperatures, heat foam joint seal material in compliance with manufacturer's written instructions.

C. Installation of Precured, Extruded-Silicone Joint Seals:

1. Apply masking tape to each side of joint, outside of area to be covered by seal system.
2. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone seal system manufacturer's written instructions and covering a bonding area of not less than 3/8 inch. Hold edge of sealant bead 1/4 inch inside masking tape.
3. Press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact with substrate.
4. Complete installation of seal system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.

3.4 PROTECTION

A. Protect preformed joint seals from damage resulting from construction operations or other causes so seals are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated seals immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 079100

SECTION 079200 - JOINT SEALANTS

1.0 PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Latex joint sealants.
3. Acoustical joint sealants.

B. Related Sections:

1. Section 042000 "Unit Masonry" for masonry control and expansion joint fillers and gaskets.
2. Section 088000 "Glazing" for glazing sealants.
3. Section 092900 "Gypsum Board" for sealing perimeter joints.
4. Section 093000 "Tile" for sealing tile joints.
5. Section 095123 "Acoustical Tile Ceilings" for sealing edge moldings at perimeters with acoustical sealant.

1.3 PRECONSTRUCTION TESTING

A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Submit not fewer than eight pieces of each kind of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.

4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.

B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.

2. Conduct field tests for each application indicated below:

a. Each kind of sealant and joint substrate indicated.

3. Notify Architect seven days in advance of dates and times when test joints will be erected.

a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

4. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.

5. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.4 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.

2. Joint-sealant manufacturer and product name.

3. Joint-sealant formulation.

4. Joint-sealant color.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.

D. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.

2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

E. Preconstruction Field-Adhesion Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

F. Field-Adhesion Test Reports: For each sealant application tested.

G. Warranties: Sample of special warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

C. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

D. Pre-installation Conference: Conduct conference at Project site.

1.7 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer.

2. When joint substrates are wet.

3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.

4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.

2. Disintegration of joint substrates from natural causes exceeding design specifications.

3. Mechanical damage caused by individuals, tools, or other outside agents.

4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

2.0 PART 2 – PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.

2. Sealant Primers for Nonporous Substrates: 250 g/L.

3. Sealant Primers for Porous Substrates: 775 g/L.

C. Low-Emitting Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

1. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.

E. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

F. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

G. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.

1. Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. Dow Corning Corporation; 790. (Design Make)

b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.

c. Pecora Corporation; 301 NS.

d. Tremco Incorporated; Spectrem 1.

B. Mildew-Resistant, Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Pecora Corporation; 898.

2.3 LATEX JOINT SEALANTS

A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Building Systems; Sonolac.

b. Bostik, Inc.; Chem-Calk 600.

c. Pecora Corporation; AC-20+.

d. Tremco Incorporated; Tremflex 834.

2.4 ACOUSTICAL JOINT SEALANTS

A. Acoustical Joint Sealant: Manufacturer's standard non-sag, paintable, non-staining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Pecora Corporation; AC-20 FTR.

b. USG Corporation; SHEETROCK Acoustical Sealant.

2.5 JOINT SEALANT BACKING

A. General: Provide sealant backings of material that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.6 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

3.0 PART – EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

a. Concrete.

b. Masonry.

c. Unglazed surfaces of ceramic tile.

3. Remove laitance and form-release agents from concrete.

4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

a. Metal.

b. Glass.

c. Porcelain enamel.

d. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.

2. Do not stretch, twist, puncture, or tear sealant backings.

3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.

2. Completely fill recesses in each joint configuration.

3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.

2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.

5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C 1193.

a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

G. Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

a. Perform 10 tests for the first 1000 feet (300 m) of joint length for each kind of sealant and joint substrate.

b. Perform 1 test for each 1000 feet (300 m) of joint length thereafter or 1 test per each floor per elevation.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:

a. Whether sealants filled joint cavities and are free of voids.

b. Whether sealant dimensions and configurations comply with specified requirements.

c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.

5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to

comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces (**JS-01**).

1. Joint Locations:

a. Isolation and contraction joints in cast-in-place concrete slabs.

b. Tile control and expansion joints.

c. Joints between different materials listed above.

d. Other joints as indicated.

1. Joint Sealant: Urethane. Single component, pourable, traffic grade

2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal non-traffic surfaces (**JS-02**).

1. Joint Locations:

a. Construction joints in cast-in-place concrete.

b. Control and expansion joints in unit masonry.

c. Joints in exterior insulation and finish systems.

d. Joints between different materials listed above.

e. Perimeter joints between materials listed above and frames of doors & windows.

f. Control and expansion joints in ceilings and other overhead surfaces.

g. Other joints as indicated.

1. Joint Sealant: Silicone. Single component, nonsag, neutral curing, Class 100/50.

2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces (**JS-03)**.

1. Joint Locations:

a. Isolation joints in cast-in-place concrete slabs.

b. Control and expansion joints in tile flooring.

c. Other joints as indicated.

1. Joint Sealant: Urethane. Single component, pourable, traffic grade.

2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal non-traffic surfaces (**JS-04)**.

1. Joint Locations:

a. Control and expansion joints on exposed interior surfaces of exterior walls.

b. Perimeter joints of exterior openings where indicated.

c. Tile control and expansion joints.

d. Vertical joints on exposed surfaces of interior unit masonry and partitions.

e. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.

f. Other joints as indicated.

2. Joint Sealant: Latex

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

E. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal non-traffic surfaces (**JS-05)**.

1. Joint Sealant Location:

   a. Joints between plumbing fixtures and adjoining walls, floors, and counters.

   b. Tile control and expansion joints where indicated.

   c. Other joints as indicated.

2. Joint Sealant: Mildew resistant, single component, nonsag, neutral curing, Silicone.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

F. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal non-traffic surfaces (**JS-06)**.

1. Joint Location:

   a. Acoustical joints where indicated.

   b. Other joints as indicated.

2. Joint Sealant: Acoustical.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Interior standard and custom hollow metal doors and frames.
2. Steel sidelight, borrowed lite and transom frames.
3. Light frames and glazing installed in hollow metal doors.

1.2 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or ANSI/SDI A250.8.

1.3 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. Include construction details, material descriptions, core descriptions hardware reinforcements, profiles, fire-resistance ratings, temperature-rise ratings, and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
7. Details of anchorages, joints, field splices, and connections.
8. Details of accessories.
9. Details of moldings, removable stops, and glazing.

C. Samples for Initial Selection: For hollow-metal doors and frames with factory-applied color finishes.

D. Samples for Verification: Samples are only required by request of the architect.

E. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.5 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each type of fire-rated hollow-metal door and frame assembly for tests performed by a qualified testing agency indicating compliance with performance requirements.

1.6 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.

B. Quality Standard: In addition to requirements specified, comply with ANSI/SDI A250.8, latest edition, “Recommended Specifications for Standard Steel Doors and Frames”.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch- (102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

1.8 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.9 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing achorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within warranty period.

1. One (1) year from substantial completion on both material and workmanship.

B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. CECO Door Products (C), ASSA ABLOY

B. Curries Company (CU), ASSA ABLOY

C. Steelcraft, Allegion (S)

D. de La Fontaine (DLF)

E. Republic, Allegion (R)

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated on Drawings, based on testing at positive pressure according to NFPA 252 or UL 10C.

1. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.
2. Temperature-Rise Limit: Where indicated, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.

B. Fire-Rated, Borrowed-Lite Assemblies: Assemblies complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

2.3 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.

C. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.

D. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

E. Glazing: Comply with requirements in Section 088000 "Glazing."

2.4 INTERIOR STEEL DOORS

A. Construct hollow-metal doors to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Doors; ANSI/SDI A250.4, Level A. At locations indicated in the Door and Frame Schedule.

1. Doors Type: As indicated in the Door and Frame Schedule.
2. Thickness: 1-3/4 inches.
3. Face: Uncoated steel sheet, minimum thickness of 16-gauge (0.053 inch).
4. Edge Construction: Full Flush seamless with continuously welded edge seam.
   a. Fabricate door to be flush with one continuous face free from joints, tool markings and abrasions, and with provision for glass and/or louvers as indicated.
5. Edge Bevel: Bevel lock and hinge edges 1/8 inch in 2 inches.
6. Core: Manufacturer's standard honeycomb core.
7. Fire-Rated Core: Manufacturer's standard laminated mineral board core for temperature rise-rated doors.
8. End Channels: Cose top and bottom of door with same material as face sheets, minimum 18-gauge. Steel flush channel, projection welded.
9. Exposed Finish: Primed and Field Finished.

2.5 INTERIOR STEEL FRAMES

A. Construct hollow-metal frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Frames; ANSI/SDI A250.4, Level A. At locations indicated in the Door and Frame Schedule

1. Frame Materials: Uncoated steel sheet, minimum thickness of 14-gauge (0.067 inch).
2. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.
3. Hollow metal panel: Same material, construction and finish as adjacent doors assemblies.
4. Glazing bead: 18-gauge (0.42 inch), screw applied with countersunk holes, butted corners.
5. Frame Assembly: Continuously welded through the entire profile, dressed smooth with seamless face.
   a. Knockdown shall only be allowed where required by field conditions. Review and approval of architect required.
6. Exposed Finish: Primed and Field Finished.

2.6 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
3. Postinstalled Expansion Anchor: Minimum 3/8-inch- diameter stainless steel bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.
4. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from material, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long.
5. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.
1. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at top of underlayment.
2. Floor anchors to be formed form material, not less than 0.042 inches thick.

C. Dust/Mortar Box: Provide dust/mortar box at strike location on drywall and masonry frames. Provide mortar guards on hinge reinforcements on masonry frames.

D. Electrical Knock Out Boxes: Factory weld 18 gauge electrical knock out boxes to frame for electrical hardware preps; including but not limited to electric through wire transfer hardware, electrical raceways and wiring harnesses, door position switches, electric strikes, magnetic locks, and jamb mounted card readers as specified in hardware sets in Division 08 Sections “Door Hardware” and “Access Control Hardware”.
1. Provide electrical knock out boxes with a dual ½-inch and ¾-inch knockouts.
2. Conduit to be coordinated and installed in the field (Division 26) from middle hinge box and strike box to door position box.
3. Electrial knock out boxes to comply with NFPA requirements and fit electrical door hardware as specified in hardware sets in Division 08 Section “Door Hardware”.
4. Electrical knock out boxes for continuous hinges should be located in the center of the vertical dimension on the hinge jamb.

E. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized according to ASTM A153/A153M, Class B.

2.7 LIGHT OPENINGS AND GLAZING

A. Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with mitered hairline joints at fabricator’s shop. Fixed and removable stops to allow

multiple glazed lites each to be removed independently. Coordinate frame rabbet widths between fixed and removable stops with the type of glazing and installation indicated.

1. Glazing moldings fabricated from 18-gauge, (0.042 inch) minimum.
2. Formed integral with hollow metal frames, a minium of 5/8 inch high unless otherwise indicated. Provide fixed frame moldings and stops on outside of exterior and on secured side of interior doors and frames.
3. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
4. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.
5. Profile to match those used on wood door vision kits.

2.8 LOUVERS

A. Provide louvers for non-fire rated doors where indicated. Louvers shall be welded inverted V-type or Y-type. Inverted vanes shall not be less than 18-gauge thickness.

1. Louvers for exterior doors shall be provided with insect and/or bird screens.
2. Provide louvers of same material as door sheet.

2.9 FABRICATION

A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Sidelite and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding, or by rigid mechanical anchors.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Door Silencers: Except on weather-stripped frames, smoke-rated frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
    b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to ANSI/SDI A250.6, the Door Hardware Schedule, and templates.

1. Surface applied hardware: Factory reinforced only, 14-gauge (0.067 inch).

2. Hinge and pivot reinforcements: 7-gauge (0.167 inch).

3. Lock front reinforcement: 14-gauge (0.067 inch).

4. Flush bolt reinforcement: 14-gauge (0.067 inch).

5. Closer reinforcement: 14-gauge (0.067 inch).
   a. Provide combination of parallel and regular arm mount reinforcing on all frames regardless if a closer is specified.

6. Other reinforcement: 14-gauge (0.067 inch).

2.10 STEEL FINISHES

A. Factory Prime Finish: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory coat of rust inhibiting shop primer.

   1. Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate, compatible with substrate and finish coatings.

B. Factory Finish Doors: Clean, pretreat, and apply manufacturer's standard two-coat, baked-on or powder-coated finish consisting of prime coat and topcoat, complying with ANSI/SDI A250.3.

   1. Color and Gloss: As selected by Architect from manufacturer's standard range.

C. Field Finish Frames: Clean, prepare, and field apply two-coats of finish per Division 09 Painting Specification.

   1. Color and Gloss: As selected by Architect from manufacturer’s full range.

PART 3 - EXECUTION

3.1 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

B. Prior to installation, adjust and securely brace welded hollow metal frames square, level, twist, and plumb condition.

C. Tolerances shall comply with SDI-117 “Manufacturing Tolerances Standard Steel Doors and Frames.”

D. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

A. General: Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Hollow-Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.

    a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
    b. Install frames with removable stops located on secure side of opening.
2. Floor Anchors: Secure with postinstalled expansion anchors.

    a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

3. Solidly pack mineral-fiber insulation inside frames.
4. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
5. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:

    a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.
    a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
    b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
    c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
    d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum ¾ inch.
2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
3. Smoke-Control Doors: Install doors according to NFPA 105.

D. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.

3.3 FIELD QUALITY CONTROL

A. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

B. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

C. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat and Painted Finish Touch-up: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanizing openings) or finish paint.

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS

1.1 PART 1 - GENERAL

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.3 SUMMARY

A. Section Includes:

1. Solid core doors with wood veneer faces.
2. Factory finishing wood doors.
3. Factory fitting wood doors to frames and factory machining for hardware.
4. Light frames and glazing installed in wood doors.

B. Related Sections:

1. Division 08 Section “Door Schedule”.
2. Division 08 Section "Hollow Metal Doors and Frames".
3. Division 08 Section "Glazing".
4. Division 28 Section "Access Control".

C. Standards and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ANSI A208.1 – Wood Particleboard.
3. Intertek Testing Service (ITS Warnock Hersey) - Certification Listings for Fire Doors.
4. NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
5. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
6. UL 10C - Positive Pressure Fire Tests of Door Assemblies; UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

7. Window and Door Manufacturers Association - WDMA I.S.1-A Architectural Wood Flush Doors.

1.4 SUBMITTALS

A. Product Data: For each type of door indicated. Include details of core and edge construction, louvers, trim for openings, and WDMA I.S.1-A classifications. Include factory finishing specifications.

B. Shop Drawings shall include:

1. Indicate location, size, and hand of each door.

2. Indicate dimensions and locations of mortises and holes for hardware.

3. Indicate dimensions and locations of cutouts.

4. Indicate requirements for veneer matching.

5. Indicate location and extent of hardware blocking.

6. Indicate construction details not covered in Product Data.

7. Indicate doors to be factory finished and finish requirements.

8. Indicate fire protection ratings for fire rated doors.

C. Samples for Initial Selection: For factory finished doors.

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three samples showing typical range of color and grain to be expected in the finished work.

2. Corner sections of doors, 8 by 10 inches, with door faces and edges representing actual materials to be used.

a. Provide samples for each species of veneer and core material.

b. Finish veneer faced door samples with same materials proposed for factory finished doors.

3. Frames for light openings, 6 inches long, for each material, type, and finish required.

D. Warranty: Provide sample of manufacturer's warranty.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer wherever possible.

B. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, latest edition, "Industry Standard for Architectural Wood Flush Doors'.

C. Fire Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing at positive pressure according to NFPA 252 (neutral pressure at 40" above sill) or UL10C.

1. Oversize Fire Rated Door Assemblies: For units exceeding sizes of tested assemblies provide manufacturer's construction label, indicating compliance to independent 3rd party certification agency's procedure, except for size.

2. Temperature Rise Limit: Where required and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire test exposure.

3. Smoke Control Door Assemblies: Comply with NFPA 105.

a. Smoke "S" Label: Doors to bear "S" label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.

D. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for receiving, handling, and installing flush wood doors.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package pre-finished doors individually in plastic bags and wrap bundles of doors in plastic sheeting.

C. Mark each door on top rail with opening number used on Shop Drawings.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weather tight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.8 WARRANTY

A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

2. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.

3. Telegraphing of core construction in wood face veneers exceeding 0.01 inch in a 3-inch span.

B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

C. Warranty Period for Solid Core Interior Doors: Life of installation.

1.9 PART 2 - PRODUCTS

1.10 DOOR CONSTRUCTION – GENERAL

A. WDMA I.S.1-A Performance Grade: Extra Heavy Duty; Aesthetic Grade: Premium.

B. Fire Rated Doors: Provide construction and core as needed to provide fire ratings indicated.

1. Category A Edge Construction: Provide fire rated door edge construction with intumescent seals concealed by outer stile (Category A) at 45, 60, and 90 minute rated doors. Comply with specified requirements for exposed edges.

2. Pairs: Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.

a. Provide fire retardant stiles that are listed and labeled for applications indicated without formed steel edges and astragals.

b. Where required for concealed hardware, provide formed steel edges and astragals with intumescent seals. Finish steel edges and astragals with baked enamel.

1.11 CORE CONSTRUCTION

A. Particleboard Core Doors:

1. Particleboard: Wood fiber based materials complying with ANSI A208.1 Particleboard standard. Grade LD-2.

2. Adhesive: Fully bonded construction using Polyurethane (PUR) glue.

B. Blocking: As indicated under article “Blocking”.

C. Fire Resistant Composite Core Doors:

1. Core: Non-combustible mineral product complying with requirements of referenced quality standard and testing and inspecting agency for fire protection rating indicated.

2. Blocking: As indicated under article “Blocking”.

3. Edge Construction: At hinge stiles, provide laminated edge construction with improved screw holding capability and split resistance. Comply with specified requirements for exposed edges.

1.12 BLOCKING

A. Non-Fire-Rated Doors:

1. Provide blocking as indicated below:

a. HB1: 5 inch in doors indicated to have closers and overhead stops.

b. HB5: Two 5 inch x 14 inch corner blocking, in doors indicated to have flush bolts.

B. Fire Rated Doors:

1. Provide blocking as indicated below:

a. HB1: 5 inch in doors indicated to have closers and overhead stops.

b. HB5: Two 5 inch x 14 inch corner blocking in doors indicated to have flush bolts.

c. HB7: 5 inch stile blocking.

d. HB8: 5 inch x 14 inch corner blocking and two 5 inch x 14 inch lock blocking on doors to have vertical rod exit devices.

1.13 VENEERED DOORS FOR TRANSPARENT FINISH

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ASSA ABLOY Wood Doors (GR): GPD Series.

2. Eggers Industries (EG): Premium Series.

3. Marshfield-Algoma (MF): Signature Series.

B. Interior Solid Core Doors:

1. Grade: Premium.

2. Faces: Veneer grades as noted below; veneer minimum 1/50-inch (0.5mm) thickness at moisture content of 12% or less.

a. Plain Sliced Red Oak, A grade faces.

b. Veneer species may vary with building / location. Field verify.

3. Match between Veneer Leaves: Book match.

4. Assembly of Veneer Leaves on Door Faces:

   a. Running Match.

5. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.

6. Transom Match: Continuous match.

7. Vertical Edges: Matching same species as faces. Wood or composite material, one piece, laminated, or veneered. Minimum requirements per WDMA section P-1, Performance Standards for Architectural Wood Flush Doors.

8. Horizontal Edges: Solid wood or structural composite material meeting the minimum requirements per WDMA section P-1, Performance Standards for Architectural Wood Flush Doors

9. Construction: Five plies. Stiles and rails are bonded to core, then entire unit sanded before applying face veneers.

10. At doors over 40% of the face cut-out for lights and or louvers, furnish engineered composite lumber core.

1.14 LIGHT FRAMES AND GLAZING

A. Metal Frames for Light Openings in Fire Rated Doors over 20-minute Rating: Manufacturer's standard frame formed of 0.048-inch-thick, cold rolled steel sheet; with baked enamel or powder coated finish; and approved for use in doors of fire protection rating indicated.

   1. Manufacturers:

      a. Air Louver (LV).

      b. All Metal Stamping (AP).

      c. Anemostat (AN).

      d. Pemko (PE).

   2. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with the flush wood door manufacturer's written instructions.

1.15 FABRICATION

A. Factory fit doors to suit frame opening sizes indicated.

   1. Comply with requirements in NFPA 80 for fire rated doors.

   2. Undercut: As required per manufacturer’s templates and sill condition.

B. Factory machine doors for hardware that is not surface applied. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.

1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.

2. Metal Astragals: Factory machine astragals and formed steel edges for hardware for pairs of fire rated doors.

C. Openings: Cut and trim openings through doors in factory.

1. Light Openings: Trim openings with moldings of material and profile indicated.

2. Glazing: Comply with applicable requirements in Division 08 Section "Glazing."

3. Louvers: Factory install louvers in prepared openings.

4. Electrical Raceways: Provide flush wood doors receiving electrified hardware with concealed wiring harness and standardized Molex™ plug connectors on both ends to accommodate up to twelve wires. Coordinate connectors on end of the wiring harness to plug directly into the electrified hardware and the through wire transfer hardware or wiring harness specified in hardware sets in Division 08 "Door Hardware". Wire nut connections are not acceptable.

1.16 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.

B. Transparent Finish: Provide a clear protective coating over the wood veneer allowing the natural color and grain of the selected wood species to provide the appearance specified. Stain is applied to the wood surface underneath the transparent finish to add color and design flexibility.

1. Finish: Meet or exceed WDMA I.S. 1A TR8 UV Cured Acrylated Polyester finish performance requirements.

2. Staining: Custom stain to match architect’s sample.

3. Sheen: Satin.

1.17 PART - EXECUTION

1.18 EXAMINATION

A. Examine doors and installed door frames before hanging doors.

1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.

2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1.19 INSTALLATION

A. Hardware: For installation, see Division 8 Section "Door Hardware."

B. Installation Instructions: Install doors and frames to comply with manufacturer's written instructions and the referenced quality standard, and as indicated.

C. Install fire rated doors in corresponding fire rated frames according to NFPA 80.

D. Factory Fitted Doors: Align in frames for uniform clearance at each edge.

E. Factory Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

F. Field modifications to doors shall not be permitted, except those specifically allowed by manufacturer or fire rating requirements.

1.20 ADJUSTING

A. Operation: Re-hang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 082250 – FRP / ALUMINUM HYBRID DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. The work of this section includes all labor, materials, tools, equipment, trucking and all related items to furnish and install all work of this section as shown by the drawings and specifications.
   1. Provide fiberglass reinforced polyester doors and related products shown on drawings and schedules and specified herein.
      a. Exterior FRP/Aluminum Hybrid Doors.

1.3 REFERENCES

A. ASTM E 84-11 – Surface Burning Characteristics of Building Materials.

B. IBC 2603 – Non-Rated Swinging Doors with Plastic Insulated Cores.

C. NFPA 252 – Fire Tests of Door Assemblies.

D. UL 10C – Positive Pressure Fire Tests of Door Assemblies.

1.4 RELATED SECTIONS

A. Division 08 Section – Door Hardware

B. Division 08 Section - Glazing

1.5 SYSTEM PERFORMANCE

A. Provide exterior and interior 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 stock systems according to test methods designated.
   1. Thermal Transmittance, NFRC 100.
      a. Opaque Swinging Door (< than 50% glass)
         1) U-Factor = 0.33 Btu/hr·ft²·°F.

b. Commercially Glazed Swinging Entrance Door (> than 50% glass)
   1) U-Factor = 0.62 Btu/hr·ft²·°F.

2. Air Leakage, NFRC 400, ASTM-E283.
   a. Opaque Swinging Door (< than 50% glass)
      1) 0.02 cfm/sqft @ 1.57 psf.
      2) 0.02 cfm/sqft @ 6.24 psf.
   b. Commercially Glazed Swinging Entrance Door (> than 50% glass)
      1) 0.22 cfm/sqft @ 1.57 psf.
      2) 0.42 cfm/sqft @ 6.24 psf.
3. Water Resistance: For single door 3'-0"x7'-0", test specimen shall be tested in accordance with STM E 331. Door shall not have water leakage.

B. Standard Interior and Exterior - Class C FRP Face Sheet Properties:
1. Flexural Strength, ASTM-D790: 27 x 10^3 psi.
2. Flexural Modulus, ASTM-D790: 0.7 x 10^6 psi.
3. Tensile Strength, ASTM-D638: 18 x 10^3 psi.
4. Tensile Modulus, ASTM-D638: 1.0 x 10^6 psi.
5. Barcol Hardness, ASTM-D2583: 40.
6. Izod Impact, ASTM-D256: 7.0 ft-lb/in.
7. Garnder Impact Strength, ASTM-D5420: 30 in-lb.
8. Water Absorption, ASTM-D570: 0.16%/24hrs at 77 deg F.
9. Surface Burning, ASTM-E84: Flame Spread, less than or equal to 200, Smoke Developed, less than or equal to 450.
10. Chemical Resistance, Excellent Rating.
11. USDA/FSIS Requirements.
    a. FRP face sheet with surfaseal is a finished outer surface material that is rigid; durable; non-toxic; non-corrosive; moisture resistant; a light, solid color such as white; easily inspected; smooth or an easily cleaned texture.
    b. FRP face sheet with surfaseal does not contain any known carcinogen, mutagen, or teratogen classified as hazardous substances; heavy metals or toxic substances; antimicrobials; pesticides or substances with pesticidal characteristics.

C. Optional Interior Face Only - Class A FRP Face Sheet Properties:
1. Flexural Strength, ASTM-D790: 14 x 10^3 psi.
2. Flexural Modulus, ASTM-D790: 0.4 x 10^6 psi.
3. Tensile Strength, ASTM-D638: 7 x 10^3 psi.
4. Tensile Modulus, ASTM-D638: 0.8 x 10^6 psi.
5. Barcol Hardness, ASTM-D2583: 45.
6. Izod Impact, ASTM-D256: 4.0 ft-lb/in.
7. Water Absorption, ASTM-D570: 0.16%/24hrs at 77 deg F.
8. Surface Burning, ASTM-E84: Flame Spread, less than or equal to 25, Smoke Developed, less than or equal to 450.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Shall have produced fiberglass reinforced polyester doors for at least five (5) years. Shall have completed projects of similar building type and size as this project.

B. Door and frame components must be fabricated by same manufacturer.

C. Field Measurement: Take field measurements prior to fabrication, to ensure proper fitting of work.

1.7 SUBMITTALS

A. Product Data: Submit manufacturer's specifications, standard details, and installation recommendations for components of fiberglass reinforced polyester doors and frames required for project including test reports certifying that products have been tested and comply with performance requirements.

B. Shop Drawings: Submit shop drawings for fabrication and installation of fiberglass reinforced polyester doors and frames, including elevations, detail sections of typical composite members, hardware mounting heights, anchorages, reinforcement, expansion provisions and glazing.

C. Finish/Color Samples: Submit manufacturer’s sample of standard colors for door face and frame of each type and color of fiber reinforced polyester finish.

D. Door Sample: Only when requested by the architect, submit manufacturer’s door corner sample composed of door face sheet, core, framing and finish.

E. Templates and Diagrams: Furnish templates, diagrams and other data to fabricators and installers of related work, as needed for coordination of operators, doors, frames, hardware, concrete work, electrical work, air supply, etc.

F. Testing and Evaluation Reports: Submit testing reports and evaluations provided by manufacturer conducted by an accredited independent testing agency certifying doors and frames comply with specified performance requirements.

1.8 DELIVERY, STORAGE AND HANDLING

A. All materials supplied shall be delivered to the jobsite in their original, unopened packages with labels intact. Materials shall be inspected for damage, and the manufacturer informed of any discrepancies. Unsatisfactory material shall not be used.

B. All materials supplied shall be packaged in individual corrugated cartons. Doors shall "float" within cartons, with no portion of door in contact with outer shell.

C. Store materials in a clean, dry area, indoors in accordance with manufacturer’s instructions.

1.9 JOB CONDITIONS

A. Inspect surfaces to receive work of this section. Report any unsatisfactory conditions to General Contractor. Proceeding with the work will be evidence of acceptance of job conditions.

1.10 WARRANTY

A. Warrant doors, frames, and factory installed hardware against failure in materials and workmanship, including excessive deflection, faulty operation, defects in hardware installation, and deterioration of finish or construction in excess of normal weathering.
   1. Standard Period: Ten years starting from the date of Substantial Completion.
   2. 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.
   3. Finish: Kynar painted aluminum: 10 years. (Based on color chosen).
   4. Through-Color FRP Face Sheets: 10 years.

B. Hardware supplied with doors and frames shall be covered by hardware manufacturers' warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, provide products by one of the following:
   1. Special-Lite, Inc., Model SL-20 Sandstone Texture - Basis of Design.
   2. Oldcastle Glass Engineered Products (Vistawall)
   3. Architect approved equal.

2.2 GENERAL FABRICATION

A. Prefabrication: All hardware, with the exception of door closer, to be shipped to door manufacturer. Door manufacturer shall install hardware on doors to the greatest extent possible. Complete fabrication, assembly, finishing and other work before shipment to project site. Disassemble components only as necessary for shipment and installation.

B. Perform fabrication operations, including cutting, fitting, forming, drilling and grinding of material in manner which prevents damage to exposed finish surfaces.

C. Sequence: Complete cutting, fitting, forming, drilling and grinding prior to cleaning, finishing and surface treatment. Remove rises from cut edges and ease edges and corners to radius of approximately 1/64".

D. Reinforcing: Install reinforcing as necessary for high-traffic performance; separate dissimilar metals with bituminous paint or other separator which will prevent corrosion.

E. Continuity: Maintain accurate relation of planes and angles, with hairline fit of contacting members.

F. Fasteners: Conceal fasteners wherever possible.

2.3 FIBERGLASS REINFORCED POLYESTER / ALUMINUM HYBRID DOORS (FRP)

A. Door Construction: Provide fiberglass reinforced polyester doors 1.75" thick, unless otherwise indicated.

B. Door Stiles and Rails.
   1. Aluminum extrusions made of 6063 aluminum alloys with a minimum temper of T5.
   2. Minimum 2-5/16 inch deep one-piece extrusion with integral reglets to accept face sheet on both interior and exterior side of door which secure face sheet into place and permit flush appearance.
      a. Screw or snap in place applied caps are not acceptable.
   3. Top Rails must have integral legs for interlocking continuous extruded aluminum flush cap.
   4. Bottom rails must have factory-installed, integral legs for interlocking weather bar with adjustable, dual brush weather stripping. Adjustable range .15” to .74” on either sides or both.
      a. Design Make: Special Lite SL-301.
   5. Meeting stiles to include integral pocket to accept adjustable, pile brush weather seal. Finished to match door color.
      a. Design Make: Special Lite AS-4A.
   6. Corners shall be mitered and secured with 3/8 inch diameter full-width steel tie rod through extruded splines top and bottom which are integral to standard tubular shaped rails. Provide aluminum angle reinforcement at corner for locking hex nut.
      a. Welding, gluing, or other methods of corner joinery are not acceptable.

C. Door Core.
   1. Poured-in-place polyurethane foam. 5-lbs/cf.
      a. Laid foam cores are not acceptable.
   2. Foam Plastic Insulated Doors per IBC 2603.4.
      a. Foam plastic shall be separated from the interior of a building by an approved thermal barrier.
      b. Approved thermal barrier must meet the acceptance criteria of the Temperature Transmission Fire Test and Integrity Fire Test as stated in NFPA 275.

c. IBC 2603.4.1.7 foam plastic insulation, having a flame spread index less than 75 and a smoke developed index of not more than 450 shall be permitted as a door core when the face is metal, minimum 0.032 inch aluminum or 0.016 inch steel.

d. Standard door assembly can be tested to show it meets these requirements without the use of thermal barrier. If no independent testing has been conducted, all doors with foam plastic core must have a thermal barrier.

D. Door Face Sheets.

a. Exterior: 0.120 inch thick sandstone texture, through color with integral surface film FRP sheet. Class C standard.

b. Interior: 0.120 inch thick, sandstone texture, Class A to meet Code requirements.

c. Face sheets integrally captured by stile and rail reglets on all four sides. Use of glue to bond face sheet to core or extrusions is not acceptable.

d. Manufacture doors with cutouts for required vision lites, louvers, and panels.

E. Fasteners: Aluminum, or other materials warranted by manufacturer to be non-corrosive and compatible with aluminum components.

1. Joinery to be galvanized steel tie rod, top and bottom bolted through an extruded spline and $^{3}/_{16}$" rivetted reinforcing angles and secured with aircraft type nuts. Mitered corners. Welding shall not be acceptable."

2. FRP face shall be secured to the rails using an integral reglet system

2.4 MATERIALS

A. Aluminum Members: Alloy and temper recommended by manufacturer for strength, corrosion resistance and application of required finish; 6061 or 6063 aluminum alloys for extrusion, ASTM B209 for sheet/plate.

B. Fasteners: Aluminum, or other materials warranted by manufacturer to be non-corrosive and compatible with aluminum components.

1. Aluminum, 18-8 stainless steel, or other noncorrosive metal.

a. Exposed Fasteners: Screws with finish matching items to be fastened.

C. Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible; otherwise, provide non-magnetic stainless steel or hot-dip galvanized steel complying with ASTM A386.

1. Provide manufacturer's standard reinforcement for each type of hardware required, not less than .125" thick.

2. Provide manufacturer's recommended fasteners reinforcement.

D. Core Material: Urethane foam of 5 pounds per cubic foot of density. (Wood core shall not be acceptable).

E. Face Material: Fiberglass reinforced polyester, .120" minimum thickness, with embossed sandstone-texture, through color with integral surface seal film finish.
   1. Tensile Strength, ASTM D638, Minimum 13 x10^3 psi.
   2. Tensile Modulus, ASTM D638, Minimum 1.2 x10^3 psi.
   3. Water Absorption, STM D570, Maximum 0.20% / 24 hours @ 77 deg F.
   4. Flexural Strength, ASTM D790, Minimum 21 x 10^3 psi.
   5. Flexural Modulus, ASTM D790, Minimum 0.7 x 10^6 psi.
   6. Bracol Hardness, ASTM D2583: 55.
   7. Chemical Resistance, Excellent Rating.
   8. Complying with USDA/FSIS Requirements with surface sealed finish.

2.5 ACCESSORIES

A. Vision Lites: Factory Glazed 1-inch thick glass insulating units per Division 08 Section, unless indicated otherwise.
   1. Size: As indicated on the Drawings. Allow for thermal expansion.
   2. Factory glazed with screw-applied aluminum stops.
   3. Color: Match perimeter door rails.
      a. Design Make: SL FL-Series

B. Architectural Panels: Fiberglass reinforced panels in size as indicated on the Drawings. Thickness to be 1.75-inch with a core of polyurethane and face sheets to match the door construction. Optional 1-inch thick panel to be used where required to meet field conditions.
   1. Color: Match door color unless indicated otherwise.
   2. Aluminum frame perimeter.
   3. Thermal Performance 1.75-inch panel, AAMA 1503-98, U-Factor = 0.10 Btu/hr.ft^2.F.

C. Hardware: Pre-machine doors in accordance with templates for approved hardware. Factory install hardware.
   1. Recessed Door Pull: Aluminum, ADA compliant, 8-11/16” high x 6-1/16” wide with 5” x 2” grip surface and recessed depth of 1-3/8”.
      a. Design Make: Special Lite SL-86 for flush doors. Special Lite SL-88 for doors with mid-rails.
      b. Provide where indicated or scheduled to be by the door manufacturer

2.6 FINISHES

A. Door Finishes.
   1. Fiberglass Reinforced Plastic Face Sheets.
      a. Color: As selected by architect from manufacturer’s full range.
   2. Aluminum Paint.
      a. Kynar: 70% Kynar or Hylar 5000 coating, meets or exceeds all AAMA 2605 specifications, 2.5 to 4.0 wet mils, 1.00 to 1.20 dry mills.
      b. Color: Custom color as selected by architect to match door skin.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect all surfaces to receive work and notify General Contractor in writing of conditions detrimental to the proper and timely completion of the work. Commencement of work shall signify acceptance of conditions and any subsequent adjustments shall be the responsibility of the door subcontractor.

3.2 INSTALLATION

A. General: Installation of doors shall be by the supplier of door material only.

B. All frames shall be plumb and square and in alignment with other work.

C. All joints between metal and masonry shall be shimmed .375" and a .375" reveal provided for caulking.

D. Repair and refinish all components in this section if damaged by the construction process.

E. Provide insulation of dissimilar metals by taping or spraying with lacquer.

F. Clearances: Door shall be installed with proper clearances and shall operate smoothly and easily

G. Clean doors promptly after installation in accordance with manufacturer's instructions.

3.3 COMPLETION

A. Upon completion of installation, leave areas of work in neat clean condition. Remove all debris caused by work of this Section from premises.

B. Upon completion of installation, including work by other trades, lubricate, test and adjust doors to operate easily, free from warp, twist or distortion and fitting weather-tight for the entire perimeter.

C. Manufacturer's Inspection: Manufacturer's representative shall visit the site to provide a final inspection to ensure that the installation is per the factory requirements. Provide architect with copy of inspection report and address all non-compliant issues prior to architect's punch list inspection.

END OF SECTION 082250

SECTION 084113 – ALUMINUM-FRAMED ENTRANCES AND CURTAINWALL

1.0 PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

B. Thermally broken aluminum-framed storefront systems complete with hardware and related components as shown on drawings and specified in this section.

C. Aluminum stile and rail doors and related components as shown on the drawings and specified in this section.

1.2 DEFINITIONS

A. ADA/ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disability Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities."

1.3 PERFORMANCE REQUIREMENTS

A. General Performance: Aluminum-framed systems (doors, frames, glass etc.) shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:

B. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.

C. Dimensional tolerances of building frame and other adjacent construction.

D. Failure includes the following:

1. Deflection exceeding specified limits.

2. Thermal stresses transferring to building structure.

3. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.

4. Glazing-to-glazing contact.

5. Noise or vibration created by wind and by thermal and structural movements.

6. Loosening or weakening of fasteners, attachments, and other components.

7. Sealant failure.

8. Failure of operating units, if any.

E. Delegated-Design Submittal: For aluminum-framed entrances and storefronts indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified New York State licensed professional engineer responsible for their preparation, using performance requirements and design criteria indicated.

F. Structural Loads:

G. Wind Loads: As indicated on Drawings.

1. Basic Wind Speed: 120 mph.

2. Importance Factor: 1.25.

3. Exposure Category: B.

H. Seismic Loads: As indicated on Drawings.

I. Deflection of Framing Members:

J. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13 feet 6 inches (4.1 m) and to 1/240 of clear span plus 1/4 inch (6.35 mm) for spans greater than 13 feet 6 inches (4.1 m) or an amount that restricts edge deflection of individual glazing lites to 3/4 inch (19 mm), whichever is less.

K. Deflection Parallel to Glazing Plane: Limited to an amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components directly below them to less than 1/8 inch (3.2 mm) and clearance between members and operable units directly below them to less than 1/16 inch (1.5 mm).

L. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:

M. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.

N. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceed 0.2 percent of span.

O. Test Durations: As required by design wind velocity, but not fewer than 10 seconds.

P. Story Drift: Provide aluminum-framed systems that accommodate design displacement of adjacent stories indicated.

Q. Design Displacement: As indicated on Drawings.

R. Test Performance: Meet criteria for passing, based on building occupancy type, when tested according to AAMA 501.4 at design displacement and 1.5 times design displacement.

S. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 6.24 lbf/sq. ft.

T. Water Penetration under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static test pressure of 12.0 psf.

U. Thermal Movements: Provide aluminum-framed systems that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

V. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

W. Interior Ambient-Air Temperature: 75 deg F.

X. Condensation Resistance (CRF): Provide aluminum-framed systems with fixed glazing and framing areas having condensation-resistance factor (CRF) of not less than 0.45 (frame) and 70 (glass) when glazed with 1" (25 mm) insulated – ¼" clear low emissivity, ½" air, ¼" clear glass when tested according to AAMA 1503.1.

Y. Thermal Conductance: Provide aluminum-framed systems with fixed glazing and framing areas having an conductive thermal transmittance (U-Value) not more than 0.38 BTU/hr/ ft2/F (2.49 W/m2/K) when glazed with 1" (25 mm) insulated – ¼" (6 mm) clear low emissivity, ½" (12 mm) air, 1/4" (6 mm) clear glass and tested according to NFRC 100 (per IECC code.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for aluminum-framed systems.

B. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.

C. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.

D. For entrance doors, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.

E. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

F. Fabrication Sample: When requested by the Architect provide a sample of a vertical-to-horizontal intersection of aluminum-framed systems, made from 12-inch (300-mm) lengths of full-size components and showing details of the following:

G. Joinery, including concealed welds.

H. Anchorage.

I. Expansion provisions.

J. Glazing.

K. Flashing and drainage.

L. Other Action Submittals:

M. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

N. Delegated-Design Submittal: For aluminum-framed entrances and storefronts indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified New York State licensed professional engineer responsible for their preparation.

O. Detail fabrication and assembly of aluminum-framed systems.

P. Include design calculations.

Q. Qualification Data: For qualified Installer and testing agency.

R. Welding certificates.

S. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for aluminum-framed systems, indicating compliance with performance requirements.

T. Field quality-control reports.

U. Maintenance Data: For aluminum-framed systems to include in maintenance manuals.

V. Warranties: Sample of special warranties.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Testing Agency Qualifications: Provide test reports from AAMA accredited laboratories certifying the performance as specified.

C. Test reports shall be accompanied by the storefront manufacturer’s letter of certification stating that the tested storefront meets or exceeds the referenced criteria for the appropriate storefront type.

D. Accessible Entrances: Comply with applicable provisions in ICC/ANSI A117.1.

E. Source Limitations for Aluminum-Framed Systems, Storefront systems, Aluminum doors: Obtain from single source from single manufacturer.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems, Storefronts, windows and doors that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

B. Failures include, but are not limited to, the following:

1. Structural failures including, but not limited to, excessive deflection.

2. Noise or vibration caused by thermal movements.

3. Deterioration of metals, and other materials beyond normal weathering.

4. Adhesive or cohesive sealant failures.

5. Water leakage through fixed glazing and framing areas.

6. Failure of operating components.

C. Warranty Period: 10 years from date of Substantial Completion.

D. Factory installed hardware: Door Manufacturer to warrant attachment of door hardware for a period of not less than 10 years from date of shipment that:

E. Hardware is installed in accordance with the hardware manufacturer’s specifications and instructions.

F. Hardware is securely mounted and, in normal usage, will not separate from the doors.

G. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.

H. Deterioration includes, but is not limited to, the following:

1. Color fading more than 5 Hunter units when tested according to ASTM D 2244.

2. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.

3. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

I. Warranty Period: 10 years from date of Substantial Completion.

1.8 MAINTENANCE SERVICE

A. Entrance Door Hardware:

B. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of entrance door hardware.

C. Initial Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of entrance door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper entrance door hardware operation at rated speed and capacity. Provide parts and supplies the same as those used in the manufacture and installation of original equipment.

2.0 PART - PRODUCTS

2.1 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

1. Sheet and Plate: ASTM B 209 (ASTM B 209M).

2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).

3. Extruded Structural Pipe and Tubes: ASTM B 429.

4. Structural Profiles: ASTM B 308/B 308M.

B. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer, complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.

1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.

2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.

3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

2.2 ALUMINUM DOORS & FRAMES

A. Basis-of-Design Product: Subject to compliance with requirements or Architect approved equal by one of the following:

1. EFCO Corp.

2. Kawneer North America.

3. TubeLite, Inc.

2.3 ALUMINUM DOORS:

A. Basis-of Design Product: EFCO Series D518 DuraStile, Heavy Duty Entrance Wide Stile (5")

B. Door Sections: Shall have .188" wall thickness. Glazing stop sections shall have .050" wall thickness and the door overall thickness shall be 2". Opening size as indicated on drawings and schedules.

C. Door stiles shall be no less than 5" wide (not including the glass stops). Stiles and rails shall have hairline joints at corners. Heavy concealed reinforcement brackets shall be secured with screws and shall be of deep penetration fillet welded.

D. Stiles and Rails: Aluminum extrusions made from prime equivalent billet that is produced from 6063-T6 alloy and temper.

E. Meeting Stiles: Adjustable meeting stile astragal at pairs of doors. Install door manufacturer's wool pile and weather seal weatherstripping. Weather stripping shall be wool pile and shall be installed in one stile of door pairs and in jamb stiles of center pivoted doors.

F. Hardware: For entrance doors is specified under "Hardware Section" of the specifications and shall be sent to the door manufacturer for application.

G. Glazing: All units shall be factory dry glazed with extruded pressure fitting aluminum glazing stops and EPDM gaskets.

H. Fasteners: Aluminum or other materials warranted to be non-corrosive and compatible with aluminum components.

I. Exposed Fasteners: Screws with finish matching items to be fastened.

2.4 ALUMINUM CURTAINWALL SYSTEMS (THERMALLY BROKEN):

A. Basis-of Design Product: EFCO Series 403X Series - Screw Spline Storefront.

B. Framing:

1. Size: 2" by 4 ½", thermally broken, outside glazed, unless indicated otherwise.

2. Material: Aluminum extrusions made from prime equivalent billet that is produced from 100% reprocessed 6063-T6 alloy recovered from industrial process, ASTM B221.

3. Jambs, Mullions, Sills, Horizontal intermediates, and Headers: All frame extrusions shall have a minimum wall thickness of 0.093 inches.

4. Thermal Break: All exterior aluminum shall be separated from interior aluminum by a rigid, structural thermal barrier. Barrier material shall be poured-in-place, two-part polyurethane. A non-structural thermal barrier is unacceptable.

5. Glazing: Outside glazed curtainwall system shall be dry glazed with an exterior cast pressure plate and snap cover with interior and exterior dense EPDM preset gaskets.

6. Applied door stops: 0.625 inches high, with screws and weatherstripping. Doorstop shall incorporate pressure gasketing for weather seal. Counterpunch fastener holes in door stop to preserve full metal thickness under fastener head. Provide ½" aluminum bar reinforcement under doorstop for required hardware attachments.

7. Caulking: Caulk joints before assembly frame membranes with silicone sealant.

8. Joints: Secure joints with fasteners using screw-spline type construction resulting in a hairline butt joint appearance.

9. Performance: All performance value data is based on laboratory testing per AAMA 101/I.S.2 / A440 for Air/Water/Structural, ASTM E90 and or E413 for Acoustical.

   a. Air Infiltration: Captured <0.06 CFM/FT^2

   b. Water: No Leakage @ 15.0 PSF.

   c. Structural: L/175

   d. Acoustical: Acceptable range between 29-32.

   e. Water Resistance: 10 PSF - Static.

   f. CRF: 62 PER AAMA 1503

   g. U-Factor: 0.28 – 0.50

C. Hardware:

1. Refer to Division 08 Section "Door Hardware" for requirements of hardware items.

2. Pre-machine and reinforce frame members for hardware in accordance with manufacturer's standards and hardware schedule.

3. Factory install door hardware where new door hardware is scheduled with new doors and frames.

D. Anchors:

1. Anchors appropriate for wall conditions to anchor framing to wall materials.

2. Door jamb and header mounting holes: maximum of 24" centers.

3. Secure head and sill members of transom, side-lites and similar conditions.

E. Removable Mullion: as indicated.

F. 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.

G. Glazing Gaskets: All units shall be "dry glazed" with EPDM gaskets on both exterior and interior of the glass.

2.5 CURTAINWALL OPERABLE WINDOW SYSTEM

A. Basis-of Design Product: EFCO Series WV430 Projected – Outswing Window System.

B. Main Framing Construction: Miter cut .080" nominal wall thickness extruded aluminum angle of 6063-T5 or T6 alloy and temper contains extruded aluminum corner key. Corners shall be bed in silicone sealant and assembled using extruded aluminum corner key.

C. Vent Frame Construction: Miter cut .125" nominal wall thickness extruded aluminum angle of 6063-T5 or T6 alloy and temper contains one screw boss and corner key and gasket dart race. Corners are bed in silicone sealant and assembled using screw boss and key construction.

D. Hardware: Standard 4 bar hinge operation is utilized with cam handles applied to vent and surface-applied cam strikes on main frame located as required structurally.

E. Screens: Frames of extruded aluminum, mounted in factory drilled holes, with aluminum mesh.

F. Glazing: The 1" glazing is structurally silicone to the vent framing at the number four surface. SSG shall be glazed full perimeter with structural silicone.

G. Performance: All performance value data is based on laboratory testing per AAMA 101/I.S.2 / A440 for Air/Water/Structural, ASTM E90 and or E413 for Acoustical.

1. Air Infiltration: <.10 CRM/FT @ 6.24 PSF.

2. Water: No Leakage @ 15.0 PSF.

3. Structural: AW60.

4. Acoustical: Acceptable range between 35-40.

5. Thermal Performance for Operable Window: Shall be no more than .43 BTU/hr/ ft2/F.

H. RESCUE WINDOWS

I. Definition: Operable windows with or without screens, that when opened shall provide six (6) square feet free opening, with minimum dimension of 24 inches; sill height 32 inches above finish floor maximum. Shop drawings shall clearly show clear opening sizes for each rescue window.

1. Locations: One (1) Rescue Window shall be provided at each student-occupied room over 550 square feet.

J. Decals: Install glass-applied decal at each rescue window. Text shall read “RESCUE WINDOW” readable from each side of the window. Bright yellow background with black letters. Size 3 inches x 5 inches.

1. Furnish and mechanically install one additional sticker on the interior face of window treatment used at rescue windows so that the decal is visible when the window treatment is in the down position.

2. Furnish one (1) additional decal for each room, turned over to the Owner for their attic stock.

2.6 GLAZING SYSTEMS

A. Glazing: As specified in Division 08 Section "Glazing."

2.7 ACCESSORY MATERIALS

A. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 07 Section "Joint Sealants."

1. Provide sealants for use inside of the weatherproofing system that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30-mil (0.762-mm) thickness per coat.

2.8 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.

2. Accurately fitted joints with ends coped or mitered.

3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.

4. Physical and thermal isolation of glazing from framing members.

5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.

6. Provisions for field replacement of glazing from interior.

7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

C. At storefront elevations requiring wind load consideration, stiffen rectangular .125” aluminum tubing with steel channels to meet design wind loading and supply applied glazing stops to suit infill thickness.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Storefront Framing: Fabricate components for assembly using shear-block system.

F. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

G. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

H. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

I. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.9 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.10 ALUMINUM FINISHES

A. Anodic Finish: Finish all exposed areas of aluminum and components with electrolytically-deposited color in accordance with Aluminum Association Designation.

1. Clear Anodized.

3.0 PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General:

B. Comply with manufacturer's written instructions.

C. Do not install damaged components.

D. Fit joints to produce hairline joints free of burrs and distortion.

E. Rigidly secure non-movement joints.

F. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.

G. Seal joints watertight unless otherwise indicated.

H. Metal Protection:

I. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or applying sealant or tape, or by installing nonconductive spacers as recommended by manufacturer for this purpose.

J. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

K. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

L. Set continuous sill members and flashing in full sealant bed as specified in Division 07 Section "Joint Sealants" to produce weathertight installation.

M. Install components plumb and true in alignment with established lines and grades, and without warp or rack.

N. Install glazing as specified in Division 08 Section "Glazing."

O. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.

P. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.

Q. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

R. Windows: Plumb and align window faces in a single plane for each wall plane, and erect windows and materials square and true. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified wind loads.

S. Install perimeter joint sealants as specified in Division 07 Section "Joint Sealants" to produce weathertight installation.

3.3 ERECTION TOLERANCES

A. Install aluminum-framed systems to comply with the following maximum erection tolerances:

B. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet (3 mm in 3.7 m); 1/4 inch (6 mm) over total length.

C. Alignment:

1. Where surfaces abut in line, limit offset from true alignment to 1/16 inch (1.5 mm).

2. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch (0.8 mm).

D. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch (3 mm).

3.4 ADJUSTING

A. Adjust operating entrance door hardware to function smoothly as recommended by manufacturer.

B. For entrance doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3 inches (75 mm) from the latch, measured to the leading door edge.

C. Adjust windows for proper operation after installation.

D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections and at opening perimeters. Wipe off excess material and leave all exposed surfaces and joints clean and smooth.

3.5 PROTECTION AND CLEANING

A. After completion of frame, door and window installation, systems shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc. Protection from this point shall be the responsibility of the General Contractor.

END OF SECTION 084113

SECTION 085113 - FIRE-RATED ALUMINUM WINDOWS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Fire-rated aluminum fixed window including frame and glazing.

1.02 RELATED SECTIONS

A. Section 08817 (08 88 17): Fire-Rated Glass & Framing.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials.
   2. ASTM E2010 Standard Test Method for Positive Pressure Fire Tests of Window Assemblies.
   3. ASTM E 283-04, Test Method for Determining Rate of Airflow Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.

B. National Fire Protection Association (NFPA):
   1. NFPA 80: Standard for Fire Doors and Fire Windows.
   2. NFPA 257: Standard on Fire Test for Window and Glass Block Assemblies.

C. Uniform Building Code (UBC):
   1. UBC-7-4: Methods for Fire Tests of Window Assemblies.

D. Underwriters Laboratories, Inc. (UL):
   1. UL 9: Fire Tests of Window Assemblies.
   2. UL 263: Fire Tests of Building Construction and Materials

F. American National Standards Institute (ANSI):
   1. ANSI Z97.1 Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test.

G. Consumer Product Safety Commission (CPSC):
   1. CPSC 16 CFR 1201 Categories I and II: Safety Standard for Glazing Materials.

H. American Architectural Manufacturers Association (AAMA)
   1. AAMA 501.1-05, Standard Test Method for Metal Curtain Walls for Water Penetration Using Dynamic Pressure.

1.04 SYSTEM DESCRIPTION

A. Performance Requirements:

   1. Fire Rating: 60 minutes.

2. Certification: Windows shall be tested in accordance with ASTM E 2010, NFPA 252, UBC 7-4, UL 9, UL263, CAN4-S106.
3. Testing Laboratory: Fire tests shall be conducted by an approved independent testing laboratory, similar to Underwriter's Laboratories, Inc.
4. Air Infiltration: The test specimen shall be tested in accordance with ASTM E283 at a minimum frame size of 97" x 145". Air infiltration rate shall not exceed 0.01 cfm/ft of area at a static air pressure differential of 6.27 psf.
5. Static Water Resistance: The test specimen shall be tested in accordance with ASTM E331 at a minimum frame size of 97" x 145". There shall be no leakage as defined in test method at a static pressure differential of 10 psf.
6. Dynamic Water Resistance: The test specimen shall be tested in accordance with AAMA 501.1 at a minimum frame size of 97" x 145". There shall be no leakage as defined in test method at a dynamic pressure differential of 10 psf.
7. Uniform Load Deflection: A minimum static air pressure difference of 60 psf shall be applied in the positive and negative direction in accordance with ASTM E330. There shall be no deflection in excess of L/175 of the span of any framing member.
8. Uniform Load Structural Test: A minimum static air pressure difference of 90 psf shall be applied in the positive and negative direction in accordance with ASTM E330.
9. Thermal Transmittance (U-value): When tested to AAMA Specification 503.1, the thermal transmittance (U-value) shall not be more than 0.48 BTU/hr/sf/˚F.

1.05 SUBMITTALS

A. Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedure Section.
   1. Shop Drawings: Submit shop drawings showing layouts, profiles and product components.
   2. Samples: Submit samples for finishes, colors and textures.
   3. Technical Information: Submit latest edition of manufacturer's product data providing product description, technical data and installation instructions.

1.06 QUALITY ASSURANCE

A. Listings and Labels:
   Fire rated framing and glazing shall be under current follow-up services by an approved independent agency and maintain a current listing or certification. Assemblies shall be labeled in accordance with limits of listings.

1.07 DELIVERY, STORAGE AND HANDLING

A. Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

B. Delivery: Deliver materials to specified destination in manufacturer's packaging undamaged, complete with installation instructions.

C. Storage and Protection: Store off ground, under cover, protected from weather, direct sunlight, construction activities and at temperature conditions recommended by manufacturer, +10°F to +110°F.

D. Handling: Protect materials and finish during handling and installation to prevent damage.

1.08 PROJECT CONDITIONS

A. Field Measurements: Verify actual measurements for openings by field measurements before fabrication. Show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

PART 2 - PRODUCTS

2.01 FIRE-RATED ALUMINUM FIXED WINDOWS

A. Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   i. Aluflam North America and Vetrotech Saint-Gobain (Design Make).
   ii. Fireglass Fireframes and Pilkington.
   iii. Safti First and SuperLite.

2.02 MATERIALS – ALUMINUM FRAMING

A. Frame construction: Integral structure and glazing stops from extruded and thermally broken aluminum profiles. Filled internally with cement composite material.

B. Dimensions:
   1. Perimeter framing face dimension: 2-½ inch
   2. Depth of framing: 3-7/16 inch
   3. Cross rail (if applicable): 3-9/16 inch

C. Assembly: Frame corners assembled by means of crimped and bonded miter joints.

D. Sealing: Framing system shall insulate against effects of fire, smoke, and heat transfer from either side. Perimeter of the framing system to the rough opening shall be firmly packed with mineral wool insulation.

2.03 MATERIALS – FIRE RESISTANT GLAZING

1. Assemblies shall be glazed with 60 minute rated 1 inch thick fire resistant glazing material. Individual lites shall be permanently identified with a listing mark.
2. Glazing material installed in “Hazardous Locations” (subject to human impact) shall be certified to meet the applicable requirements for fire rated assemblies referenced in ANSI Z97.1 Standard for Safety Glazing Materials Used In Buildings and/or CPSC 16 CFR 1201 Safety Standard for Architectural Glazing Materials.
3. Visible daylight transmission shall be a minimum of 81%. Glazing material shall be optically clear, colorless and free from unusual distortion.

2.04 MATERIALS – GLAZING AND ASSEMBLY ACCESSORIES

B. Fasteners: All fasteners, setting pads, and glazing clips, shall be stainless or zinc-plated steel.

B. Glazing Accessories: The glazing material perimeter shall be separated from the perimeter framing system with approved flame retardant intumescent glazing tape. Ceramic setting blocks shall be placed between the metal setting pads and the glazing material. Setting pads and blocks provided by manufacturer.

2.05 FABRICATION

A. Window frames shall be furnished pre-assembled. Window assemblies shall be field glazed.

B. Fabrication Dimensions: Fabricate to approved dimensions. The general contractor shall guarantee dimensions within required tolerance (+ - 1/8”). Obtain approved shop drawings prior to fabrication.

2.06 FINISHES

A. Framing shall be chemically cleaned and pretreated, then finished on all exposed areas with: Fluoropolymer – (Kynar/ Duranar) Color to be selected from manufacturer’s full range.

B. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Slight variations in appearance of abutting or adjacent pieces are acceptable. Noticeable variations in the same piece are not acceptable.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine area to receive windows. Openings shall be plumb, square and within allowable tolerances. Notify Architect of conditions that would adversely affect installation or subsequent use. Do not proceed with installation until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Window installation shall be by a specialty contractor with appropriate experience qualifications; and in strict accordance with the approved shop drawings.

3.03 CLEANING

A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Glass and frame should be cleaned using soft clean cloth, chamois leathers, sponges or soft paper. Use clean warm water with a mild detergent. Do not use detergent that contains either alkaline, acids or fluoride! Abrasive cleaning methods can damage surfaces! Clean prior to owner’s acceptance. Remove construction debris from project site and legally dispose of debris.

END OF SECTION 085113

SECTION 087100 – DOOR HARDWARE

GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes:

1. Mechanical and electrified door hardware for:

   a. Swinging doors.

2. Field verification, preparation and modification of existing doors and frames to receive new door hardware.
3. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

B. Exclusions: Unless specifically listed in hardware sets, hardware is not specified in this section for:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 01 Section "Alternates" for alternates affecting this section.
2. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
3. Division 09 sections for touchup, finishing or refinishing of existing openings modified by this section.

1.03 REFERENCES

A. UL - Underwriters Laboratories

1. UL 10B - Fire Test of Door Assemblies
2. UL 10C - Positive Pressure Test of Fire Door Assemblies
3. UL 1784 - Air Leakage Tests of Door Assemblies
4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule
2. Recommended Locations for Builders Hardware
3. Key Systems and Nomenclature

C. ANSI - American National Standards Institute

1. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties

1.04 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 requirements.
2. Highlight, encircle, or otherwise specifically identify on submittals deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.
3. Prior to forwarding submittal, comply with procedures for verifying existing door and frame compatibility for new hardware, as specified in PART 3, “EXAMINATION” article, herein.

B. Action Submittals:

1. Product Data: Technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Samples for Verification: If requested by Architect, submit production sample or sample installations of each type of exposed hardware unit in finish indicated, and tagged with full description for coordination with schedule.

    a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.

3. Door Hardware Schedule: Submit schedule with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Indicate complete designations of each item required for each door or opening, include:

    a. Door Index; include door number, heading number, and Architects hardware set number.
    b. Opening Lock Function Spreadsheet: List locking device and function for each opening.
    c. Quantity, type, style, function, size, and finish of each hardware item.
    d. Name and manufacturer of each item.

e. Fastenings and other pertinent information.
f. Location of each hardware set cross-referenced to indications on Drawings.
g. Explanation of all abbreviations, symbols, and codes contained in schedule.
h. Mounting locations for hardware.
i. Door and frame sizes and materials.
j. Name and phone number for local manufacturer's representative for each product.
k. Operational Description of openings with any electrified hardware (locks, exits, electromagnetic locks, electric strikes, automatic operators, door position switches, magnetic holders or closer/holder units, and access control components). Operational description should include operational descriptions for: egress, ingress (access), and fire/smoke alarm connections.
   1) Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work that is critical in Project construction schedule.

4. Key Schedule:

   a. After Keying Conference, provide keying schedule listing levels of keying as well as explanation of key system's function, key symbols used and door numbers controlled.
   b. Use ANSI/BHMA A156.28 “Recommended Practices for Keying Systems” as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
   c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
   d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
   e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion.
      1) Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.

   f. Prepare key schedule by or under supervision of supplier, detailing Owner’s final keying instructions for locks.

5. Templates: After final approval of hardware schedule, provide templates for doors, frames and other work specified to be factory or shop prepared for door hardware installation.

C. Informational Submittals:

1. Qualification Data: For Supplier, Installer and Architectural Hardware Consultant.
2. Product data for electrified door hardware:

   a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.

3. Certificates of Compliance:

a. UL listings for fire-rated hardware and installation instructions if requested by Architect or Authority Having Jurisdiction.
b. Installer Training Meeting Certification: Letter of compliance, signed by Contractor, attesting to completion of installer training meeting specified in "QUALITY ASSURANCE" article, herein.
c. Electrified Hardware Coordination Conference Certification: Letter of compliance, signed by Contractor, attesting to completion of electrified hardware coordination conference, specified in "QUALITY ASSURANCE" article, herein.

4. Warranty: Special warranty specified in this Section.

D. Closeout Submittals:

1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:

a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
b. Catalog pages for each product.
c. Factory order acknowledgement numbers (for warranty and service)
d. Name, address, and phone number of local representative for each manufacturer.
e. Parts list for each product.
f. Final approved hardware schedule, edited to reflect conditions as-installed.
g. Final keying schedule
h. Copies of floor plans with keying nomenclature
i. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.
j. Copy of warranties including appropriate reference numbers for manufacturers to identify project.

1.05 QUALITY ASSURANCE

A. Supplier Qualifications and Responsibilities: Recognized architectural hardware supplier with record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that provides certified Architectural Hardware Consultant (AHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.

1. Warehousing Facilities: In Project's vicinity.
2. Scheduling Responsibility: Preparation of door hardware and keying schedules.

B. Architectural Hardware Consultant Qualifications: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:

1. For door hardware, DHI-certified, Architectural Hardware Consultant (AHC).
2. Can provide installation and technical data to Architect and other related subcontractors.
3. Can inspect and verify components are in working order upon completion of installation.
4. Capable of producing wiring diagrams.
5. Capable of coordinating installation of electrified hardware with Architect and electrical engineers.

C. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

D. Fire-Rated Door Openings: Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed products tested by Underwriters Laboratories, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

E. Accessibility Requirements: For door hardware on doors in an accessible route, comply with governing accessibility regulations cited in “REFERENCES” article, herein.

F. Keying Conference

1. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:

a. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
b. Preliminary key system schematic diagram.
c. Requirements for key control system.
d. Requirements for access control.
e. Address for delivery of keys.

G. Pre-installation Conference

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Inspect and discuss preparatory work performed by other trades.
3. Inspect and discuss electrical roughing-in for electrified door hardware.
4. Review sequence of operation for each type of electrified door hardware.
5. Review required testing, inspecting, and certifying procedures.

H. Coordination Conferences:

1. Installation Coordination Conference: Prior to hardware installation, schedule and hold meeting to review questions or concerns related to proper installation and adjustment of door hardware.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site.

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

1. Deliver each article of hardware in manufacturer’s original packaging.

C. Project Conditions:

1. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
2. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

D. Protection and Damage:

1. Promptly replace products damaged during shipping.
2. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work.
3. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

E. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

F. Deliver keys and permanent cores to Owner by registered mail or overnight package service.

1.07 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

D. Existing Openings: Where existing doors, frames and/or hardware are to remain, field verify existing functions, conditions and preparations and coordinate to suit opening conditions and to provide proper door operation.

1.08 WARRANTY

A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Beginning from date of Substantial Completion, for durations indicated.

a. Closers:
1) Mechanical: 30 years.

b. Exit Devices:
1) Mechanical: 3 years.
2) Electrified: 1 year.

c. Locksets:
   1) Mechanical: 10 years.

d. Key Blanks: Lifetime

2. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.

1.09 MAINTENANCE

A. Maintenance Tools: Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

PRODUCTS

2.01 MANUFACTURERS

A. The Owner requires use of certain products for their unique characteristics, functionality and project suitability to insure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: “No Substitute.”

   1. Where “No Substitute” is noted, submittals and substitution requests for other products will not be considered.

B. Approval of manufacturers and/or products other than those listed as “Scheduled Manufacturer” or “Acceptable Manufacturers” in the individual article for the product category shall be in accordance with QUALITY ASSURANCE article, herein.

C. Approval of products from manufacturers indicated in “Acceptable Manufacturers” is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer’s product.

D. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

A. Fasteners

   1. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.
   2. Furnish screws for installation with each hardware item. Finish exposed (exposed under any condition) screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.

3. Provide concealed fasteners for hardware units exposed when door is closed except when no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless thru-bolts are required to fasten hardware securely. Review door specification and advise Architect if thru-bolts are required.
4. Install hardware with fasteners provided by hardware manufacturer.

B. Modification and Preparation of Existing Doors: Where existing door hardware is indicated to be removed and reinstalled.

1. Provide necessary fillers, Dutchmen, reinforcements, and fasteners, compatible with existing materials, as required for mounting new opening hardware and to cover existing door and frame preparations.
2. Use materials which match materials of adjacent modified areas.
3. When modifying existing fire-rated openings, provide materials permitted by NFPA 80 as required to maintain fire-rating.

C. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.

1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

2.03 HINGES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Ives 5BB series.
2. Acceptable Manufacturers and Products: Hager BB series, McKinney TA/T4A series, PBB BB series.

B. Requirements:

1. Provide hinges conforming to ANSI/BHMA A156.1.
2. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:

   a. Exterior: Heavy weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
   b. Interior: Heavy weight, steel, 4-1/2 inches (114 mm) high

3. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:

   a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
   b. Interior: Heavy weight, steel, 5 inches (127 mm) high

4. 2 inches or thicker doors:

   a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
   b. Interior: Heavy weight, steel, 5 inches (127 mm) high

5. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
6. Where new hinges are specified for existing doors or existing frames, provide new hinges of identical size to hinge preparation present in existing door or existing frame.

7. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

    a. Steel Hinges: Steel pins
    b. Non-Ferrous Hinges: Stainless steel pins
    c. Out-Swinging Exterior Doors: Non-removable pins
    d. Out-Swinging Interior Lockable Doors: Non-removable pins
    e. Interior Non-lockable Doors: Non-rising pins

8. Width of hinges: 4-1/2 inches (114 mm) at 1-3/4 inch (44 mm) thick doors, and 5 inches (127 mm) at 2 inches (51 mm) or thicker doors. Adjust hinge width as required for door, frame, and wall conditions to allow proper degree of opening.

2.04 CONTINUOUS HINGES

A. Aluminum Geared

1. Manufacturers:

    a. Scheduled Manufacturer: Ives.
    b. Acceptable Manufacturers: Select, Roton.

2. Requirements:

    a. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
    b. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
    c. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
    d. Provide hinges capable of supporting door weights up to 450 pounds and successfully tested for 1,500,000 cycles.
    e. On fire-rated doors, provide aluminum geared continuous hinges that are classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
    f. Install hinges with fasteners supplied by manufacturer.
    g. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.05 ELECTRIC POWER TRANSFER

A. Manufacturers:

    a. Scheduled Manufacturer: Von Duprin EPT-10.
    b. Acceptable Manufacturers: Precision ELR150 series, TownSteel TSPT.

B. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires sufficient to accommodate electric function of specified hardware.

C. Locate electric power transfer per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.

2.06 FLUSH BOLTS

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:

1. Provide automatic, constant latching, and manual flush bolts with forged bronze or stainless-steel face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch (305 mm) steel or brass rods at doors up to 90 inches (2286 mm) in height. For doors over 90 inches (2286 mm) in height increase top rods by 6 inches (152 mm) for each additional 6 inches (152 mm) of door height. Provide dust-proof strikes at each bottom flush bolt.

2.07 COORDINATORS

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:

1. Where pairs of doors are equipped with automatic flush bolts, an astragal, or other hardware that requires synchronized closing of the doors, provide bar-type coordinating device, surface applied to underside of stop at frame head.
2. Provide filler bar of correct length for unit to span entire width of opening, and appropriate brackets for parallel arm door closers, surface vertical rod exit device strikes or other stop mounted hardware. Factory-prepared coordinators for vertical rod devices as specified.

2.08 MORTISE LOCKS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Schlage L9000 series
2. Acceptable Manufacturers and Products: Best 45H series, TownSteel MSS series, Sargent 8200 series

B. Requirements:

1. Provide mortise locks conforming to ANSI/BHMA A156.13 Series 1000, Grade 1 Operational, Grade 1 Security, and manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance. Provide lock case that is multi-function and field reversible for handing without opening case. Cylinders: Refer to “KEYING” article, herein.

2. Provide locks with standard 2-3/4 inches (70 mm) backset with full 3/4 inch (19 mm) throw stainless steel mechanical anti-friction latchbolt. Provide deadbolt with full 1 inch (25 mm) throw, constructed of stainless steel.
3. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
4. Lever Trim: Solid brass, bronze, or stainless steel, cast or forged in design specified, with wrought roses and external lever spring cages. Provide thru-bolted levers with 2-piece spindles.
5. Locksets on doors to normally occupied spaces shall incorporate inside trim with visual Locked/Unlocked indicators.

    a. Lever Design: Schlage 06A.

2.09 EXIT DEVICES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Von Duprin 99 series.
2. Acceptable Manufacturers and Products: Precision Apex 2000 series, TownSteel ED1000 series.

B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to “KEYING” article, herein.
3. Provide touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
6. Provide flush end caps for exit devices.
7. Provide exit devices with manufacturer’s approved strikes.
8. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
9. All exit devices on doors to occupied spaces shall incorporate a “Locked/Unlocked” status indicator as part of the center case assembly.
10. Mount mechanism case flush on face of doors, or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
11. Provide cylindrical or hex-key dogging as specified at non fire-rated openings.
12. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
13. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
14. Provide electrified options as scheduled.
15. Top latch mounting: double or single tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
16. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

2.10 POWER SUPPLIES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Schlage/Von Duprin PS900 series.
2. Acceptable Manufacturers and Products: Precision ELR series, TownSteel PS series.

B. Requirements:

1. Provide power supplies approved by manufacturer of supplied electrified hardware.
2. Provide appropriate quantity of power supplies necessary for proper operation of electrified locking components as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams. Locate power supplies as directed by Architect.
3. Provide regulated and filtered 24 VDC power supply, and UL class 2 listed.
4. Provide power supplies with the following features:

   a. 12/24 VDC Output, field selectable.
   b. Class 2 Rated power limited output.
   c. Universal 120-240 VAC input.
   d. Low voltage DC, regulated and filtered.
   e. Polarized connector for distribution boards.
   f. Fused primary input.
   g. AC input and DC output monitoring circuit w/LED indicators.
   h. Cover mounted AC Input indication.
   i. Tested and certified to meet UL294.
   j. NEMA 1 enclosure.
   k. Hinged cover w/lock down screws.
   l. High voltage protective cover.

2.11 CYLINDERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Schlage FSIC.

B. Requirements:

1. Provide cylinders/cores, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer's series as indicated. Refer to "KEYING" article, herein.
2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.

   a. Conventional cylinder with large format interchangeable core (FSIC).

C. Construction Keying:

1. Replaceable Keyed Construction Cores.

a. Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
   1) 3 construction control keys
   2) 12 construction change (day) keys.

b. Owner or Owner's Representative will replace temporary construction cores with permanent cores.

2.12 KEYING

A. Scheduled System:

1. Existing Schlage factory registered system:

   a. Provide cylinders/cores keyed into Owner's existing factory registered keying system. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Requirements:

1. Construction Keying:

   a. Replaceable Construction Cores
      1) Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
         a) 3 construction control keys
         b) 12 construction change (day) keys.
      2) Owner or Owner's Representative will replace temporary construction cores with permanent cores.

2. Permanent Keying:

   a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.
      1) Master Keying system as directed by the Owner.

   b. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
   c. Provide keys with the following features:
      1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
      2) Patent Protection: Keys and blanks protected by one or more utility patent(s).

   d. Identification:
      1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
      2) Identification stamping provisions must be approved by the Architect and Owner.
      3) Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.

4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.

e. Quantity: Furnish in the following quantities.
1) Change (Day) Keys: 3 per cylinder/core.
2) Permanent Control Keys: 3.
3) Master Keys: 6.

2.13 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: LCN 4010/4110/4020 series.
2. Acceptable Manufacturers and Products: Sargent 281 series less PRV, Townsteel TDC40 series.

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. Certify surface mounted mechanical closers to meet fifteen million (15,000,000) full load cycles. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
3. Cylinder Body: 1-1/2 inch (38 mm) diameter with 11/16 inch (17 mm) diameter double heat-treated pinion journal.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers. When closers are parallel arm mounted, provide closers which mount within 6-inch (152 mm) top rail without use of mounting plate so that closer is not visible through vision panel from pull side.
8. Pressure Relief Valve (PRV) Technology: Not permitted.
9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI/BHMA Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.14 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:

1. Provide kick plates, mop plates, and armor plates minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
2. Sizes of plates:

   a. Kick Plates: 10 inches (254 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs.
   b. Mop Plates: 4 inches (102 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs.
   c. Armor Plates: 36 inches (914 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs.

2.15 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide convex type where mortise type locks are used and concave type where cylindrical type locks are used.
2. Where a wall stop cannot be used, provide universal floor stops for low or high rise options.
3. Where wall or floor stop cannot be used, provide medium duty surface mounted overhead stop.

2.16 OVERHEAD STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer: Glynn Johnson.
2. Acceptable manufacturers: Rixson, ABH.

B. Requirements:

1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.
2. Provide friction type at non-rated doors without closer and positive type at doors with closer.

2.17 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer: Zero International, National Guard Products.
2. Acceptable Manufacturers: Pemko, Reese.

B. Requirements:

1. Provide thresholds, weather-stripping (including door sweeps, seals, and astragals) and gasketing systems (including smoke, sound, and light) as specified and per architectural details. Match finish of other items.
2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
3. Size of thresholds:

   a. Saddle Thresholds: 1/2 inch (13 mm) high by jamb width by door width, unless otherwise noted.
   b. Bumper Seal Thresholds: 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width of doors on pairs.

4. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
5. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.

2.18 FINISHES

A. Finish: BHMA 626/652 (US26D); except:

1. Hinges at Exterior Doors: BHMA 630 (US32D)
2. Continuous Hinges: BHMA 628 (US28)
3. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
4. Protection Plates: BHMA 630 (US32D)
5. Overhead Stops and Holders: BHMA 630 (US32D)
6. Door Closers: Powder Coat to Match
7. Wall Stops: BHMA 630 (US32D)
8. Weatherstripping: Clear Anodized Aluminum
9. Thresholds: Mill Finish Aluminum

EXECUTION

3.01 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Field verify existing doors and frames receiving new hardware and existing conditions receiving new openings. Verify that new hardware is compatible with existing door and frame preparation and existing conditions.

C. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Where on-site modification of doors and frames is required:

1. Carefully remove existing door hardware and components being reused. Clean, protect, tag, and store in accordance with storage and handling requirements specified herein.
2. Field modify and prepare existing door and frame for new hardware being installed.
3. When modifications are exposed to view, use concealed fasteners, when possible.
4. Prepare hardware locations and reinstall in accordance with installation requirements for new door hardware and with:

    a. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
    b. Wood Doors: DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."
    c. Doors in rated assemblies: NFPA 80 for restrictions on on-site door hardware preparation.

3.03 INSTALLATION

A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

C. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

D. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

F. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

G. Lock Cylinders: Install construction cores to secure building and areas during construction period.

1. Replace construction cores with permanent cores as indicated in keying section.

H. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

3.04 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, Installer's Architectural Hardware Consultant must examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.05 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.06 DOOR HARDWARE SCHEDULE

A. Hardware items are referenced in the following hardware. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.

B. Hardware Sets:

Abbreviation	Name
GLY	Glynn-Johnson Corp
IVE	H.B. Ives
LCN	LCN Commercial Division
NGP	National Guard Products Inc
ROC	Rockwood Manufacturing Co.
SCH	Schlage Lock Company
VON	Von Duprin
ZER	Zero International Inc

Legend:
Link to catalog cut sheet
Electrified Opening

Hardware Group No. 01

For use on Door #(s):
1-1
Provide each DE door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
2	EA	CONT. HINGE	224XY			628	IVE
2	EA	FIRE EXIT HARDWARE	9927-EO-F-LBR-499F			626	VON
2	EA	SURFACE CLOSER	4111 EDA TBWMS			689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS			630	IVE
2	EA	MAGNET	SEM7830 12V/24V/120V			689	LCN
1	EA	GASKETING	488SBK PSA			BK	ZER
2	EA	MEETING STILE	8194AA			AA	ZER

DOORS NORMALLY HELD OPEN BY WALL MAGNETS.
FURNISH MANUFACTURER'S APPROVED ARMATURE EXTENSIONS AS REQUIRED TO ENSURE CONTACT BETWEEN WALL MAGNET AND DOOR ARMATURE WITHOUT MODIFICATION.
AUTOMATIC RELEASE UPON SMOKE/FIRE ALARM ACTIVATION.

Hardware Group No. 02

For use on Door #(s):
134 136
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PRIVACY W/INDICATOR	L9440 06A 09-544 OS-OCC		626	SCH
1	EA	SURFACE CLOSER	4011 TBWMS		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 03

For use on Door #(s):
135
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	STOREROOM LOCK	L9080T 06A		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4111 CUSH TBWMS		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 04

For use on Door #(s):
137
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	OFFICE/ENTRY LOCK W/ INSIDE INDICATOR	L9050T 06A 09-544 IS-LOC		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4011 TBWMS		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER
1	EA	THRESHOLD ASSEMBLY	8133 WS X 8146 X 139A X 8145 10-24 MS-LA X 8168N X 8139 10-24 MS-LA		AL	NGP

Hardware Group No. 05

For use on Door #(s):
137-A
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	L9080T 06A		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	OH STOP	450S		630	GLY
1	EA	SURFACE CLOSER	4011 TBWMS		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 06

For use on Door #(s):
137-B 138.1-A
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CYL X TURN DEAD LOCK	L460T 09-544		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	CYLINDER PULL	90		626	ROC
1	EA	SURFACE CLOSER	4111 EDA TBWMS		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 07

For use on Door #(s):
137.1
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PRIVACY W/INDICATOR	L9440 06A 09-544 OS-OCC		626	SCH
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 08

For use on Door #(s):
138-C 138
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	224XY		628	IVE
1	EA	FIRE RATED REMOVABLE MULLION	KR9954		689	VON
1	EA	FIRE EXIT HARDWARE	99-EO-F		626	VON
1	EA	FIRE EXIT HARDWARE	99-L-F-06		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	MORTISE CYLINDER	20-059 X K510-730		626	SCH
2	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4111 CUSH TBWMS		689	LCN
1	EA	SURFACE CLOSER	4111 EDA TBWMS		689	LCN
2	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	MAGNET	SEM7850 12V/24V/120V	✓	689	LCN
1	EA	GASKETING	488SBK PSA		BK	ZER
2	EA	MEETING STILE	8194AA		AA	ZER
1	EA	THRESHOLD ASSEMBLY	8133 WS X 8146 X 139A X 8145 10-24 MS-LA X 8168N X 8139 10-24 MS-LA		AL	NGP

LHR LEAF @ DR. 138, RHR LEAF @ DR. 138-B CAN BE HELD OPEN BY WALL MAGNET. AUTOMATIC RELEASE UPON SMOKE/FIRE ALARM ACTIVATION.

Hardware Group No. 09

For use on Door #(s):
138.1
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	CONST LATCHING BOLT	FB61P		630	IVE
1	EA	DUST PROOF STRIKE	DP2		626	IVE
1	EA	STOREROOM LOCK	L9080T 06A		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	COORDINATOR	COR7G		626	IVE
2	EA	OH STOP	90S		630	GLY
2	EA	SURFACE CLOSER	4011 TBWMS		689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER
2	EA	MEETING STILE	8194AA		AA	ZER
1	EA	THRESHOLD ASSEMBLY	8139 X 8168N X 8144 X 8133		AL	NGP

Hardware Group No. 10

For use on Door #(s):
138-A 138-B
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	224XY		628	IVE
1	EA	FIRE EXIT HARDWARE	99-L-F-06		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4111 EDA TBWMS		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	MAGNET	SEM7850 12V/24V/120V	✓	689	LCN
1	EA	GASKETING	488SBK PSA		BK	ZER
1	EA	THRESHOLD ASSEMBLY	8133 WS X 8146 X 139A X 8145 10-24 MS-LA X 8168N X 8139 10-24 MS-LA		AL	NGP

Hardware Group No. 11

For use on Door #(s):
138-D
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112XY EPT		628	IVE
2	EA	POWER TRANSFER	EPT10		689	VON
1	EA	REMOVABLE MULLION	KR4954 STAB		689	VON
1	EA	ELEC PANIC HARDWARE	CD-RX-99-DT		626	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-99-NL 24 VDC		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	MORTISE CYLINDER	20-059 X K510-730		626	SCH
1	EA	MORTISE CYLINDER	20-091 ICX K510-730 XQ11-948		626	SCH
3	EA	FSIC CORE	23-030		626	SCH
2	EA	SURFACE CLOSER	4111 SCUSH		689	LCN
2	EA	CUSH SHOE SUPPORT	4110-30 SRT		689	LCN
1	EA	MULLION SEAL	8780NBK PSA		BK	ZER
1	EA	GASKETING	BY DOOR & FRAME MFR.			
1	EA	INTEGRAL ADJ. ASTRAGAL	BY DOOR MFR.		AL	
2	EA	INTEGRAL ADJ. DOOR BOTTOM	BY DOOR MFR.		AL	
1	EA	THRESHOLD ASSEMBLY	322 X TH X 355 X 322		AL	NGP
1	EA	CREDENTIAL READER	BY SECURITY CONTRACTOR			
2	EA	DOOR CONTACT	BY SECURITY CONTRACTOR			
1	EA	POWER SUPPLY	PS902 900-2RS 900-BBK 120/240 VAC			VON

THEORY OF OPERATION:
DOORS NORMALLY LOCKED.
PROPER CREDENTIAL TO READER RETRACTS LATCH ON ACTIVE (RHR) LEAF.
FREE EGRESS AT ALL TIMES.
DOOR REMAINS LOCKED UPON LOSS OF POWER (FAIL SECURE).

Hardware Group No. 12

For use on Door #(s):
138-E
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112XY		628	IVE
1	EA	REMOVABLE MULLION	KR4954 STAB		689	VON
1	EA	PANIC HARDWARE	CD-99-EO		626	VON
1	EA	PANIC HARDWARE	CD-99-NL		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	MORTISE CYLINDER	20-059 X K510-730		626	SCH
2	EA	MORTISE CYLINDER	20-091 ICX K510-730 XQ11-948		626	SCH
4	EA	FSIC CORE	23-030		626	SCH
2	EA	SURFACE CLOSER	4111 SCUSH		689	LCN
2	EA	CUSH SHOE SUPPORT	4110-30 SRT		689	LCN
1	EA	MULLION SEAL	8780NBK PSA		BK	ZER
1	EA	GASKETING	BY DOOR & FRAME MFR.			
1	EA	INTEGRAL ADJ. ASTRAGAL	BY DOOR MFR.		AL	
2	EA	INTEGRAL ADJ. DOOR BOTTOM	BY DOOR MFR.		AL	
1	EA	THRESHOLD ASSEMBLY	322 X TH X 355 X 322		AL	NGP
2	EA	DOOR CONTACT	BY SECURITY CONTRACTOR			

Hardware Group No. 13

For use on Door #(s):
138.3
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PRIVACY W/INDICATOR	L9440 06A 09-544 OS-OCC		626	SCH
1	EA	SURFACE CLOSER	4011 TBWMS		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 14

For use on Door #(s):
139
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	OFFICE/ENTRY LOCK W/ INSIDE INDICATOR	L9050T 06A 09-544 IS-LOC		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4011 TBWMS		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 15

For use on Door #(s):
G-1
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	224XY		628	IVE
1	EA	FIRE EXIT HARDWARE	9927-EO-F-LBR-499F		626	VON
1	EA	FIRE EXIT HARDWARE	9927-L-F-LBRAFL-06-499F		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
2	EA	SURFACE CLOSER	4111 EDA		689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS		630	IVE
1	EA	MAGNET	SEM7820 12V/24V/120V	✓	689	LCN
1	EA	MAGNET	SEM7830 12V/24V/120V	✓	689	LCN
1	EA	GASKETING	488SBK PSA		BK	ZER
2	EA	MEETING STILE	8194AA		AA	ZER

DOORS NORMALLY HELD OPEN BY WALL/FLOOR MAGNETS.
AUTOMATIC RELEASE UPON SMOKE/FIRE ALARM ACTIVATION.

Hardware Group No. 16

For use on Door #(s):
G14 G15
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CLASSROOM LOCK	L9070T 06A		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4111 EDA TBWMS		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 17

For use on Door #(s):
G17
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 5 X 4.5		652	IVE
1	EA	OFFICE/ENTRY LOCK W/ INSIDE INDICATOR	L9050T 06A 09-544 IS-LOC		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4011 TBWMS		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	SET	GASKETING	870AA-S		AA	ZER
1	EA	DOOR BOTTOM	364AA		AA	ZER

Hardware Group No. 18

For use on Door #(s):
G17.1
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	STOREROOM LOCK	L9080T 06A		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4111 EDA TBWMS		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER
1	EA	THRESHOLD ASSEMBLY	8139 X 8168N X 8144 X 8133		AL	NGP

Hardware Group No. 19

For use on Door #(s):
ST-1
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	027XY EPT		628	IVE
2	EA	POWER TRANSFER	EPT10		689	VON
1	EA	REMOVABLE MULLION	KR4954 STAB		689	VON
1	EA	ELEC PANIC HARDWARE	CD-RX-99-EO		626	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-99-NL-OP-110MD 24 VDC		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	MORTISE CYLINDER	20-059 X K510-730		626	SCH
1	EA	MORTISE CYLINDER	20-091 ICX K510-730 XQ11-948		626	SCH
3	EA	FSIC CORE	23-030		626	SCH
2	EA	90 DEG OFFSET PULL	8190EZHD 10" STD		630-316	IVE
2	EA	SURFACE CLOSER	4111 SCUSH		689	LCN
2	EA	CUSH SHOE SUPPORT	4110-30 SRT		689	LCN
1	EA	MULLION SEAL	8780NBK PSA		BK	ZER
1	EA	GASKETING	BY DOOR & FRAME MFR.			
2	EA	DOOR SWEEP	8198AA		AA	ZER
1	EA	THRESHOLD ASSEMBLY	322 X TH X 355 X 322		AL	NGP
1	EA	CREDENTIAL READER	BY SECURITY CONTRACTOR			
2	EA	DOOR CONTACT	BY SECURITY CONTRACTOR			
1	EA	POWER SUPPLY	PS902 900-2RS 900-BBK 120/240 VAC			VON

THEORY OF OPERATION:
DOORS NORMALLY LOCKED.
PROPER CREDENTIAL TO READER RETRACTS LATCH ON ACTIVE (RHR) LEAF.
FREE EGRESS AT ALL TIMES.
DOOR REMAINS LOCKED UPON LOSS OF POWER (FAIL SECURE).

END OF SECTION

SECTION 088000 - GLAZING

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:

1. Windows (Factory glazed).
2. Doors.
3. Curtainwall and Entrance framing.
4. Interior borrowed lites.

B. Related Sections:

1. Division 08 Section "Hollow Metal Frames."
2. Division 08 Section “Aluminum-Framed Entrances and Curtainwall.”

1.3 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

C. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or a specified gas.

D. Deterioration of Coated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in metallic coating.

E. Deterioration of Insulating Glass: Failure of hermetic seal under normal use that is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

F. Deterioration of Laminated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1.4 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:

1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:

2. Design Wind Pressures: As indicated on Drawings.

3. Design Snow Loads: As indicated on Drawings.

4. Vertical Glazing: For glass surfaces sloped 15 degrees or less from vertical, provide glass to resist design wind pressure based on glass type factors for short-duration load.

5. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch (25 mm), whichever is less.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

D. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6.0 mm thick

2. For laminated-glass lites, properties are based on products of construction indicated.

3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.

4. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).

5. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.

6. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

1.5 PRECONSTRUCTION TESTING

A. Preconstruction Adhesion and Compatibility Testing: Test each glazing material type, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.

1. Testing will not be required if data is submitted based on previous testing of current sealant products and glazing materials matching those submitted.

2. Use ASTM C 1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.

3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.

4. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including the use of specially formulated primers.

1.6 ACTION SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. Glass Samples: As requested by the architect for each type of glass of the following products; 12 inches (300 mm) square.

1. Acid etched glass.

2. Coated glass.

3. Fire-protective glazing products.

4. Fire-resistive glazing products.

5. Laminated glass.

6. Insulating glass.

C. Glazing Schedule: Use same designations indicated on Drawings for glazing and glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For installers

B. Product Certificates: For glass and glazing products, from manufacturer.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for tinted glass, coated glass, insulating glass, glazing sealants and glazing gaskets.

1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.

D. Preconstruction adhesion and compatibility test report.

E. Warranties: Sample of special warranties.

1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.

B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

E. Source Limitations for Glass: Obtain glass from single source from single manufacturer for each glass type.

F. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

G. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. GANA Publications: GANA's "Laminated Glazing Reference Manual" and GANA's "Glazing Manual."

2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

H. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the manufacturer and SGCC. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

I. Fire-Protection-Rated Glazing Labeling: Permanently mark fire-protection-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, test standard, whether glazing is for use in fire doors or other openings, whether or not glazing passes hose-stream test, whether or not glazing has a temperature rise rating of 450 deg F (250 deg C), and the fire-resistance rating in minutes.

J. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.10 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or below 40 deg F (4.4 deg C).

1.11 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: **10 years** from date of Substantial Completion.

B. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form in which laminated-glass manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1. Warranty Period: **10 years** from date of Substantial Completion.

C. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: **10 years** from date of Substantial Completion.

2.0 PART 2 - PRODUCTS

2.1 GLASS PRODUCTS, GENERAL

A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.

1. Minimum Glass Thickness for Exterior Lites: Not less than 6.0 mm.

B. Strength: Where float glass is indicated, provide annealed float glass, Kind HS heat-treated float glass, or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened glass is indicated, provide Kind HS heat-treated float glass or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.

2.2 GLASS PRODUCTS

A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.

B. Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

C. Silicone-Coated Spandrel Glass: ASTM C 1048, Type I, Quality-Q3, and complying with other requirements specified.

1. Glass: Insulated glass units as specified – heat tempered

2. Silicone Coating Color: As selected by Architect from manufacturer's full range of standard colors.

2.3 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190, and complying with other requirements specified.

1. Sealing System: Dual seal, with manufacturer's standard primary and secondary. Silicone type for structural glazing.

2. Spacer: Manufacturer's standard warm-edge spacer material and construction.

3. Desiccant: Molecular sieve or silica gel, or blend of both.

B. Glass: Comply with applicable requirements in "Glass Products" Article as indicated by designations in "Insulating-Glass Types" Article.

2.4 FIRE-PROTECTION-RATED GLAZING

A. Fire-Protection-Rated Glazing, General: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252 for door assemblies and NFPA 257 for window assemblies.

B. Film-Faced Ceramic Glazing: Clear, ceramic flat glass; 3/16-inch (5-mm) nominal thickness; faced on one surface with a clear glazing film; fire-protection rated and impact safety-rated, complying with testing requirements in 16 CFR 1201 for Category I and II materials. Conforms to positive pressure standards and passes required hose stream test.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Basis-of- Design: Schott Pyran Platinum F.

b. Nippon Electric Glass Co., Ltd. (distributed by Technical Glass Products); FireLite NT

c. Safti First; SuperLite C/SP.

d. Vetrotech Saint-Gobain; SGG Keralite FR-F.

C. Laminated Ceramic Glazing: Multi-ply polished glass-ceramic with special interlayer, fire-protection rated and impact safety, 3/8" (9mm); complying with testing requirements in16 CFR 1201 for Category I and II materials. Conforms to positive pressure standards and passes required hose stream test. Fire rating up to 90 minutes (up to 180 minutes in doors) with hose stream test.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Basis-of-Design: Schott Pyran Platinum L

b. Vetrotech Saint-Gobain: Keralite Select FR-L

c. Technical Glass Products: Firelite Premium Plus.

2.5 FIRE-RESISTIVE-RATED GLAZING

A. Fire-Resistive-Rated Glazing, General: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-resistive ratings indicated, based on testing according to ASTM E-119 and NFPA 251 for temperature rise.

B. Laminated Glass with Intumescent Interlayers: Laminated glass made from multiple plies of uncoated, clear float glass; with intumescent interlayers; complying with testing requirements in 16 CFR 1201 for Category II materials.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Basis-of-Design Pilkington Group Limited (distributed by Technical Glass Products); PyroStop.

b. InterEdge, Inc., a subsidiary of AFG Industries, Inc.; Pyrobel.

c. Vetrotech Saint-Gobain; SGG Swissflam N2

2.6 GLAZING GASKETS

A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:

1. EPDM complying with ASTM C 864.

2. Silicone complying with ASTM C 1115.

3. Thermoplastic polyolefin rubber complying with ASTM C 1115.

B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned EPDM silicone or thermoplastic polyolefin rubber gaskets, compatible with glazing and complying with ASTM C 509, Type II, black; of profile and hardness required to maintain watertight seal.

1. Application: Use where soft compression gaskets will be compressed by inserting dense compression gaskets on opposite side of glazing or pressure applied by means of pressure-glazing stops on opposite side of glazing.

2.7 GLAZING SEALANTS

A. General:

1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.

3. Colors of Exposed Glazing Sealants: As indicated by manufacturer's designations.

B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Dow Corning Corporation; 790.

b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.

c. May National Associates, Inc.; Bondaflex Sil 290.

d. Pecora Corporation; 890.

e. Sika Corporation, Construction Products Division; SikaSil-C990.

f. Tremco Incorporated; Spectrem 1.

C. Glazing Sealants for Fire-Rated Glazing Products: Products that are approved by testing agencies that listed and labeled fire-resistant glazing products with which they are used for applications and fire-protection ratings indicated.

2.8 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with

or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:

1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.

2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

2.9 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Perimeter Insulation for Fire-Resistive Glazing: Product that is approved by testing agency that listed and labeled fire-resistant glazing product with which it is used for application and fire-protection rating indicated.

2.10 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.

C. Grind smooth and polish exposed glass edges and corners.

2.11 MONOLITHIC-GLASS TYPES

A. **Glass Type MG-1**: Clear fully tempered and laminated float glass.

1. Thickness: 6.0 mm

2. Type 1, Quality Q3: of class, kind, and condition indicated.

3. Provide safety glazing labeling.

2.12 INSULATING-GLASS TYPES

A. **Glass Type IG-1**: Low-e-coated, clear insulating glass, fully tempered.

1. Overall Unit Thickness: 1 inch (25 mm)

2. Thickness of Each Glass Lite: 6.0 mm

3. Outdoor Lite: Fully tempered float glass

4. Interspace Content: Argon.

5. Indoor Lite: Fully tempered float glass

6. Low-E Coating: Second surface.

7. Visible Light Transmittance: 68 percent minimum.

8. Winter Nighttime U-Factor: 0.25 maximum.

9. Solar Heat Gain Coefficient: 0.38 maximum.

10. Provide safety glazing labeling.

11. Acceptable Products: Guardian SunGuard SN-68, PPG Solarban 60, or approved equal.

B. **Glass Type IG-2 (Diffusing)**: Low-e-coated, clear insulating glass, fully tempered with light diffusing insulated capillary slab and glass fiber tissue.

1. Overall Unit Thickness: 1 inch (25 mm)

2. Thickness of Each Glass Lite: 6.0 mm

3. Outdoor Lite: Fully tempered float glass

4. Interspace Content: Argon.

5. Indoor Lite: Fully tempered float glass

6. Low-E Coating: Second surface.

7. Cavity: UV stable, capillary slab encsed in SAB fiber tissue. Capillaries are not to exceed 3mm diameter to assure proper diffusion. (Design Make: Okalux)

8. Visible Light Transmittance: 48 percent minimum.

9. Winter Nighttime U-Factor: 0.44 btu/hr/F basd upon 1” Okalux.

10. Solar Heat Gain Coefficient: 0.45 maximum.

11. Provide safety glazing labeling.

12. Acceptable Products: Guardian SunGuard SN-68, PPG Solarban 60, or approved equal. Okalux North America, LLC

C. **Spandrel Glass Type SP-1:** Silicone-coated, low-e, insulating spandrel glass.

1. Overall Unit Thickness: 1 inch (25 mm)

2. Thickness of Each Glass Lite: 6.0 mm

3. Outdoor Lite: Heat-strengthened float glass

4. Interspace Content: Argon.

5. Indoor Lite: Heat-strengthened float glass

6. Low-E Coating: Pyrolytic on second surface.

7. Opaque Coating Location: Fourth surface.

8. Winter Nighttime U-Factor: 0.24 maximum.

9. Summer Daytime U-Factor: maximum.

2.13 INSULATING SECURITY-GLASS TYPES

A. **Glass Type SG-1:** Low-e-coated, insulating glass, fully tempered and laminated to comply with Shooter/Attach Resistant Security requirements.

1. Overall Unit Thickness: 1 inch (25 mm)

2. Thickness of Each Glass Lite: 6.0 mm unless indicated otherwise.

3. Outdoor Lite: Laminated glass comprised of interlayer sandwiched by two panes of optically clear tempered glass.

a. Only surface applied films clearly identified to achieve a specified level of performance my be considered.

b. Overall laminated pane thickness: 5/16-inch.

4. Interspace Content: Argon.

5. Indoor Lite: Fully tempered float glass

6. Low-E Coating: Second surface.

7. Visible Light Transmittance: 68 percent minimum.

8. Winter Nighttime U-Factor: 0.25 maximum.

9. Solar Heat Gain Coefficient: 0.38 maximum.

10. Provide security / safety glazing labeling.

11. Testing and Certified Performance Requirements

    a. FTD-SA Standard for Shooter Attack certification Class 6.

    b. ASTM F3561 Standar Test Method for Forced-Entry-Resistance of Fenestration Systems After Simulated Active Shooter Attack Resistance Level 3.

12. Acceptable Products: **Armoured One Shooter Attack Glass**, or approved equal.

2.14 FIRE-PROTECTION-RATED GLAZING TYPES

A. **Glass Type FRG-1**: Up to 45-minute fire-rated glazing; film-faced ceramic glazing.

1. Provide safety glazing labeling.

B. **Glass Type FRG-2**: Up to 90-minute fire-rated glazing; film-faced ceramic glazing.

1. Provide safety glazing labeling.

3.0 PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.

2. Presence and functioning of weep systems.

3. Minimum required face and edge clearances.

4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that will leave visible marks in the completed work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.

2. Provide 1/8-inch (3-mm) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

J. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

K. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

L. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.

D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 088000

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Non-load-bearing steel framing systems for interior gypsum board assemblies.

2. Suspension systems for interior gypsum ceilings, soffits, and grid systems.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATION SUBMITTALS

A. Evaluation Reports: For firestop tracks, from ICC-ES.

2.0 PART 2 - PRODUCTS

2.1 DESCRIPTION

A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 FRAMING SYSTEMS

A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.

2. Protective Coating: ASTM A 653/A 653M, G40 (Z120), hot-dip galvanized, unless otherwise indicated.

B. Studs and Runners: ASTM C 645.

1. Steel Studs and Runners:

a. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm).

b. Depth: As indicated on Drawings.

C. Slip-Type Head Joints: Where indicated, provide one of the following:

1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch- (51-mm-) deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within 12 inches (305 mm) of the top of studs to provide lateral bracing.

2. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch- (51-mm-) deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.

3. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1) Dietrich Metal Framing; Max Trak (SLT) Slotted Deflection Track.

2) MBA Building Supplies; Slotted Deflecto Track.

3) Steel Network Inc. (The); VertiTrack VTD Series.

4) Superior Metal Trim; Superior Flex Track System (SFT).

5) Telling Industries; Vertical Slip Track.

D. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Fire Trak Corp.; Fire Trak System attached to studs with Fire Trak Posi Klip.

b. Grace Construction Products; FlameSafe FlowTrak System.

c. Metal-Lite, Inc.; The System.

E. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm).

F. Cold-Rolled Channel Bridging: Steel, 0.053-inch (1.34-mm) minimum base-metal thickness, with minimum 1/2-inch- (13-mm-) wide flanges.

1. Depth: As indicated on Drawings.

2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches (38 by 38 mm), 0.068-inch- (1.72-mm-) thick, galvanized steel.

G. Hat-Shaped, Rigid Furring Channels: ASTM C 645.

1. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm).

2. Depth: As indicated on Drawings.

H. Resilient Furring Channels: 1/2-inch- (13-mm-) deep, steel sheet members designed to reduce sound transmission.

1. Configuration: Asymmetrical or hat shaped.

I. Cold-Rolled Furring Channels: 0.053-inch (1.34-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges.

1. Depth: As indicated on Drawings.

J. Z-Shaped Furring: With slotted or non-slotted web, face flange of 1-1/4 inches (31.8 mm), wall attachment flange of 7/8 inch (22 mm), minimum uncoated-metal thickness of 0.018 inch (0.45 mm), and depth required to fit insulation thickness indicated.

2.3 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.

B. Hanger Attachments to Concrete:

1. Anchors: Fabricated from corrosion-resistant materials with holes or loops for attaching wire hangers and capable of sustaining, without failure, a load equal to 5 times that imposed by construction as determined by testing according to ASTM E 488 by an independent testing agency.

a. Type: Post-installed, expansion anchor.

2. Powder-Actuated Fasteners: Suitable for application indicated, fabricated from corrosion-resistant materials with clips or other devices for attaching hangers of type indicated, and capable of sustaining, without failure, a load equal to 10 times that imposed by construction as determined by testing according to ASTM E 1190 by an independent testing agency.

C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch (4.12 mm) in diameter.

D. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.053 inch (1.34 mm) and minimum 1/2-inch- (13-mm-) wide flanges.

1. Depth: As indicated on Drawings.

E. Furring Channels (Furring Members):

1. Cold-Rolled Channels: 0.053-inch (1.34-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges, 3/4 inch (19 mm) deep.

2. Steel Studs and Runners: ASTM C 645.

a. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm).

b. Depth: As indicated on Drawings.

3. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch (22 mm) deep.

a. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm).

4. Resilient Furring Channels: 1/2-inch- (13-mm-) deep members designed to reduce sound transmission.

a. Configuration: Asymmetrical or hat shaped.

2.4 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

B. Isolation Strip at Exterior Walls: Provide one of the following:

1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), non-perforated.

2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit steel stud size.

3.0 PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.

3.3 INSTALLATION, GENERAL

A. Installation Standard: ASTM C 754, except comply with framing sizes and spacing indicated.

1. Gypsum Veneer Plaster Assemblies: Also comply with requirements in ASTM C 844 that apply to framing installation.

2. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.

B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

C. Install bracing at terminations in assemblies.

D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 INSTALLING FRAMED ASSEMBLIES

A. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

B. Install studs so flanges within framing system point in same direction.

1. Space studs as follows:

a. Single-Layer Application: 16 inches (406 mm) 400 mm o.c. unless otherwise indicated.

b. Multilayer Application: 16 inches (406 mm) 400 mm o.c. unless otherwise indicated.

c. Tile Backing Panels: 16 inches (406 mm) 400 mm o.c. unless otherwise indicated.

C. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.

2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.

    a. Install two studs at each jamb unless otherwise indicated.

    b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (13-mm) clearance from jamb stud to allow for installation of control joint in finished assembly.

    c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.

4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.

    a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.

5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.

D. Direct Furring:

1. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.

E. Z-Furring Members:

1. Erect insulation (specified in Division 07 Section "Thermal Insulation") vertically and hold in place with Z-furring members spaced 24 inches (610 mm) o.c., unless noted otherwise.

2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.

3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches (305 mm) from corner and cut insulation to fit.

F. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

3.5 INSTALLING SUSPENSION SYSTEMS

A. Install suspension system components in sizes and spacings indicated on Drawings, but not less than those required by referenced installation standards for assembly types and other assembly components indicated.

B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. Suspend hangers from building structure as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.

3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.

4. Do not attach hangers to steel roof deck.

5. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.

6. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.

7. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.

E. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 092900 - GYPSUM BOARD

1.0 PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Interior gypsum board.

2. Tile backing panels.

B. Related Requirements:

1. Section 06, "Sheathing" for gypsum sheathing for exterior walls.

2. Section 09, "Non-Structural Metal Framing" for non-structural framing and suspension systems that support gypsum board panels.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.

2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

2.0 PART 2 – PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

C. Low-Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 INTERIOR GYPSUM BOARD

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. American Gypsum.
2. CertainTeed Corp.
3. Georgia-Pacific Gypsum LLC.
4. National Gypsum Company.
5. USG Corporation.

B. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch (15.9 mm).
2. Long Edges: Tapered.

C. Abuse-Resistant Gypsum Board: ASTM C 1629/C 1629M, Level 3.

1. Core: 5/8 inch (15.9 mm), Type X.
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

D. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.

1. Core: 5/8 inch (15.9 mm), Type X.

2. Long Edges: Tapered.

3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.3 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 and ASTM C1288 or ASTM C13125, with manufacturer's standard edges.

1. Thickness: 5/8 inch.

2. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

B. Water-Resistant Gypsum Backing Board: ASTM C1396/C1396M, with manufacturer's standard edges.

1. Core: 5/8 inch, Type X.

2.4 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.

2. Shapes (as indicated on Drawings):

a. Cornerbead.

b. LC-Bead: J-shaped; exposed long flange receives joint compound.

c. L-Bead: L-shaped; exposed long flange receives joint compound.

d. U-Bead: J-shaped; exposed short flange does not receive joint compound.

e. Expansion (control) joint.

B. Exterior Trim: ASTM C 1047.

1. Material: Hot-dip galvanized steel sheet.

2. Shapes:

a. Cornerbead.

b. LC-Bead: J-shaped; exposed long flange receives joint compound.

c. Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening.

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.

2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.

a. Use setting-type compound for installing paper-faced metal trim accessories.

3. Fill Coat: For second coat, use drying-type, all-purpose compound.

4. Finish Coat: For third coat, use drying-type, all-purpose compound.

D. Joint Compound for Exterior Applications:

1. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting-type, sandable topping compound.

2.6 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.

D. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

E. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound

transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Accumetric LLC; BOSS 824 Acoustical Sound Sealant.

   b. Grabber Construction Products; Acoustical Sealant GSC.

   c. Pecora Corporation; AC-20 FTR

   d. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.

   e. USG Corporation; SHEETROCK Acoustical Sealant.

3.0 PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.

2. Fit gypsum panels around ducts, pipes, and conduits.

3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Wallboard Type: As indicated on Drawings.

2. Type X: Where required for fire-resistance-rated assembly and as indicated on Drawings.

3. Abuse-Resistant Type: As indicated on Drawings.

4. Moisture- and Mold-Resistant Type: As indicated on Drawings.

B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.

2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

a. Stagger abutting end joints not less than one framing member in alternate courses of panels.

b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.

3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.

4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches (400 mm) minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.

2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.

3. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.

4. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

D. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

3.4 APPLYING EXTERIOR GYPSUM PANELS FOR CEILINGS AND SOFFITS

A. Apply panels perpendicular to supports, with end joints staggered and located over supports.

1. Install with 1/4-inch (6.4-mm) open space where panels abut other construction or structural penetrations.

2. Fasten with corrosion-resistant screws.

3.5 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners, unless otherwise indicated.

2. LC-Bead: Use at exposed panel edges.

3. L-Bead: Use where indicated.

4. U-Bead: Use where indicated.

D. Exterior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners.

2. LC-Bead: Use at exposed panel edges.

3.6 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.

2. Level 2: N/A

3. Level 3: N/A

4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.

a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

3.7 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.

2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 093000 - CERAMIC TILE

1.0 PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Tile for Floor Applications.
2. Tile for Wall Applications.
3. Non-Ceramic Trim.
4. Ceramic Trim.
5. Setting Materials, Grouts, Maintenance Materials &Accessory Materials.
6. Waterproofing Membrane.
7. Crack Isolation Membrane.
8. Stone Thresholds.

B. Related Sections include the following:

1. Division 3 Section 035416 “Hydraulic Cement Underlayment”.
2. Division 7 Section 079200 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
3. Division 9 Section 092900 "Gypsum Board " for cementitious backer units.

1.3 REFERENCE STANDARDS

A. ANSI A108/A118/A136.1 – American National Standard Specifications for the Installation of Ceramic Tile (Compendium): 2022. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.2, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, ANSI A108.17, ANSI A118.3, ANSI A118.4, ANSI A118.7, ANSI A118.9, ANSI A118.10, ANSI A118.12,

ANSI A118.13, ANSI A118.15, ANSI A137.1, and ANSI A326.3 which are contained in "American National Standard Specifications for Installation of Ceramic Tile."

C. EJ171: Movement Joint Guidelines for Ceramic, Glass and Stone; Current Edition.

D. TCNA (HB): Handbook for Ceramic, Glass and Stone Tile Installation; 2019.

E. Module Size: Actual tile size (minor facial dimension as measured per ASTM C 499) plus joint width indicated.

F. Facial Dimension: Actual tile size (minor facial dimension as measured per ASTM C 499).

1.4 PERFORMANCE REQUIREMENTS

A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ANSI A326.3:

1. Level Surfaces: Minimum 0.42.

2. Step Treads: Minimum 0.42.

3. Ramp Surfaces: Minimum 0.8.

1.5 SUBMITTALS

A. See Section 013300 Submittal Procedures for submittal procedures.

B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout and accessories.

C. Shop Drawings: Indicate tile layout, pattern, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, setting details and non-ceramic trim.

D. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.

E. Samples for Verification:

1. Full-size units of each type and composition of tile and for each color and finish required.

2. Full-size units of each type of trim and accessory for each color and finish required.

3. Stone thresholds in 6-inch (150-mm) lengths.

4. Metal edge strips in 6-inch (150-mm) lengths.

F. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and installer.

G. Product Certificates: For each type of product, signed by product manufacturer.

H. Material Test Reports: For each tile-setting and –grouting product and special-purpose tile.

I. Qualification Data: For qualified Installer.

J. Maintenance Data: Include recommended cleaning methods, cleaning materials and stain removal methods.

K. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. Extra Tile: 5 percent of each size, color and surface finish combination but not less than 25 SF of each type.

a. Extra materials that match and are from same production runs as products installed and are packaged with protective covering for storage and identified with labels describing content.

2. Grout: Furnish quantity of grout equal to 5 percent of amount installed for each type, composition and color indicated.

1.6 QUALITY ASSURANCE

A. Maintain one copy of ANSI A108/A118/A136 and TCNA (HB) on site.

B. Source Limitations for Tile: Obtain all tile of same type and color or finish from one source or producer.

1. Obtain tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.

C. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

D. Source Limitations for Other Products: Obtain each of the following products specified in this Section through one source from a single manufacturer for each product:

1. Stone thresholds.

2. Joint sealants.

E. Installer Qualifications

1. Company specializing in performing tile installations with minimum of five years of documented experience.

2. Accredited Five-Star member of the National Tile Contractors Association (NTCA) or Trowel of Excellence member of the Tile Contractors' Association of America (TCAA).

F. Installer Certification:

1. Ceramic Tile Education Foundation (CTEF): Certified Tile Installer (CTI).

2. Apprenticeship Program: Installer has achieved Journeyworker status through an apprenticeship from the International Union of Bricklayers and Allied Craftworkers (IUBAC) or a U.S. Department of Labor (DOL) recognized program.

3. Advanced Certifications for Tile Installers (ACT): Certification in the installation of membranes, mortar bed (mud) floors, mortar (mud) walls, shower receptors, large format tile, gauged porcelain tile/panels/slabs, and grouts.

4. International Masonry Training and Education Foundation (IMTEF): Supervisor Certification Program (SCP).

5. Warranty: Installer of work contained in this Section to warrant installation for minimum of 1 year from date of completion for defects in workmanship.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Store liquid latexes and emulsion adhesives in unopened containers and protected from freezing.

E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size indicated but not less than one box.

2.0 PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:

1. Basis-of-Design Product: The design for each tile type is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

1. Provide tile complying with Standard grade requirements unless otherwise indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.

C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

1. Where tile is indicated for installation **in wet areas**, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

E. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.3 TILE PRODUCTS

A. Glazed Wall Tile Type **(GCT-1):** ANSI A137.1, standard grade.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Basis-of-Design Product: Subject to compliance with requirements, provide products by one of the following:

        a. Crossville Tile, Color Perspectives

        b. Or approved equal

2. Moisture Absorption: 15 to 19 percent as tested in accordance with ASTM C373.

3. Module Size: 4 by 12 inches

4. Face Size Variation: Rectified.

5. Thickness: 1/4 inch (6.35 mm).

6. Face: Plain with bevel edges

7. Finish: Gloss

8. Tile Color and Pattern: As indicated on finish schedule

9. Grout Color: As selected by Architect from manufacturer's full range

10. Trim Units: See section 2.9 metal edge strips.

B. Glazed Wall Tile Type **(GCT-2):** ANSI A137.1, standard grade.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Basis-of-Design Product: Subject to compliance with requirements, provide products by one of the following:

        a. Crossville Tile, Color Perspectives

        b. Or approved equal

2. Moisture Absorption: 15 to 19 percent as tested in accordance with ASTM C373.

3. Module Size: 4 by 12 inches

4. Face Size Variation: Rectified.

5. Thickness: 1/4 inch (6.35 mm).

6. Face: Plain with bevel edges

7. Finish: Gloss

8. Tile Color and Pattern: As indicated on finish schedule

9. Grout Color: As selected by Architect from manufacturer's full range

10. Trim Units: See section 2.9 metal edge strips.

C. Tile Type (**PCT-1**): Porcelain Wall Tile. ANSI A137.1, standard grade.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Basis-of-Design Product: Subject to compliance with requirements, provide products by one of the following:

      a. Crossville Tile, Argent 2.0

      b. Or approved equal

2. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.

3. Module Size: 12 by 24 inches

4. Face Size Variation: Rectified.

5. Thickness: 3/8 inch (9.5 mm).

6. Face: Plain with square or cushion edges.

7. Finish: Unpolished with Cross-Sheen

8. Tile Color and Pattern: Color as indicated on finish schedule and pattern as indicated on drawings.

9. Grout Color: As selected by Architect from manufacturer's full range.

10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile.

D. Tile Type (**PCT-2**): Porcelain Wall Tile. ANSI A137.1, standard grade.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Basis-of-Design Product: Subject to compliance with requirements, provide products by one of the following:

a. Crossville Tile, Argent 2.5

b. Or approved equal

2. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.

3. Module Size: 12 by 24 inches

4. Face Size Variation: Rectified.

5. Thickness: 3/8 inch (9.5 mm).

6. Face: Plain with square or cushion edges.

7. Finish: Unpolished with Cross-Sheen

8. Tile Color and Pattern: Color as indicated on finish schedule and pattern as indicated on drawings.

9. Grout Color: As selected by Architect from manufacturer's full range.

10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile.

E. Tile Type (**PCT-3**): Porcelain Wall and Floor Tile. ANSI A137.1, standard grade.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Basis-of-Design Product: Subject to compliance with requirements, provide products by one of the following:

a. Crossville Tile, Argent 2.0 – Random Angle Mosaic

b. Or approved equal

2. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.

3. Module Size: 4 by 4 inches

4. Face Size Variation: Rectified.

5. Thickness: 3/8 inch (9.5 mm).

6. Face: Plain with square or cushion edges.

7. Finish: Unpolished with Cross-Sheen

8. Tile Color and Pattern: Color as indicated on finish schedule and pattern as indicated on drawings.

9. Grout Color: As selected by Architect from manufacturer's full range.

10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:

    a. Base Cove: 4 by 24 inch - Single Bullnose

F. Tile Type (**PCT-4**): Porcelain Floor Tile. ANSI A137.1, standard grade.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Basis-of-Design Product: Subject to compliance with requirements, provide products by one of the following:

        a. Crossville Tile, Argent 2.0 – Random Angle Mosaic

        b. Or approved equal

2. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.

3. Module Size: 4 by 4 inches

4. Face Size Variation: Rectified.

5. Thickness: 3/8 inch (9.5 mm).

6. Face: Plain with square or cushion edges.

7. Finish: Unpolished with Cross-Sheen

8. Tile Color and Pattern: Color as indicated on finish schedule and pattern as indicated on drawings.

9. Grout Color: As selected by Architect from manufacturer's full range.

10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile.

G. Tile Type (**PCT-5**): Porcelain Wall Tile. ANSI A137.1, standard grade.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Basis-of-Design Product: Subject to compliance with requirements, provide products by one of the following:

        a. Crossville Tile, Shades 2.0

b. Or approved equal

2. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.

3. Module Size: 24 by 48 inches

4. Face Size Variation: Rectified.

5. Thickness: 13/32 inch (10.5 mm).

6. Face: Plain with square or cushion edges.

7. Finish: Unpolished with Cross-Sheen

8. Tile Color and Pattern: Color as indicated on finish schedule and pattern as indicated on drawings.

9. Grout Color: As selected by Architect from manufacturer's full range.

10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile.

2.4 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Width 2” with bevel edges at 1:2 slope, aligning lower edge of bevel with adjacent floor finish. Limit height of bevel to 1/2 inch (12.7 mm) or less, and finish bevel to match face of threshold.

B. Marble Thresholds: ASTM C 503 with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.

1. Description: Uniform, fine- to medium-grained white stone with gray veining.

2. Description: Match Architect's sample.

C. Metal Edge Strips: Angle, L-shape, adjustable transition profile, height to match tile and setting-bed thickness, designed specifically for flooring applications, stainless steel; ASTM A 666, 300 Series exposed-edge material.

1. At level floor transitions between New floor and New floor:

a. Schluter-Schiene by Schluter Systems

2. At floor transitions between New and Existing floor or floors transitions that are different heights:

a. Schluter-Reno-V adjustable transition profile by Schluter Systems

2.5 WATERPROOFING MEMBRANES FOR THIN-SET TILE INSTALLATIONS AT TOILET ROOMS/SHOWERS

A. General: Manufacturer's standard product that complies with ANSI A118.10, selected from the following.

1. Cold applied, single component liquid, load bearing membrane: ANSI A118.10 & A118.12

2. Fluid-Applied Membrane: System consisting of a self-curing liquid rubber polymer.

a. Products: Subject to compliance with requirements, provide the following:

1) Laticrete International, Inc.; Laticrete Hydro Ban.

2) Or approved equal

a. Provide compatible sheet membrane where cracks 1/8” or greater occur.

b. Locations: As specified on drawings

3. Provide Waterproofing/Crack Isolation Membranes from Single same manufacturer as setting materials and grouts, to provide system warranty.

B. Latex-Portland Cement Product: Flexible mortar consisting of cement-based mix and acrylic-latex additive.

1. Products:

a. MAPEI Corporation; PRP 315.

b. Southern Grouts & Mortars, Inc.; Southcrete 1100.

c. TEC Specialty Products Inc.; TA-324, Triple Flex.

2.6 CRACK ISOLATION MEMBRANE FOR PCT INSTALLATION

A. General: Manufacturer's standard product that complies with ANSI A118.12 for high performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

1. Products: Subject to compliance with requirements, provide the following or equal:

a. Laticrete International, Inc.; Laticrete Hydro Ban.

b. Or Equal

2.7 SETTING AND GROUTING MATERIALS

A. Manufacturers:

1. Bostik.

2. Custom Building Products.

3. LATICRETE International Inc.

4. MAPEI Corporation.

B. Improved Polymer Fortified Adhesive Mortar ANSI A118.4 & ANSI A118.5

1. Prepackaged dry-mortar mix containing dry, redispersible, ethylene vinyl acetate additive to which only water must be added at Project site.

2. For wall applications, provide mortar that complies with requirements for non-sagging mortar in addition to the other requirements in ANSI A118.4 & ANSI A118.5.

3. Basis-of-Design Product: Subject to compliance with requirements, provide Laticrete 4-XLT

C. Polymer-Modified Tile Grout: ANSI A118.7.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Laticrete Permacolor.

2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.

a. Sanded grout mixture for joints on floors.

b. Unsanded grout mixture for joints on walls.

2.8 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

C. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; stainless steel or nickel silver exposed-edge material, as recommended by manufacturer.

1. Manufacturer: Product: Subject to compliance with requirements, provide Schluter Systems Profiles or comparable product.

2. Metal Edge Floor-Wall Profiles:
   a. Product: Schluter **JOLLY** or approved equal
      a. Description: L-shaped profile with 1/8" (3.2 mm) wide top section and vertical wall section that together form the visible surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
      b. Anchoring Leg:
         i. Provide with straight anchoring leg
         ii. Provide with special radius anchoring leg for radius applications
      c. Corners:
         i. Provide with matching inside corners
         ii. Provide with matching outside corners
         iii. Provide with internal connectors
      d. Material and Finish: Stainless Steel Type 316 or as selected by architect from manufacturers full range.
      e. Height: As required
      f. Location:
         i. Top of wall tile

   b. Product: Schluter **QUADEC** or approved equal
      a. Description: Profile with square visible surface, integrated trapezoid perforated anchoring leg, and integrated grout joint spacer.
      b. Corners:
         i. Provide with matching inside corners
         ii. Provide with matching outside corners
         iii. Provide with internal connectors
      c. Material and Finish: Stainless Steel Type 304 or as selected by Architect from manufacturers full range.
      d. Height: As required
      e. Location: Exposed corners at corridors

   c. Product: Schluter **DILEX-AHKA** or approved equal
      a. Description: Profile with single integrated trapezoid-perforated anchoring leg and dovetailed channel, connected at a 90 degree angle by a cove-shaped 3/8 inch (10mm) radius section that forms the visible surface.
      b. Corners:
         i. Provide with matching inside corners
         ii. Provide with matching outside corners
         iii. Provide with matching end caps and internal connectors
      c. Material and Finish: AE: Satin Anodized Alumimum or as selected by Architect from manufacturers full range.
      d. Height: As required, coordinate with tile selection and setting system.
      e. Location: Floor to wall transitions in toilet rooms

2.9 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

3.0 PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.

2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.

3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.

B. Provide concrete substrates for tile floors installed with thin-set mortar that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.

1. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.

2. Remove protrusions, bumps, and ridges by sanding or grinding.

C. Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.

B. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated in ceramic tile installation schedules.

C. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.

2. Note: Glass Mosaics are mounted on removable paper sheets bonded to the face of the mosaics. Do not install backwards!!!

F. Lay out tile wainscots to next full tile beyond dimensions indicated.

G. Refer to TCA's "Handbook for Ceramic Tile Installation" and to ANSI A108 Series of tile installation standards for data on expansion joints. Both require joint locations to be indicated on Drawings. There is no substitute for showing all joints on Drawings.

H. Expansion Joints:

1. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated and as per current TCNA EJ171 and ANSI Standards. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.

2. Keep control and expansion joints free of mortar, grout, adhesive.

3. Provide interior control joints in tiled surfaces at 20’-25’ in each direction.

4. Provide exterior control joints in tiled surfaces at 8’-12’ in each direction.

5. Provide interior control joints in tiled surfaces exposed to direct sunlight or moisture at 8’-12’ in each direction.

6. Provide movement joints where tile work abuts restraining surfaces, including perimeter walls, dissimilar floors, curbs, columns, pipes, door and window frames and where changes occur in backing materials or change of plane.

7. Joints through tilework directly over structural joints must never be narrower than the structural joint.

8. Apply sealant to joints.

   a. Locate joints in tile surfaces directly above joints in concrete substrates.

   b. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

I. Grout tile to comply with requirements of the following tile installation standards:

1. For ceramic tile grouts (sand-portland cement; dry-set, commercial portland cement; and latex-portland cement grouts), comply with ANSI A108.10.

3.4 WATERPROOFING AND CRACK-SUPPRESSION MEMBRANE INSTALLATION

A. Install waterproofing to comply with ANSI A108.13 and waterproofing manufacturer's written instructions to produce waterproof membrane of uniform thickness bonded securely to substrate.

B. Install crack-suppression membrane to comply with manufacturer's written instructions to produce membrane of uniform thickness bonded securely to substrate.

C. Do not install tile over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.5 FLOOR TILE INSTALLATION

A. General: Install tile to comply with requirements in the Floor Tile Installation Schedule, including those referencing TCA installation methods and ANSI A108 Series of tile installation standards.

1. For installations indicated below, follow procedures in ANSI A108 Series tile installation standards for providing 95 percent mortar coverage.

   a. Tile floors in wet areas.

   b. Tile floors composed of tiles 8 by 8 inches (200 by 200 mm) or larger.

B. Joint Widths: Install tile on floors with the following joint widths:

1. Porcelain Tile: 1/4 inch (6.35 mm).

2. Terrazzo Tile:1/8” Min

C. Stone Thresholds: Install stone thresholds at locations indicated; set in same type of setting bed as abutting field tile, unless otherwise indicated.

1. Set thresholds in latex-portland cement mortar for locations where mortar bed would otherwise be exposed above adjacent nontile floor finish.

D. Back Buttering: For installation indicated, obtain 100 percent mortar coverage by complying with applicable special requirements for back buttering of tile in referenced ANSI A108 series of tile installation standards:

1. Tile floors composed of rib-backed tiles.

3.6 WALL TILE INSTALLATION

A. Install types of tile designated for wall installations to comply with requirements in the Wall Tile Installation Schedule, including those referencing TCA installation methods and ANSI setting-bed standards.

B. Joint Widths: Install tile on walls with the following joint widths:

1. Glazed Wall Tile: 1/16 inch (1.6 mm).

2. Porcelain Wall Tile: 1/8 inch.

3.7 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove epoxy grout residue from tile as soon as possible.

2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

B. When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

3.8 FLOOR TILE INSTALLATION SCHEDULE

A. Tile Installation PCT: Interior floor installation on waterproof membrane over concrete; thin-set mortar; TCA F122-05 and ANSI A108.5

1. Tile Type: PCT

2. Thin-Set Mortar: Latex-portland cement mortar.

3. Grout: Polymer-modified unsanded grout.

4. Location: All toilet Room Floors

B. Tile Installation: Interior floor installation on crack-suppression membrane over concrete; thin-set mortar; TCA F122 and ANSI A108.5.

1. Tile Type: PCT

2. Thin-Set Mortar: Latex-portland cement mortar.

3. Grout: Polymer-modified grout as recommended by manufacturer.

4. Crack Suppression Membrane: Ditra by Schluter

5. Location: All floor tile on first floor

3.9 WALL TILE INSTALLATION SCHEDULE

A. Tile Installation: Interior wall installation over gypsum board; thin-set mortar; TCA W243 and ANSI A108.5.

1. Tile Type: GCT

2. Thin-Set Mortar: Latex-portland cement mortar.

3. Grout: Polymer-modified sanded grout as recommended by tile manufacturer.

4. Location: All Gypsum wall to receive tile

B. Tile Installation: Interior wall installation over CMU; thin-set mortar; TCA W243 and ANSI A108.5.

1. Tile Type: GCT

2. Thin-Set Mortar: Latex-portland cement mortar.

3. Grout: Polymer-modified sanded grout as recommended by tile manufacturer.

4. Location: All CMU walls to receive tile

C. Tile Installation: Interior wall installation over gypsum board; thin-set mortar; TCA W243 and ANSI A108.5.

1. Tile Type: PCT

2. Thin-Set Mortar: Latex-portland cement mortar.

3. Grout: Polymer-modified sanded grout as recommended by tile manufacturer.

4. Location: All Gypsum wall to receive tile

D. Tile Installation: Interior wall installation over CMU; thin-set mortar; TCA W243 and ANSI A108.5.

1. Tile Type: PCT

2. Thin-Set Mortar: Latex-portland cement mortar.

3. Grout: Polymer-modified sanded grout as recommended by tile manufacturer.

4. Location: All CMU walls to receive tile

END OF SECTION 09300

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes acoustical panels and exposed suspension systems for interior ceilings.

B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified, 6 inches (150 mm) in size.

C. Samples for Initial Selection: For components with factory-applied finishes.

D. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:

1. Acoustical Panels: Set of 6” Samples of each type, color, pattern, and texture.
2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch- (150-mm-) long Samples of each type, finish, and color.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Ceiling suspension-system members.
2. Structural members to which suspension systems will be attached.
3. Method of attaching hangers to building structure.

a. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.

4. Carrying channels or other supplemental support for hanger-wire attachment where conditions do not permit installation of hanger wires at required spacing.
5. Size and location of initial access modules for acoustical panels.
6. Items penetrating finished ceiling and ceiling-mounted items including the following:

    a. Lighting fixtures.
    b. Diffusers.
    c. Grilles.
    d. Speakers.
    e. Sprinklers.
    f. Access panels.
    g. Perimeter moldings.

7. Show operation of hinged and sliding components covered by or adjacent to acoustical panels.
8. Minimum Drawing Scale: 1/4 inch = 1 foot (1:48)

B. Qualification Data: For testing agency.

C. Product Test Reports: For each acoustical panel ceiling, for tests performed by manufacturer and witnessed by a qualified testing agency

D. Evaluation Reports: For each acoustical panel ceiling suspension system and anchor and fastener type, from ICC-ES.

E. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Units: Full-size panels equal to 2 percent of quantity installed.
2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.
3. Hold-Down Clips: Equal to 2 percent of quantity installed.
4. Impact Clips: Equal to 2 percent of quantity installed.

1.7 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Build mockup of typical ceiling area as shown on Drawings.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design seismic restraints for ceiling systems.

B. Seismic Performance: Suspended ceilings shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

C. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Class A according to ASTM E 1264.
2. Smoke-Developed Index: 5 or less.

D. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL or from the listings of another qualified testing agency.

2.3 ACOUSTICAL PANELS **(ACT-1)** (ALL AREAS UNLESS INDICATED OTHERWISE)

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Armstrong World Industries, Inc.

2. USG Corporation. (Design Make: Model #86785 MARS ClimaPlus)

B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E 1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

C. Classification: Provide fire-resistance-rated panels as follows:
1. Type and Form: Type III, Form 2, mineral base with factory applied latex paint.
2. Pattern: F Course
3. Fire Rating: Class A

D. Color: White

E. Humidity/Sag Resistance: High

F. Light Reflectance (LR): Not less than 0.90

G. Ceiling Attenuation Class (CAC): Not less than 35

H. Noise Reduction Coefficient (NRC): Not less than 0.75

I. Articulation Class (AC): Not less than 200

J. Edge/Joint Detail: Angled Tegular

K. Recycled Content: 69%

L. Thickness: 3/4”

M. Modular Size: 24”x24”

N. Warranty: 30-Year Limited System Warranty.

O. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273, ASTM D 3274, or ASTM G 21 and evaluated according to ASTM D 3274 or ASTM G 21.

2.4 SPECIALTY CEILING **(SCS-1)**

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
   a. USG Ceiling Plus, Colortex Fins – Sprite Tile System
   b. Or approved equal

B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E84-14 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

C. Composition: Acoustical material produced by felting PET plastic.

D. Color: As indicated on finish legend or as selected by Architect from manufacturer's full range.

E. Standard Size: 24"W x 24"L

F. Standard Depth: 5" Deep

G. Pattern: Refer to drawings

H. Suspension Grid Tee: 15/16"

I. Suspension Grid color: White.

J. Fire rating: ASTME84 Class A

K. Acoustics: ASTM E795 (E400 Mounting): NRC up to 1.10.

L. Material Ingredient Transparency: Health Product Declaration (HPD); Declare Label, VOC Emissions Test (CDPH Standard Method V1.2)

M. Warranty: 1-Year Limited Warranty.

N. Accessories:
   1. Provide all necessary accessories including deck hanging kit, suspension frames, cables, and attachments for a complete system.
   2. Removable clips at each fin.
   3. All exposed framing to be painted and/ or finished to match ceiling paint finish.

2.5 SPECIALTY CEILING **(SCS-2)**

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
   a. Turf Designs, Inc. Fractal – Triangle Layout
   b. Or approved equal

B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E84-14 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

C. Composition: Acoustical material produced by felting PET plastic.

D. Color: As indicated on finish legend or as selected by Architect from manufacturer's full range.

E. Standard Size: 36"W x 31.2"H x 7.5"D

F. Standard Depth: 7.5" Deep

G. Thickness: 9 mm.

H. Suspension: Cable to Deck Connection.

I. Pattern: Refer to drawings

J. Fire rating: ASTME84 Class A

K. Acoustics: ASTM C423-17: Type J - NRC 1.15

L. Material Ingredient Transparency: Health Product Declaration (HPD); Declare Label, VOC Emissions Test (CDPH Standard Method V1.2)

M. Accessories:
1. Provide all necessary accessories including deck hanging kit, cables, and attachments for a complete system.
2. All exposed framing to be painted and/ or finished to match ceiling paint finish.

N. Warranty: 5-Years.

2.6 SPECIALTY CEILING (**SCS-3**)

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
a. Armstrong World Industries, Inc. – Lyra PB Direct Apply #WZ00001uoy
b. Or approved equal

B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

C. Composition: Fiberglass with Plant Based Binder

D. Texture: Smooth

E. Color: As indicated on finish legend or as selected by Architect from manufacturer's full range.

F. Light Reflectance (LR): Not less than 0.88.

G. Noise Reduction Coefficient (NRC): Not less than 0.80.

H. Articulation Class (AC): Not less than 0.80.

I. Standard Size: As indicated on reflected ceiling plans.

J. Edge Profile: Square All-Sides

K. Dimensional Stability: HumiGuard Plus

L. Mounting: D-40 Mounting

M. Fire rating: ASTM E1264 Class A

N. Acoustics: ASTM C423: NRC .95

O. Material Ingredient Transparency: Health Product Declaration (HPD); Declare Label

P. Accessories:
1. Provide all necessary accessories including deck mounting kit and attachments for a complete system.
2. Manufacturer's recommended adhesive - TiteBond® GREENChoice Acoustical Ceiling Tile Adhesive

Q. Warranty: 10-Year Limited Warranty from date of installation.

2.7 METAL SUSPENSION SYSTEM

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Armstrong World Industries, Inc.
2. USG Corporation. Design Make: USG DX 15/16" Exposed Tee

B. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C 635/C 635M and designated by type, structural classification, and finish indicated.

C. Narrow-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 (Z90) coating designation; with prefinished 15/16-inch- (15-mm-) wide metal caps on flanges.

1. Structural Classification: Intermediate duty system.
2. End Condition of Cross Runners: butt-edge type.
3. Face Design: Flat, flush
4. Cap Material: Cold-rolled steel
5. Cap Finish: white

2.8 ACCESSORIES

A. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing according to ASTM E 488/E 488M or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.

    a. Type: Postinstalled expansion anchors.
    b. Corrosion Protection: Carbon-steel components zinc plated according to ASTM B 633, Class SC 1 (mild) service condition.
    c. Corrosion Protection: Stainless-steel components complying with ASTM F 593 and ASTM F 594, Group 1 Alloy 304 or 316.
    d. Corrosion Protection: Components fabricated from nickel-copper-alloy rods complying with ASTM B 164 for UNS No. N04400 alloy.

2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E 1190, conducted by a qualified testing and inspecting agency.

B. Wire Hangers, Braces, and Ties: Provide wires as follows:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
2. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.135-inch- diameter wire.

C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

D. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

E. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch-thick, galvanized-steel sheet complying with ASTM A 653/A 653M, G90 (Z275) coating designation; with bolted connections and 5/16-inch- diameter bolts.

2.9 ACOUSTICAL SEALANT

A. Acoustical Sealant: As specified in Section 079219 "Acoustical Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated and comply with layout shown on reflected ceiling plans.

B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION

A. Install acoustical panel ceilings according to ASTM C 636/C 636M and manufacturer's written instructions.

1. Fire-Rated Assembly: Install fire-rated ceiling systems according to tested fire-rated design.

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that

will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.

5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
8. Do not attach hangers to steel deck tabs.
9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
10. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.
11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
2. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends. Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.

1. Arrange directionally patterned acoustical panels as follows:

   a. As indicated on reflected ceiling plans.

2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.

3. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
4. Protect lighting fixtures and air ducts according to requirements indicated for fire-resistance-rated assembly.

3.4 ERECTION TOLERANCES

A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m), non-cumulative.

B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m), non-cumulative.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:

1. Periodic inspection during the installation of suspended ceiling grids according to ASCE/SEI 7.

B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

C. Perform the following tests and inspections of completed installations of acoustical panel ceiling hangers and anchors and fasteners in successive stages and when installation of ceiling suspension systems on each floor has reached 20 percent completion, but no panels have been installed. Do not proceed with installations of acoustical panel ceiling hangers for the next area until test results for previously completed installations of acoustical panel ceiling hangers show compliance with requirements.

1. Within each test area, testing agency will select one of every 10 power-actuated fasteners and postinstalled anchors used to attach hangers to concrete and will test them for 200 lbf (890 N) of tension; it will also select one of every two postinstalled anchors used to attach bracing wires to concrete and will test them for 440 lbf (1957 N) of tension.
2. When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 pass consecutively and then will resume initial testing frequency.

D. Acoustical panel ceiling hangers, anchors, and fasteners will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

3.6 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.

B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

SECTION 096466 - WOOD ATHLETIC FLOORING

1.0 PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Field-finished wood athletic flooring at Homer Brink Elementary School Gym.

2. Court Line Paints at Homer Brink Elementary School Gym.

B. Related Sections:

1. Division 09 "Resilient Base and Accessories" for vented rubber base at perimeter of existing & new wood flooring systems.

1.3 COORDINATION

A. Coordinate layout and installation of new wood athletic flooring system with existing concrete slab floor depression to assure the depth accommodates the floor assembly.

B. Coordinate layout and installation of flooring with any floor inserts for gymnasium equipment.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For each type of floor assembly and accessory. Include plans, elevations, sections, details, and attachments to other work. Include expansion provisions and trim details.

C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors and finishes available for wood flooring, floor finishes and game-line and marker paints.

D. Samples for Verification: For each type of wood flooring and accessory, with stain color and finish required, approximately 12 inches (300 mm) long and of same thickness and material indicated for the Work and showing the full range of normal color and texture variations expected.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Wood Flooring: Equal to 1 percent of amount installed for each type of wood flooring indicated.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual that has been approved by MFMA as an accredited Installer according to the MFMA Accreditation Program

1. Installer responsibilities include installation and field finishing or wood athletic flooring components and accessories, and application of game lines and markers.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver wood flooring materials in unopened cartons or bundles.

B. Protect wood flooring from exposure to moisture. Do not deliver wood flooring until after concrete, masonry, plaster, ceramic tile, and similar wet work is complete and dry.

C. Store wood flooring materials in a dry, warm, ventilated, weathertight location.

1.8 PROJECT CONDITIONS

A. Conditioning period begins not less than seven days before wood flooring installation, is continuous through installation, and continues not less than seven days after wood flooring installation.

1. Environmental Conditioning: Maintain an ambient temperature between 65 and 75 deg F (18 and 24 deg C) and relative humidity planned for building occupants in spaces to receive wood flooring during the conditioning period.

2. Wood Flooring Conditioning: Move wood flooring into spaces where it will be installed, no later than the beginning of the conditioning period.

a. Do not install flooring until it adjusts to relative humidity of, and is at same temperature as, space where it is to be installed.

b. Open sealed packages to allow wood flooring to acclimatize immediately on moving flooring into spaces in which it will be installed.

B. After conditioning period, maintain relative humidity and ambient temperature planned for building occupants.

C. Install factory-finished wood flooring after other finishing operations, including painting, have been completed.

2.0 PART 2 – PRODUCTS

2.1 FIELD-FINISHED WOOD ATHLETIC FLOORING

A. Solid-Wood Flooring System: Kiln dried to 6 to 9 percent maximum moisture content, tongue and groove and end matched, and with backs channeled.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Robbins "Bio-Channel SB" floor system

1) Robbins Shock absorbing pads

2) Robbins Bio-Channel Star subfloor

b. Or Equal

2. Subfloor:

a. 9/16" Zero/G lineal strip shock pad.

b. Bio-Channel SB subfloor panels have been factory prepared to accept anchor channel and lineal strips.

c. 16 gauge coated metal anchor channels.

3. Species and Grade: MFMA-RL First Grade hard maple.

4. Cut: Plain sawn.

5. Total Floor System Height: 1-3/4 inches (with 25/32" flooring).

6. Face Width: 2-1/4 inches (57 mm).

7. Lengths: Flooring shall be manufactured and graded in accordance with MFMA-FJ rules ("long-length" maple). Flooring shall include XLplus technology or equivalent to provide built-in expansion between each maple strip, and to reduce or eliminate routine spacing for expansion.

B. Waterborne Wood Floor Finish System (@ Gymnasium): Complete water-based system of compatible components that is recommended by finish manufacturer for application indicated.

1. Basis-of-Design Product: Subject to compliance with requirements, provide "SuperSport Seal" and "SuperSport Finish" sports floor sealer/finish by Bona US (2550 South Parker Rd, Suite 600, Aurora, CO 80014) or comparable product by one of the following:

a. Basic Coatings, Inc.

b. Dura Seal, Sherwin-Williams Company (The).

c. Polo-Plaz Coatings; National Coatings Company.

2. VOC Content: When calculated according to 40 CFR 59, Subpart D (EPA Method 24), as follows:

a. Finish Coats and Floor Sealers: Not more than 350 g/L.

C. Court Lines Paint Finish: High-solids, fast drying solvent-based system of compatible components that is recommended by finish manufacturer for application indicated.

1. Basis-of-Design Product: Subject to compliance with requirements, provide "Courtlines" sports floor paint by Bona US (2550 South Parker Rd, Suite 600, Aurora, CO 80014) or comparable product by one of the following:

a. Dura Seal, Sherwin-Williams Company (The).

b. Hillyard, Inc.

2. Color: As selected by Architect from manufacturer's full range.

3. Court Line Layout: Refer to drawings.

D. Wood Filler: Compatible with finish system components and recommended by filler and finish manufacturers for use indicated. If required to match approved Samples, provide pigmented filler.

2.2 ACCESSORY MATERIALS

A. Asphalt-Saturated Felt: ASTM D 4869, Type II.

B. Trowelable Leveling and Patching Compound: Latex-modified, hydraulic-cement-based formulation approved by wood flooring manufacturer.

C. Fasteners: As recommended by manufacturer, but not less than that recommended in NWFA's "Installation Guidelines: Wood Flooring."

D. Resilient Wall Base: Refer to Division 07.

E. Thresholds: Refer to Division 07.

F. Vapor Retarder: ASTM E 1745 Class A, B, & C; Permeance, No less than 0.008 PERMS as tested by ASTM F1249; 14' wide roll with thickness of 15 mil. And puncture resistance on no less than 2266 grams per ASTM D1709. Stego Wrap 15 mil by Stego Industries or approved equal.

3.0 PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas and conditions, with Installer present, for compliance with requirements for maximum moisture content, installation tolerances, and other conditions affecting performance of wood flooring.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Concrete Slabs: Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.

1. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. (18.6 sq. m), and perform no fewer than two tests in each installation area and with test areas evenly spaced in installation areas.

a. Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

3.2 PREPARATION

A. Concrete Slabs: Grind high spots and fill low spots to produce a maximum 1/8-inch (3-mm) deviation in any direction when checked with a 10-foot (3-m) straight edge.

1. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.

B. Remove coatings, including curing compounds, and other substances on substrates that are incompatible with installation adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

C. Broom or vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

A. Comply with flooring manufacturer's written installation instructions, but not less than applicable recommendations in NWFA's "Installation Guidelines: Wood Flooring."

B. Wood Underlayment: Install according to requirements in Section 061000 "Rough Carpentry."

C. Provide expansion space at walls and other obstructions and terminations of flooring of not less than 3/4 inch (19 mm).

D. Vapor Retarder: Comply with NOFMA's "Installing Hardwood Flooring" for vapor retarder installation and the following:

1. Wood Flooring Nailed to Wood Subfloor: Install flooring over a layer of asphalt-saturated felt.

2. Wood Flooring Installed Directly on Concrete: Install a layer of polyethylene sheet ONLY if recommended by flooring manufacturer's written instructions.

E. Solid-Wood Flooring: Blind nail or staple flooring to substrate.

3.4 FIELD FINISHING

A. All sealing and finishing processes shall comply with the applicable recommendations in MFMA and NWFA's "Installation Guidelines: Wood Flooring."

B. New unfinished wood floor systems; shall be machine-sand flooring to remove offsets, ridges, cups, and sanding-machine marks that would be noticeable after finishing. Use three grades of sandpaper, ending with 00 grade.

1. After sanding, buff entire area with 100 grit screenback or equivalent using heavy duty buffing machine. Thoroughly vacuum and tack clean the entire floor surface prior to applying any sealer or finish material. Prevent the spread of dirt, dust and debris to and from the working area during the entire process and follow the manufacturer's recommendations for providing adequate ventilation to the work area.

C. Apply floor sealer materials in the number of coats recommended by the finish manufacturer for the application indicated, but not less than one coat of floor sealer. Screenback or steel wool and vacuum or tack between each coat after it dries.

D. Court Lining: Refer to drawings for the layout and color selections for all game lines prior to the commencement of floor sanding and finishing.

1. Apply game markings using paint that is compatible with the chosen sealer and finish.

2. Mask and paint game lines with proper aid of precision taping machines and striping tools. When using masking tape, pull it up as soon as the paint begins to dry or set.

3. Once all game markings have thoroughly dried, lightly abrade using steel wool or a pad recommended by the finish manufacturer, then clean the floor surface.

E. Apply floor-finish materials in number of coats recommended by finish manufacturer for application indicated, but not less than three finish coats. Buff after each coat or as recommended by finishing manufacturer.

F. Do not cover wood flooring after finishing until finish reaches full cure, and not before seven days after applying last finish coat.

3.5 PROTECTION

A. Protect installed wood flooring during remainder of construction period with covering of heavy kraft paper or other suitable material. Do not use plastic sheet or film that might cause condensation.

1. Do not move heavy and sharp objects directly over kraft-paper-covered wood flooring. Protect flooring with plywood or hardboard panels to prevent damage from storing or moving objects over flooring.

END OF SECTION 096400

SECTION 096513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Thermoplastic-rubber base.

2. Resilient molding accessories.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified, not less than 6 inches long.

C. Samples for Initial Selection: For each type of product indicated.

D. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.

1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.4 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Coordinate mockups in this Section with mockups specified in other Sections.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F

1.6 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F in spaces to receive resilient products during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 THERMOPLASTIC-RUBBER BASE **(RB-1)**

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
1. Roppe Corporation, USA
2. Or approved equal

B. Product Standard: ASTM F1861, Type TP (rubber, thermoplastic).

1. Group: I (solid, homogeneous)
2. Style and Location:

a. Style B, Cove: where scheduled

C. Thickness: 1/8” thick

D. Height: 4 inches, unless indicated otherwise or required to match field conditions.

E. Lengths: Cut lengths 48 inches long or coils in manufacturer's standard length.

F. Outside Corners: Preformed

G. Inside Corners: Preformed

H. Colors: As listed in Finish Legend or selected by Architect from Manufacturer's Standard Colors.

2.2 VENTED COVE BASE **(RB-2)**

A. Basis of Design: Subject to compliance with requirements, provide **Johnsonite; "Vent Cove"** or Architect approved equal product.

B. Product Standard: ASTM F1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).

1. Style and Location:
   a. Vented cove wall base.
   b. Location: Provide in all locations with wood floors.

C. Thickness: 5/16 inch (7.9 mm).

D. Height: 4 inches (102 mm).

E. Lengths: Coils in manufacturer's standard length.

F. Venting: Vertical semi-circular vents along the back side of the wall base to ensuring proper air circulation under the floor and permits free expansion of the floor

G. Outside Corners: Job formed.

H. Inside Corners: Job formed.

I. Colors: As indicated on the Finish Legend.

2.3 RUBBER MOLDING ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Johnsonite, Tarkett Company
2. Roppe Corporation, USA

B. Description: Rubber transition strips.

C. Locations: From all floor finish-to-finish conditions where an elevation change is unavoidable.

2.4 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates for Resilient Stair Accessories: Prepare horizontal surfaces according to ASTM F710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than **9**pH.
4. Moisture Testing: Perform tests so that each test area does not exceed 200sq. ft. and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

    a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3lb of water/1000 sq. ft. in 24 hours.
    b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install resilient products until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Preformed Corners: Install preformed corners before installing straight pieces.

H. Job-Formed Corners:

1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 12 inches in length.

   a. Form without producing discoloration (whitening) at bends.

2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 12 inches in length.

   a. Miter or cope corners to minimize open joints.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from surfaces.
2. Sweep and vacuum horizontal surfaces thoroughly.
3. Damp-mop horizontal surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Standard Vinyl floor tile (VT)

B. ACTION SUBMITTALS

C. Product Data: For each type of product.

D. Shop Drawings: For each type of resilient floor tile.

   1. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
   2. Show details of special patterns.

E. Samples for Initial Selection: For each type of floor tile indicated.

F. Samples for Verification: Full-size units of each color and pattern of floor tile required.

G. Product Schedule: For floor tile. Use same designations indicated on Drawings.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

B. Warranty.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.

1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Coordinate mockups in this Section with mockups specified in other Sections.

a. Size: Minimum 100 sq. ft. (9.3 sq. m) for each type, color, and pattern in locations indicated.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store floor tile and installation material in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer. Store floor tiles on flat surfaces per manufacturer.

B. Materials and adhesive must be acclimated to the installation area for a minimum of 48 hours prior to installation.

1.8 FIELD CONDITIONS

A. The permanent mechanical system must be on for seven days prior to, during and after installation. Maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F or more than 85 deg F, in spaces to receive floor tile during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer.

C. Close spaces to traffic during floor tile installation and for 48 hours after floor tile installation.

D. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For resilient floor tile, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2. Smoke Density ASTM E662: Passes, <450

2.2 STANDARD VINYL FLOOR TILE (**VT**)

A. Basis-of-Design Product: Subject to compliance with requirements, provide one of the following available products that may be incorporated into the Work, but are not limited to, the following:
1. Patcraft – I768V Numix
2. Or approved equal

B. Construction: Homogeneous Tile

C. Thickness: 0.125 inch (3.2 mm)

D. Size: 36 by 36 inches (81.4 cm by 91.4 cm)

E. Backing Class: Commercial Grade

F. Installation: Glue down.

G. Colors and Patterns: As indicated on the Finish Schedule, Finish Legend and Finish Floor Plans.

H. Slip Resistance: ASTM D2047 ≥0.5

I. Warranty: Twenty-five (25) year lifetime commercial warranty when installed in accordance with manufacturer's guidelines.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, Portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.
1. Do not install resilient flooring over gypsum-based patching and/or leveling compounds.

B. Primer: Type recommended by floor tile and adhesive manufacturers to suite floor tile and subtrate conditions.
   1. Luxury Vinyl Tile (LVT) Primer: Shaw 9050 pH Blocker/Floor Primer.

C. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.

D. Floor Polish / Barrier Coat: Provide protective, liquid floor-polish products recommended by floor tile manufacturer and acceptable to the Owner.

E. Moisture Mitigation Barrier: One-coat, 100% solids epoxy resin moisture management system for RH readings up to 100% in new or existing concrete. ASTM E96 – 0.06 perms.
   1. Design Make: Ardex MC Rapid

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

   1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F710.

   1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
   2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
   3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate pass testing.
   4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. (18.6 sq. and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

      a. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum **75** percent relative humidity level measurement.

C. Access Flooring Panels: Remove protective film of oil or other coating using method recommended by access flooring manufacturer.

D. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

E. Do not install floor tiles until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.

F. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.3 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

1. Lay tiles square with room axis.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

1. Lay tiles with grain running in one direction.

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.

G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

H. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.

B. Perform the following operations immediately after completing floor tile installation:

1. Remove adhesive and other blemishes from surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Use neutral cleaner and cool water and scrub with a low-rpm machine or auto scrubber using a red pad or brush. (Brown or black pads are too aggressive.)
4. Remove the cleaning solution with wet-dry vacuum or auto scrubber until the floor is dry.
5. Rinse the floor with clean water. Repeat the rinse process if necessary to remove all haze.

C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Floor Finish: Remove soil, adhesive, and blemishes from floor tile surfaces before applying finish:

1. VT: Apply 4 coats of finish or as recommended by manufacturer.

E. Cover floor tile with paper-based protection system until Substantial Completion. Do not use a plastic adhesive based protection system. Repair and maintain protection system as needed during the course of the work.

END OF SECTION 096519

SECTION 096623 - RESINOUS MATRIX TERRAZZO FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Thin-set, epoxy-resin terrazzo flooring.

2. Precast epoxy-resin terrazzo units.

B. Related Requirements:

1. Section 079200 "Joint Sealants" for sealants installed with terrazzo.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to terrazzo including, but not limited to, the following:

a. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
b. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
c. Review special terrazzo designs and patterns.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include terrazzo installation requirements. Include plans, sections, component details, and relationship to other work. Show layout of the following:

1. Divider strips.
2. Control-joint strips.
3. Accessory strips.
4. Abrasive strips.

5. Terrazzo patterns.

C. Samples: For each exposed product and for each color and texture specified, 6 inches in size.

D. Samples for Initial Selection: NTMA's "Terrazzo Color Palette" showing the full range of colors and patterns available for each terrazzo type.

E. Samples for Verification: For each type, material, color, and pattern of terrazzo and accessory required showing the full range of color, texture, and pattern variations expected. Label each terrazzo Sample to identify manufacturer's matrix color and aggregate types, sizes, and proportions. Prepare Samples of same thickness and from same material to be used for the W

F. ork, in sizes indicated below:

1. Terrazzo: 6-inch square Samples.

2. Precast Stair Treads: full size sample (matching existing profile to be used in the work.)

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Material Certificates: For each type of terrazzo material or product.

C. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.

D. Preinstallation moisture-testing reports.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For terrazzo to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications:

1. Engage an installer who is a contractor member of NTMA.
2. Engage an installer who is certified in writing by terrazzo manufacturer as qualified to install manufacturer's products.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in supplier's original wrappings and containers, labeled with source's or manufacturer's name, material or product brand name, and lot number if any.

B. Store materials in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting terrazzo installation.

B. Field Measurements: Verify actual dimensions of construction contiguous with precast terrazzo by field measurements before fabrication.

C. Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during terrazzo installation.

D. Close spaces to traffic during terrazzo application and for not less than 24 hours after application unless manufacturer recommends a longer period.

E. Control and collect water and dust produced by grinding operations. Protect adjacent construction from detrimental effects of grinding operations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain primary terrazzo materials from single source from single manufacturer. Provide secondary materials including patching and fill material, joint sealant, and repair materials of type and from source recommended by manufacturer of primary materials.

B. Source Limitations for Aggregates: Obtain each color, grade, type, and variety of granular materials from single source with resources to provide materials of consistent quality in appearance and physical properties.

2.2 PERFORMANCE REQUIREMENTS

A. NTMA Standards: Comply with NTMA's written recommendations for terrazzo type indicated unless more stringent requirements are specified.

2.3 EPOXY-RESIN TERRAZZO **(TZ)**

A. Epoxy-Resin Terrazzo Flooring: Comply with manufacturer's written instructions for matrix and aggregate proportions and mixing.

1. Acceptable Manufacturers:
   a. Key Resin Company, Pheonix AZ ; Key Epoxy Terrazzo
   b. Terrazzo & Marble Supply Companies; Terroxy Resin System

B. Mix Color and Pattern:
1. Refer to Finish Legend & Schedule.

C. Materials:

1. Moisture-Vapor-Emission-Control Membrane: Two-component, high-solids, high-density, low-odor, epoxy-based membrane-forming product produced by epoxy terrazzo manufacturer that reduces moisture emission from concrete substrate to not more than 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
2. Substrate-Crack-Suppression Membrane: Product of terrazzo-resin manufacturer, having minimum 120 percent elongation potential according to ASTM D 412.

    a. Reinforcement: Fiberglass scrim.

3. Primer: Manufacturer's product recommended for substrate and use indicated
4. Epoxy-Resin Matrix: Manufacturer's standard recommended for use indicated and in color required for mix indicated.

    a. Physical Properties without Aggregates:

        1) Hardness: 60 to 85 per ASTM D 2240, Shore D.
        2) Minimum Tensile Strength: 3000 psi (20.7 MPa) per ASTM D 638 for a 2-inch (51-mm) specimen made using a "C" die per ASTM D 412.
        3) Minimum Compressive Strength: 10,000 psi (6.9 MPa) per ASTM D 695, Specimen B cylinder.
        4) Chemical Resistance: No deleterious effects by contaminants listed below after seven-day immersion at room temperature per ASTM D 1308.

            a) Distilled water.
            b) Mineral water.
            c) Isopropanol.
            d) Ethanol.
            e) 0.025 percent detergent solution.
            f) 1.0 percent soap solution.
            g) 5 percent acetic acid.
            h) 10 percent sodium hydroxide.
            i) 10 percent hydrochloric acid.
            j) 30 percent sulfuric acid.

    b. Physical Properties with Aggregates: For terrazzo blended according to manufacturer's recommendations with one part epoxy resin with three parts marble aggregate consisting of 60 percent No. 1 chips and 40 percent No. 0 chips that is ground and grouted to a 1/4-inch (6.35-mm) nominal thickness, and cured for 7 days at 75 deg F (24 deg C) plus or minus 2 deg F (1 deg C) and at 50 percent plus or minus 2 percent relative humidity.

        1) Flammability: Self-extinguishing, maximum extent of burning 1/4 inch (6.35 mm) according to ASTM D 635.
        2) Thermal Coefficient of Linear Expansion: 0.0025 inch/inch per deg F (0.0025 mm/mm per 0.5556 deg C) according to ASTM C 531.

5. Aggregates: Comply with NTMA gradation standards for mix indicated and contain no deleterious or foreign matter.

a. Abrasion and Impact Resistance: Less than 40 percent loss per ASTM C 131/C 131M.
b. 24-Hour Absorption Rate: Less than 0.75 percent.
c. Dust Content: Less than 1.0 percent by weight.

6. Finishing Grout: Resin based.

2.4 PRECAST EPOXY-RESIN TERRAZZO

A. Precast Terrazzo Stair Tread Units: Minimum 1 1/2-inch thick, epoxy terrazzo units. Comply with manufacturer's written instructions for fabricating precast units in sizes and profiles indicated. Reinforce units as required by unit sizes, profiles, and thicknesses and as recommended by manufacturer. Finish exposed-to-view edges and reveals to match face finish. Ease exposed edges to 3/8-inch radius.

1. Color, Pattern, and Finish: Match existing color, pattern, profile and finish.

2.5 STRIP MATERIALS

A. Thin-Set Divider Strips: L-type angle in depth required for topping thickness indicated.

1. Material: Aluminum
2. Top Width: 1/8 inch or match existing

B. Control-Joint Strips: Separate, double L-type angles, positioned back to back, that match material and color of divider strips and in depth required for topping thickness indicated.

C. Accessory Strips: Match divider-strip width, material, and color unless otherwise indicated. Use the following types of accessory strips as required to provide a complete installation:

1. Base-bead strips for exposed top edge of terrazzo base.
2. Edge-bead strips for exposed edges of terrazzo.

D. Abrasive Strips: Abrasive nosing strip and three-line abrasive inserts at nosings. Silicon carbide or aluminum oxide, or combination of both, in epoxy-resin binder and set in channel.

1. Width: match existing.
2. Depth: As required by terrazzo thickness.
3. Length: match existing
4. Color: match existing

2.6 MISCELLANEOUS ACCESSORIES

A. Strip Adhesive: Epoxy-resin adhesive recommended by adhesive manufacturer for this use.

B. Anchoring Devices:

1. Strips: Provide mechanical anchoring devices or adhesives for strip materials as recommended by manufacturer and as required for secure attachment to substrate.
2. Precast Terrazzo: Provide mechanical anchoring devices as recommended by fabricator for proper anchorage and support of units for conditions of installation and support.

C. Patching and Fill Material: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.

D. Joint Compound: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.

E. Resinous Matrix Terrazzo Cleaner: Chemically neutral cleaner with pH factor between 7 and 10 that is biodegradable, phosphate free, and recommended by sealer manufacturer for use on terrazzo type indicated.

F. Sealer: Slip- and stain-resistant, penetrating-type sealer that is chemically neutral; does not affect terrazzo color or physical properties; and is recommended by sealer manufacturer.

1. Surface Friction: Not less than 0.6 according to ASTM D 2047.
2. Acid-Base Properties: With pH factor between 7 and 10.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions, including levelness tolerances, have been corrected.

3.2 PREPARATION

A. Clean substrates of substances, including oil, grease, and curing compounds, that might impair terrazzo bond. Provide clean, dry, and neutral substrate for terrazzo application.

B. Concrete Slabs:

1. Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with terrazzo.

a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
b. Repair damaged and deteriorated concrete according to terrazzo manufacturer's written instructions.
c. Use patching and fill material to fill holes and depressions in substrates according to terrazzo manufacturer's written instructions.

C. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.

D. Preinstallation Moisture Testing:

1. Testing Agency: Engage a qualified testing agency to perform tests.
2. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. , and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

   a. Moisture-Vapor-Emission Test: Maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours when tested according to ASTM F 1869 using anhydrous calcium chloride.
   b. Relative Humidity Test: Maximum 75 percent relative humidity measurement when tested according to ASTM F 2170 using in-situ probes.

3. Proceed with terrazzo installation only after concrete substrates pass moisture testing or after installation of moisture-vapor-emission-control membrane on substrate areas that fail testing.

E. Moisture-Vapor-

F. Emission-Control Membrane: Install according to manufacturer's written instructions.

1. Install on concrete substrates that incorporate lightweight aggregates.
2. Install concrete substrates that fail preinstallation moisture testing.

G. Substrate-Crack-Suppression Membrane: Install to isolate and suppress substrate cracks according to manufacturer's written instructions.

1. Prepare and prefill substrate cracks with membrane material.
2. Install to produce full substrate coverage in areas to receive terrazzo.
3. Reinforce membrane with fiberglass scrim.

H. Protect other work from water and dust generated by grinding operations. Control water and dust to comply with environmental protection regulations.

1. Erect and maintain temporary enclosures and other suitable methods to limit water damage and dust migration and to ensure adequate ambient temperatures and ventilation conditions during installation.

3.3 EPOXY-RESIN TERRAZZO INSTALLATION

A. Comply with NTMA's written recommendations for terrazzo and accessory installation.

B. Strip Materials:

1. Divider and Control-Joint Strips:

   a. Locate divider strips where indicted and to match existing.

b. Install control-joint strips back to back and directly above concrete-slab control joints.
c. Install control-joint strips with 1/4-inch gap between strips, and install sealant in gap.
d. Install strips in adhesive setting bed without voids below strips, or mechanically anchor strips as required to attach strips to substrate, as recommended by strip manufacturer.

2. Accessory Strips: Install as required to provide a complete installation

C. Apply primer to terrazzo substrates according to manufacturer's written instructions.

D. Place, rough grind, grout, cure grout, fine grind, and finish terrazzo according to manufacturer's written instructions.

1. Installed Thickness: 3/8 inch nominal.
2. Terrazzo Finishing: Ensure that matrix components and fluids from grinding operations do not stain terrazzo by reacting with divider and control-joint strips.

a. Rough Grinding: Grind with 24-grit or finer stones or with comparable diamond abrasives. Follow initial grind with 60/80-grit stones or with comparable diamond abrasives.
b. Grouting: Before grouting, clean terrazzo with water, rinse, and allow to dry. Apply and cure epoxy grout.
c. Fine Grinding/Polishing: Delay fine grinding until heavy trade work is complete and construction traffic through area is restricted. Grind with 120 grit stones or with comparable diamond abrasives until grout is removed from surface.

3. Installation Tolerance: Limit variation in terrazzo surface from level to 1/4 inch in 10 feet noncumulative.

E. Install and finish poured-in-place terrazzo stairs at the same time the adjacent terrazzo flooring is installed.

F. Install and finish poured-in-place terrazzo base at the same time the adjacent terrazzo flooring is installed.

3.4 PRECAST TERRAZZO INSTALLATION

A. Install precast terrazzo units using method recommended in writing by NTMA and manufacturer unless otherwise indicated.

B. Do not install units that are chipped, cracked, discolored, or improperly finished.

C. Seal joints between units with joint compound matching precast terrazzo matrix

3.5 REPAIR

A. Cut out and replace terrazzo areas that evidence lack of bond with substrate. Cut out terrazzo areas in panels defined by strips and replace to match adjacent terrazzo, or repair panels according to NTMA's written recommendations, as approved by Architect.

3.6 CLEANING AND PROTECTION

A. Cleaning:

1. Remove grinding dust from installation and adjacent areas.
2. Wash surfaces with cleaner according to NTMA's written recommendations and manufacturer's written instructions; rinse surfaces with water and allow them to dry thoroughly.

B. Sealing:

1. Seal surfaces according to NTMA's written recommendations.
2. Apply sealer according to sealer manufacturer's written instructions.

C. Protection: Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure that terrazzo is without damage or deterioration at time of Substantial Completion.

END OF SECTION 096623

SECTION 096723 - RESINOUS FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Resinous flooring systems.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site before work and mockups begin.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.

B. Samples for Initial Selection: For each type of exposed finish required.

C. Samples for Verification: For each resinous flooring system required, 6 inches (150 mm) square, applied to a rigid backing by Installer for this Project.

1.5 INFORMATIONAL SUBMITTALS

A. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

B. Material Certificates: For each resinous flooring component, from manufacturer.

C. Material Test Reports: For each resinous flooring system, by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For resinous flooring to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Engage an installer who is trained, approved, and certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.

C. Installer to provide letter stating that they have been in business for at least ten years and listing five projects in the last two years of similar scope. For each project provide: project name, location, date of installation, contact information, size of project, and manufacturer of materials with system information.

D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Apply full-thickness field sample color and texture mockups on 96-inch- (2400-mm-) square floor area for Architect approval. Location of mockup selected by Architect.

   a. Include 96-inch (2400-mm) length of integral cove base with inside and outside corner.

2. Simulate finished lighting conditions for Architect's review of mockups.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.

B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.

C. Close spaces to traffic during resinous flooring application and for 24 hours after application unless manufacturer recommends a longer period.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Flammability: Self-extinguishing according to ASTM D635.

2.2 MANUFACTURERS

A. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, from single source from single manufacturer. Obtain secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from manufacturer recommended in writing by manufacturer of primary materials.

2.3 RESINOUS FLOORING **(RF-1)**

A. Basis of Design Product: Subject to compliance with requirements, provide **Sherwin Williams; Resuflor Deco Quartz,** or Architect approved equal product.

B. Resinous Flooring System: Abrasion-, impact-, and chemical-resistant, aggregate-filled, moisture-insensitive, and resin-based monolithic floor surfacing designed to produce a seamless floor and integral cove base.

C. System Characteristics:

1. Color and Pattern: As selected by Architect from manufacturer's full range.
2. Wearing Surface: Textured for slip resistance.
3. Overall System Thickness: 1/8 inch (3.175 mm).
   a. Primer: Resuprime 3579 at 250 sq. ft. per gallon.
   b. 1st Receiver Coat: Resuflor 3561 at 140-145 sq. ft. per gallon
   c. 1st Broadcast: GP5900F to excess at 0.4 lbs. per sq. ft.
   d. 2nd Receiver Coat: Resuflor 3561 at 65-70 sq. ft. per gallon
   e. 2nd Broadcast: GP5900F to excess at 0.4 lbs. per sq. ft.
   f. Grout Coat: Resuflor 3746 at 100 sq. ft. per gallon.
   g. Topcoat: Resuflor 3746 at 200 sq. ft. per gallon.
4. Hardness: ASTM D 2240.
5. Compressive Strength: ASTM C 579.
6. Tensile Strength: ASTM C 307.
7. Abrasion Resistance: ASTM D 4060.
8. Flexural Strength: ASTM C 580.
9. Adhesion: ACI 503R.
10. Impact Resistance: MIL-D-3134J.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry substrate for resinous flooring application.

B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.

1. Roughen concrete substrates as follows:

a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
b. Comply with NACE No. 6/SSPC-SP13, with a **Concrete Surface Profile (CSP) of 3** or greater in accordance with the International Concrete Repair Institute (ICRI) Technical Guideline No. 310.2R, unless manufacturer's written instructions are more stringent.

2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written instructions.

C. Patching and Filling: Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.

1. Control Joint Treatment: Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written instructions.
a. Cover joint with resinous flooring system, saw cut at joint, fill with sealant, cover with flake topper seal.

D. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.

3.2 INSTALLATION

A. Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.

1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
3. Expansion and Isolation Joint Treatment: At substrate expansion and isolation joints, comply with resinous flooring manufacturer's written instructions.

B. Integral Cove Base: Apply epoxy cove base mix to wall surfaces after applying flooring. Apply according to manufacturer's written instructions and details, including those for taping, mixing, priming, troweling, sanding, and topcoating of cove base. Round internal and external corners.

1. Basis of design: Epoxy wall coved base by Xtreme polishing system.
   a. Integral Cove Base: 4 inches (100 mm) high.

C. Self-Leveling Body Coats: Apply self-leveling slurry body coats in thickness indicated for flooring system.

1. Aggregates: Broadcast aggregates at rate recommended by manufacturer and, after resin is cured, remove excess aggregates to provide surface texture indicated.

D. Troweled or Screeded Body Coats: Apply troweled or screeded body coats in thickness indicated for flooring system. Hand or power trowel and grout to fill voids. When body coats are cured, remove trowel marks and roughness using method recommended by manufacturer.

E. Grout Coat: Apply grout coat, of type recommended by resinous flooring manufacturer, to fill voids in surface of final body coat.

F. Topcoats: Apply topcoats in number indicated for flooring system and at spreading rates recommended in writing by manufacturer and to produce wearing surface indicated.

3.3 FIELD QUALITY CONTROL

A. Material Sampling: Owner may, at any time and any number of times during resinous flooring application, require material samples for testing for compliance with requirements.

1. Owner will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.
3. If test results show applied materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with unacceptable materials, and reapply flooring materials to comply with requirements.

B. Core Sampling: At the direction of Owner and at locations designated by Owner, take one core sample per 1000 sq. ft. (92.9 sq. m) of resinous flooring, or portion of, to verify thickness. For each sample that fails to comply with requirements, take two additional samples. Repair damage caused by coring. Correct deficiencies in installed flooring as indicated by testing.

3.4 PROTECTION

A. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.

END OF SECTION 096723

SECTION 097200 - WALL COVERINGS

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Resilient cork/linoleum tackable wallcovering

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include data on physical characteristics, durability, fade resistance, and fire-test-response characteristics.

B. Shop Drawings: Show location and extent of each wall-covering type. Indicate seams and termination points.

C. Samples: For each type of wall covering and for each color, pattern, texture, and finish specified, full width by 7 inches (18 cm)] x 9 inches (23 cm)] long in size.

1. Wall-Covering Sample: From same production run to be used for the Work.

D. Samples for Initial Selection: For each type of wall covering.

E. Samples for Verification: For each type of wall covering and for each color, pattern, texture, and finish specified, full width by 7 inches (18 cm)] x 9 inches (23 cm)] long in size.

1. Wall-Covering Sample: From same production run to be used for the Work.

F. Product Schedule: For wall coverings. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each wall covering, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For wall coverings to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same production run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Wall-Covering Materials: For each type, color, texture, and finish, full width by length to equal to **5** percent of amount installed.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install wall coverings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and HVAC system is operating and maintaining ambient temperature and humidity conditions at levels intended for occupants after Project completion during the remainder of the construction period.

1. Wood-Veneer Wall Coverings: Condition spaces for not less than 48 hours before installation.

B. Lighting: Do not install wall covering until lighting that matches conditions intended for occupants after Project completion is provided on the surfaces to receive wall covering.

C. Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall-covering manufacturer for full drying or curing.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Manufacturers: Subject to compliance with requirements, provide products by the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Forbo Flooring Systems
2. Or approved equal

B. Fire-Test-Response Characteristics: As determined by testing identical wall coverings applied with identical adhesives to substrates in accordance with test method indicated below by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: 25 or less.
b. Smoke-Developed Index: 450 or less.

2. Fire-Growth Contribution: No flashover and heat and smoke release when tested in accordance with NFPA 286.

2.2 RESILIENT TACKABLE WALL COVERING (**TW-1**)

A. BASIS of DESIGN: Forbo Bulletin Board - tackable surface sheet material

B. Description: Provide wall coverings in rolls from same production run and that comply with the following:

C. Fire Rating: Class B

D. Thickness: 1/4 inch (6mm)

E. Width: 48 inches (1219 mm)

F. Surface Gloss: Matte

G. Pattern Match: Straight Match

H. Features:
1. Tackable.
2. Self-Healing

I. Colors, Textures, and Patterns: As selected by Architect from manufacturer's full range. Refer to finish legend.

2.3 ACCESSORIES

A. Adhesive: Mildew-resistant, nonstaining, strippable adhesive, for use with specific wall covering and substrate application indicated and as recommended in writing by wall-covering manufacturer.
1. Adhesive: Solvent-free, SBR type linoleum adhesive (L-910W)

B. Primer/Sealer: Mildew resistant, complying with requirements in Section 099123 "Interior Painting" and recommended in writing by primer/sealer and wall-covering manufacturers for intended substrate.
1. Wall surfaces scheduled to receive tackable wallcovering must be properly sealed with a quality primer specified for use under flexible vinyl wallcoverings per manufacturers instructions.

C. Sealant: Color matched caulk. As recommended in writing by wall-covering manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation surfaces being true in plane and vertical and horizontal alignment, maximum moisture content, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Comply with manufacturer's written instructions for surface preparation.

B. Clean substrates of substances that could impair bond of wall covering, including dirt, oil, grease, mold, and mildew.

C. Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.

1. Moisture Content: Maximum of 5 percent on new plaster, concrete, and concrete masonry units when tested with an electronic moisture meter.
2. Gypsum Board: Apply primer/sealer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
3. Painted Surfaces:

a. Check for pigment bleeding. Apply primer/sealer to areas susceptible to pigment bleeding as recommended in writing by primer/sealer manufacturer.
b. Sand gloss, semigloss, and eggshell finishes with fine sandpaper.

D. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

E. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.3 INSTALLATION OF WALL COVERING

A. Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated.

B. Cut wall-covering strips in roll number sequence. Change the roll numbers at partition breaks and corners.

C. Install strips in same order as cut from roll.

D. Install wall covering without lifted or curling edges and without visible shrinkage.

E. Scribe, cut, and fit material to butt tightly to adjacent surfaces, built-in casework and permanent fixtures and pipes.

F. Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without overlaps or gaps between strips.

G. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.

H. Joints: Butt joints where required

3.4 CLEANING

A. Remove excess adhesive at seams, perimeter edges, and adjacent surfaces.

B. Use cleaning methods recommended in writing by wall-covering manufacturer.

C. Replace strips that cannot be cleaned.

D. Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

3.5 PROTECTION

A. Protect installed product and finish surfaces from damage during construction.

END OF SECTION 097200

SECTION 099113 – EXTERIOR PAINTING

1.0 PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes surface preparation and the application of paint systems on the following exterior substrates:

1. Steel.

B. Related Sections include the following:

1. Division 09 Section "Interior Painting" for surface preparation and the application of paint systems on interior substrates.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.

2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

1.4 QUALITY ASSURANCE

A. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."

2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

2.0 PART 2 – PRODUCTS

2.1 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. Sherwin-Williams Company (The).
2. Or Equal.

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. Colors: As selected by Architect from manufacturer's full range of colors.

2.3 METAL PRIMERS

A. Alkyd Anticorrosive Metal Primer: MPI #79.

1. VOC Content: E Range of E1.

2.4 QUICK-DRYING ENAMELS

A. Quick-Drying Enamel (Semigloss): MPI #81 (Gloss Level 5).

1. VOC Content: E Range of E2.

3.0 PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

C. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

D. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.

2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:

1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.

2. Testing agency will perform tests for compliance of paint materials with product requirements.

3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

A. Steel Substrates:

1. Quick-Drying Enamel System: MPI EXT 11.

a. Basis of Design: Duration Exterior Acrylic Latex (Satin) by Sherwin Williams.

1) Location: Exterior structural steel, lintels, doors, and frames.

END OF SECTION 099113

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and the application of paint systems on the following interior substrates:

1. Concrete masonry units (CMUs).
2. Gypsum wall board (GWB)
3. Plaster
4. Steel Substrates

1.2 DEFINITIONS

A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D523.

B. MPI Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.

C. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.

D. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D523.

E. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D523.

F. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D523.

G. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D523.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
2. Indicate VOC content.

B. Samples for Initial Selection: For each type of topcoat product.

C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches (200 mm) square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 1 gal. of each material and color applied.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Sherwin-Williams Company
2. Glidden Professional.
3. Pratt & Lambert.

B. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include but are not limited to products listed in the Interior Painting Schedule for the paint category indicated.

2.2 PAINT, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. Colors: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Masonry (Clay and CMUs): 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

D. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 INTERIOR PAINTING SCHEDULE

A. CMU Substrates:

1. Latex System MPI INT 4.2A:

a. Block Filler: Block filler, latex, interior/exterior**,** MPI #4.

b. Intermediate Coat: Latex, interior, matching topcoat.

c. Topcoat: Latex, interior, satin (MPI Gloss Level 4)**,** MPI #43.

B. Steel Substrates

1. Latex System:

a. Primer Coat: Rust-Inhibitive, Water Based: MPI #107.

b. Intermediate Coat: Latex, Interior, matching topcoat.

c. Topcoat: Latex, interior Gloss, (Gloss Level 6, except minimum gloss of 6.5 units at 60 degrees), MPI #114.

C. Galvanized-Metal Substrates:

1. Latex System:

a. Primer Coat: Primer, Galvanized, Water Based, MPI #134.

b. Intermediate Coat: Latex, Interior, matching topcoat.

c. Topcoat:Latex, interior Gloss, (Gloss Level 6, except minimum gloss of 6.5 units at 60 degrees), MPI #114.

D. Galvanized-Metal Substrates:

1. Epoxy System:

a. Primer Coat: Primer, Galvanized, MPI #134

b. Intermediate Coat: Epoxy, interior, matching topcoat.

c. Topcoat: Two Part Epoxy, Semi-Gloss, High solids, high build, fast drying polyamide epoxy. Macropoxy 646 Fast Cure.

E. Gypsum Board Substrates

1. Latex System

a. Prime Coat: Primer sealer, latex, interior MPI #50

b. Intermediate Coat: Latex, interior, matching topcoat.

c. Topcoat: Latex, interior, flat, (MPI Gloss Level 1) MPI#53

1) Locations: Soffits

d. Topcoat: Latex, interior satin (MPI Gloss Level 4), MPI #43.

1) Locations: Walls

END OF SECTION 099123

SECTION 099646 - INTUMESCENT PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Intumescent paint for interior items and surfaces.

B. Related Requirements:
1. Section 099123 "Interior Painting" for primers and finish coats that may be used with intumescent paint finishes.
2. Section 099300 "Staining and Transparent Finishing" for primers, finish coats, and wood stains that may be used with intumescent paint finishes.
3. Section 099113 “Exterior Painting” for primers and finish coats for exterior painting.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Indicate VOC content.

B. Samples: For each type of topcoat product.

C. Samples for Initial Selection: For each type of topcoat product.

D. Samples for Verification: For each type of coating system and each color and gloss of intumescent paint finish indicated.

1. Submit Samples on rigid backing, not less than 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

E. Product Schedule: Use same designations indicated on Drawings and in Part 3 intumescent painting schedules to cross-reference paint systems specified in this Section. Include color designations.

1.5 INFORMATIONAL SUBMITTALS

A. Material Test Reports: For each intumescent paint.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match materials applied and that are packaged with protective covering for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent of each color applied, but not less than 1 gal. of each material and color applied.

1.7 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each coating system.

   a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft..
   b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

   a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.9 FIELD CONDITIONS

A. Apply waterborne intumescent paints only when temperatures of surfaces to be painted and ambient air temperatures are between 50 and 90 deg F.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Provide Flame off fire barrier paint or an approved equal.
   1. Provide dry film thickness required to meet fire rating of 2 hours as follows or as recommended by approved manufacturer.
      a. Corrugated Metal Decking: 75 Mil Minimum
      b. Steel Beams: 71 Mil Minimum
      c. WF Columns: 57 Mil Minimum

2.2 INTUMESCENT PAINT PRODUCTS, GENERAL

A. Comply with requirements for fire-retardant coating classification and surface-burning characteristics indicated.

B. Bond Strength: 7000 PSF per ASTM E736

C. Fire-Endurance Ratings: ASTM E119/ UL 263 (UL Design No. Y658)

D. Surface-Burning Characteristics of Fire-Retardant Systems: As tested according to ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

   1. Flame-Spread Index: 25 or less.
   2. Smoke-Developed Index: 450 or less.

E. Material Compatibility:

   1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
   2. For each material or coat, provide products recommended in writing by intumescent paint manufacturer for use on substrate indicated.

F. Colors and Gloss: As selected by Architect from manufacturer's full range.
   1. If color matching the finish schedule is not available a compatible top coat color is to be provided.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with manufacturer's requirements for surface treatments, shop-primed surfaces, maximum moisture content, and other conditions affecting performance of the Work.

B. Begin coating only when moisture content of wood substrate is 15 percent or less when measured with an electronic moisture meter.

C. Begin coating no sooner than 28 days after substrate is constructed and is visually dry on both sides.

D. Verify suitability of substrates, including surface conditions, and compatibility with existing finishes and primers.

E. Proceed with coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

3.2 PREPARATION

A. Comply with manufacturer's written instructions applicable to substrates and coating systems indicated.

B. Remove hardware and hardware accessories, plates, machined surfaces, light fixtures, and similar items already installed that are not to be coated. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating.

1. After completing coating operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants. Do not coat surfaces if surface moisture content or alkalinity exceeds that permitted in manufacturer's written instructions.

1. Remove incompatible primers, and reprime substrate with compatible primers as required to produce coating systems indicated.
2. Perform cleaning and coating application so dust and other contaminants from cleaning process do not fall on wet, newly coated surfaces.

3.3 INSTALLATION

A. Apply intumescent paints according to manufacturer's written instructions and to comply with requirements for listing and labeling for surface-burning characteristics specified.

1. Use equipment and techniques best suited for substrate and type of material being applied.

2. Coat surfaces behind movable items the same as similar exposed surfaces.
3. Apply each coat separately according to manufacturer's written instructions.

B. Apply coatings to prepared surfaces as soon as practical after preparation and before subsequent surface soiling or deterioration.

C. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Produce sharp lines and color breaks.

1. Pigmented Finishes: If undercoats or other conditions show through pigmented topcoat/overcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
2. Clear Finishes: Produce a smooth surface film of even sheen using multiple coats.

3.4 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from coating application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

END OF SECTION 099646

SECTION 101100 - VISUAL DISPLAY SURFACES

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Markerboards.

2. Tackboards.

1.3 DEFINITIONS

A. Tackboard: Framed or unframed, tackable, visual display board assembly.

B. Visual Display Board Assembly: Visual display surface that is factory fabricated into composite panel form, either with or without a perimeter frame; includes chalkboards, markerboards, and tackboards.

C. Visual Display Surface: Surfaces that are used to convey information visually, including surfaces of chalkboards, markerboards, tackboards, and surfacing materials that are not fabricated into composite panel form but are applied directly to walls.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for visual display surfaces.

B. Shop Drawings: For visual display surfaces. Include plans, elevations, sections, details, and attachments to other work.

1. Show locations of panel joints.

2. Show locations of special-purpose graphics for visual display surfaces.

3. Include sections of typical trim members.

C. Samples for Initial Selection: For each type of visual display surface indicated, for units with factory-applied color finishes, and as follows:

1. Actual sections of porcelain-enamel face sheet, & tackboard.

2. Include accessory Samples to verify color selected.

3. Provide color samples for tackboard color selection of actual tackboard material, printed color samples will not be accepted.

D. Samples for Verification: For each type of visual display surface indicated.

1. Visual Display Surface: Not less than 8-1/2 by 11 inches (215 by 280 mm), mounted on substrate indicated for final Work. Include one panel for each type, color, and texture required.

2. Trim: 6-inch- (152-mm-) long sections of each trim profile.

E. Product Schedule: For visual display surfaces.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for surface-burning characteristics of fabrics.

C. Warranties: Sample of special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For visual display surfaces to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of motor-operated, sliding visual display units required for this Project.

B. Source Limitations: Obtain visual display surfaces from single source from single manufacturer.

C. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25 or less.

2. Smoke-Developed Index: 450 or less.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver factory-built visual display surfaces, including factory-applied trim where indicated, completely assembled in one piece without joints, where possible. If dimensions exceed maximum manufactured panel size, provide two or more pieces of equal length as acceptable to Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site.

B. Store visual display surfaces vertically with packing materials between each unit.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install visual display surfaces until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

B. Field Measurements: Verify actual dimensions of construction contiguous with visual display surfaces by field measurements before fabrication.

1. Allow for trimming and fitting where taking field measurements before fabrication might delay the Work.

1.10 WARRANTY

A. Special Warranty for Porcelain-Enamel Face Sheets: Manufacturer's standard form in which manufacturer agrees to repair or replace porcelain-enamel face sheets that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Surfaces lose original writing and erasing qualities.

b. Surfaces exhibit crazing, cracking, or flaking.

2. Warranty Period: 50 years from date of Substantial Completion.

2.0 PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Porcelain-Enamel Face Sheet: Manufacturer's type 316 stainless steel sheet with porcelain-enamel coating fused to steel; uncoated thickness indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Claridge Products and Equipment, Inc.

b. PolyVision Corporation; a Steelcase company.

c. Or equal.

2. Matte Finish: Low reflective; wipes clean with dry cloth or standard eraser.

B. Plastic-Impregnated Cork Sheet: Seamless, homogeneous, self-sealing sheet consisting of granulated cork, linseed oil, resin binders, and dry pigments that are mixed and calendared onto fabric backing; with washable vinyl finish and integral color throughout.

1. Color: to be selected from manufacturer's full range of colors.

C. Hardboard: ANSI A135.4, tempered.

D. Extruded Aluminum: ASTM B 221 (ASTM B 221M), Alloy 6063.

E. Adhesives: Manufacturer's standard product that complies with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 MARKERBOARD ASSEMBLIES (MB)

A. Porcelain-Enamel Markerboard Panels: Balanced, high-pressure, factory-laminated markerboard assembly of three-ply construction, consisting of moisture-barrier backing, core material, and porcelain-enamel face sheet with low-gloss finish. Laminate panels under heat and pressure with manufacturer's standard, flexible waterproof adhesive.

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Claridge Products and Equipment, Inc.

2. Egan Visual Inc.

3. Ghent Manufacturing, Inc.

4. PolyVision Corporation; a Steelcase company.

5. Or equal.

C. Face Sheet Thickness: 0.062 inch uncoated base metal thickness

D. Manufacturer's Standard Core: Minimum 1/4 inch thick, with manufacturer's standard moisture-barrier backing.

E. Laminating Adhesive: Manufacturer's standard moisture-resistant thermoplastic type.

F. Marker Tray: Manufacturer's standard

1. Solid Type: Extruded aluminum with ribbed section and smoothly curved exposed ends.

G. Graphics:

1. MB-2: Custom Graphic - Music Staff

2.3 TACKBOARD ASSEMBLIES (TB)

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Forbo Flooring Systems

2. AARCO Products, Inc.

3. Best-Rite Manufacturing.

4. Claridge Products and Equipment, Inc.

5. Egan Visual Inc.

6. Ghent Manufacturing, Inc.

7. PolyVision Corporation; a Steelcase company.

8. Or equal.

B. Plastic-Impregnated-Cork Tackboard: 1/4-inch- (6-mm-) thick, plastic-impregnated cork sheet factory laminated to 1/4-inch- (6-mm-) thick hardboard backing.

2.4 MARKERBOARD AND TACKBOARD ACCESSORIES

A. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch- (1.57-mm-) thick, extruded aluminum; standard size and shape.

1. Factory-Applied Trim: Manufacturer's standard.

2.5 FABRICATION

A. Porcelain-Enamel Visual Display Assemblies: Laminate porcelain-enamel face sheet and backing sheet to core material under heat and pressure with manufacturer's standard flexible, waterproof adhesive.

B. Visual Display Boards: Factory assembled visual display boards unless otherwise indicated.

1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display boards at manufacturer's factory before shipment.

C. Aluminum Frames and Trim: Fabricate units straight and of single lengths, keeping joints to a minimum. Miter corners to a neat, hairline closure.

1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display units at manufacturer's factory before shipment.

2.6 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.7 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

2.8 VISUAL DISPLAY SURFACE SCHEDULE

A. **Markerboard (MB-1):** Factory assembled.

1. Markerboard: Porcelain-enamel markerboard assembly.

a. Color: White

2. Corners: Square.

3. Width: As indicated on interior elevation.

4. Height: 4’-0”

5. Mounting: Wall.

6. Mounting Height: Coordinate in field.

7. Factory-Applied Aluminum Trim: Manufacturer's standard with clear anodic finish.

B. **Markerboard (MB-2):** Factory assembled.

1. Markerboard: Porcelain-enamel markerboard assembly.

a. Color: White

2. Custom Graphic: Music Staff

3. Corners: Square.

4. Width: As indicated on interior elevation.

5. Height: 4’-0”

6. Mounting: Wall.

7. Mounting Height: Coordinate in field.

8. Factory-Applied Aluminum Trim: Manufacturer's standard with clear anodic finish.

C. **Tackboard (TB-1):** Factory assembled.

1. Tack Surface: Plastic-impregnated-cork tackboard assembly.

   a. Color: As selected by Architect from Manufacturer's full color range.

2. Corners: Square.

3. Width: As indicated on interior elevation.

4. Height: 4'-0"

5. Mounting: Wall.

6. Mounting Height: Coordinate in field.

7. Edges: Concealed by trim.

   a. Factory-Applied Aluminum Trim: Manufacturer's standard style, with clear anodic finish.

3.0 PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance of the Work.

B. Examine walls and partitions for proper preparation and backing for visual display surfaces.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Comply with manufacturers written instructions for surface preparation.

B. Clean substrates of substances that could impair the performance of and affect the smooth, finished surfaces of visual display boards, including dirt, mold, and mildew.

C. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, projections, depressions, and substances that will impair bond between visual display surfaces and wall surfaces.

3.3 INSTALLATION OF FACTORY-FABRICATED VISUAL DISPLAY BOARDS AND ASSEMBLIES

A. Visual Display Boards: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display boards with fasteners at not more than 16 inches (400 mm) o.c. Secure both top and bottom of boards to walls.

3.4 CLEANING AND PROTECTION

A. Clean visual display surfaces according to manufacturer's written instructions. Attach one cleaning label to visual display surface in each room.

B. Touch up factory-applied finishes to restore damaged or soiled areas.

C. Cover and protect visual display surfaces after installation and cleaning.

END OF SECTION 101100

SECTION 101400 – SIGNAGE

1.0 PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Room Signs: Modular, Acrylic/PVC based, plaque signs.

2. Dimensional Exterior and Interior Signage

1.3 DEFINITIONS

A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.4 SUBMITTALS

A. Room Signs:

1. Product Data: For each type of product indicated.

a. Shop Drawings: Show fabrication and installation details for signs.

b. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.

c. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.

2. Samples for Initial Selection: Manufacturer's color charts consisting of actual units or sections of units showing the full range of colors available for the following:

a. Acrylic/PVC sheet.

3. Samples for Verification: For each of the following products and for the full range of color, texture, and sign material indicated, of sizes indicated:

a. Plaque: 6 inches (150 mm) square including border.

b. Acrylic Sheet: 6 inches (150 mm) square for each color required.

c. Accessories: Manufacturer's full-size unit.

4. Sign Schedule: Indicate all rooms to receive signage. Use same designations indicated on Drawings.

5. Coordinate first paragraph below with qualification requirements in Division 01 Section "Quality Requirements" and as supplemented in "Quality Assurance" Article.

6. Qualification Data: For Installer.

7. Maintenance Data: For signs to include in maintenance manuals.

8. Warranty: Special warranty specified in this Section.

B. Interior and Exterior Dimensional Signage:

1. Signage schedule in manufacturer's format for verification of text/ copy.

2. Approval drawings showing materials, construction detail, lay-out, copy, size and mounting methods.

3. Engineering drawings for each sign type.

4. Full size sample of each type of dimensional letter for verification of materials, color, pattern, overall quality, and for adherence to drawings and requirements indicated.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications:

1. Room Signs:

a. Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

2. Interior and Exterior Dimensional Signage

a. Manufacturer specializing in manufacturing the products specified in this section with minimum 5-year experience. Obtain signs from one source and a single manufacturer.

B. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.

C. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

D. Surface Burning Characteristics:

1. All interior signs shall be fabricated of materials tested and certified to meet the following burning properties:

a. Flame Spread: ASTM E84 Class A, not more than 25;

b. Smoke Density: ASTM D2843 not over 75; or ASTME84 not over 450.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify recess openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

A. Coordinate placement of anchorage devices with templates for installing signs.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of embedded graphic image colors and sign lamination.

2. Room Signs Warranty Period: One year from date of Substantial Completion.

3. Interior and Exterior Dimensional Signs Warranty Period: Minimum 5 years against defects in materials and workmanship.

2.0 PART 2 – PRODUCTS

2.1 ROOM SIGNS

A. Materials: Acrylic, .375” thick two layered with direct printing to prevent scratching, fading or other damage. Edges shall be smooth without chips or marks and acrylic shall be on-glare optically clear assuring no loss of clarity or composition to the print.

B. Manufacturers: The materials or items included in this Section shall be products of the same quality and design of the manufacturers used herein for reference, or accepted substitutes:

1. Manufacturers of Signs:

a. Takeform

1) Vivid

b. Mohawk Sign Systems.

c. Best Sign Systems.

d. ASI Sign Innovations, Inc.

2.2 ROOM SIGNAGE

A. Description:

1. General: Refer to Part 4 “Signage Types” for size, color, graphic, and text height/font.

2. Signs shall be manufactured from high impact acrylic/PVC thermoplastic alloy, pressure molded using co-molding process. Provide tactile copy and grade 2 Braille raised 1/32 inch minimum from plaque surface using manufacturer’s process.

   a. Provide lettering and graphics precisely formed, uniformly opaque to comply with relevant ADA regulations and requirements indicated.

   b. Colors: High contrast semi-matte integral colors for graphics. All integral resins are UV stabilized resins using automotive grade pigments.

      1) Selected from manufacturer’s full range of standard high contrast, semi-matte colors.

3. Fabrication: Panel depth .25 inch. with attachable backplate panel depth: 0.125 inch.

   a. Sign Size:

      1) 6 inches high x 6 inches wide.

      2) 9 inches high x 6 inches wide.

   b. Sign Shape: Rectangular with radiused corners.

4. Integral Window Feature: Subsurface, lateral slot, separate changeable graphic insert plaque construction in compliance with indicated materials, thickness, finish, colors, designs, shapes, sizes and details.

   a. Lens: Clear, .080-inch-thick, matte first surface to accept graphic insert, die-cut paper.

   b. Visible Window Opening Located centered, 1 inch from bottom edge and 2-1/2 inch high. (Doubled for two rows of text.)

5. Mounting Height: Tactile characters on signs shall be located 48 inches (1220 mm) minimum above finish floor or ground surface, measured from the baseline of the lowest tactile character and 60 inches (1525 mm) maximum above finish floor or ground surface, measured from the baseline of the highest tactile character.

6. Mounting Location: Mount on wall alongside the door on latch side. At double doors with one active leaf, the sign shall be located on the inactive leaf. At double doors with two active leafs, the sign shall be located to the right of the

right-hand door. If there is no wall space at the latch side, locate the sign on the nearest adjacent wall.

7. Mounting Type: Vinyl tape mounting (VT), unless otherwise noted.

8. Refer to Part 4 "Signage Schedule" for size, color, graphic, and text height/font.

B. Room Types:

1. **TYPE A**: Room Identification w/ Room Name and Room Number.

2. **TYPE B:** Room Identification w/ Room Number and Integral Window Slot/Lens

3. **TYPE C / D**: Room Designation w/ Pictogram.

a. Each renovated or new handicapped accessible Toilet Room sign shall incorporate the international symbol of accessibility and denote graphically "BOYS", "GIRLS" or "ALL GENDER" as applicable.

4. **TYPE E:** Room Identification w/ Pictogram

a. Each renovated Staircase sign shall incorporate the symbol for stairs and denote graphically "STAIRS".

5. **TYPE F:** Room Identification w/ Pictogram

a. Each renovated Elevator sign shall incorporate the international symbol of accessibility and denote graphically "ELEVATOR".

C. Finishes:

1. Colors and Surface Textures: For exposed sign material that requires selection of materials with integral or applied color surface textures or other characteristics related to appearance, provide color matches indicated, or if not indicated, as selected by the Architect from the manufacturer's standards and noted on drawings.

D. Textures:

1. Matte Non-Glare, as selected from the manufacturer's standards.

2.3 DIMENSIONAL EXTERIOR AND INTERIOR SIGNAGE

A. DIMENSIONAL CHARACTERS:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Basis of Design Product: Subject to compliance with requirements,

provide product Takeform Ethos, Fabricated Aluminum with Internal LEDs for halo-lit illumination on Drawings or comparable product by one of the following:

1) Gemini

2) Or approved equal

b. Character Material: Aluminum

c. Character Height: As indicated on Drawings

d. Thickness: 2” Thick or a recommended by Manufacturer for size of character

e. Backer Panel Depth: .125”

f. Material Fire Raing: Class A

g. Finishes:

1) Aluminum Face Painted MAP Acrylic Paint: Refer to finish legend

2) White LED

3) Backer Panel MAP Acrylic Paint: Refer to finish legend

h. Typeface: Refer to drawings.

i. Color and Finish: Refer to drawings.

B. DIMENSIONAL CHARACTER MATERIALS

1. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

2. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

C. MOUNTING HARDWARE

1. All fasteners shall be concealed. See drawings for mounting positions and method.

D. ACCESSORIES

1. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:

a. Use concealed fasteners and anchors unless indicated to be exposed.

b. Exposed Metal-Fastener Components, General:

1) Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.

2) Fastener Heads: For nonstructural connections, use flat head or oval countersunk screws and bolts with tamper-resistant Allen-head slots unless otherwise indicated.

c. Sign Mounting Fasteners:

1) Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.

2) Through Fasteners: Exposed metal fasteners matching sign finish, with type of head indicated, installed in predrilled holes.

d. Adhesive: As recommended by sign manufacturer.

e. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch (1.14 mm) thick, with adhesive on both sides.

f. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

E. FABRICATION

1. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

a. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.

b. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.

c. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.

d. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.

e. Internally brace dimensional characters for stability, to meet structural performance loading without oil-canning or other surface deformation,

and for securing fasteners.

f. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

g. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.

F. GENERAL FINISH REQUIREMENTS

1. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

2. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

3. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

3.0 PART 3 – EXECUTION

3.1 SITE VISITS

A. Interior and Exterior Dimensional Signage:

1. Site Visits – 3 site visits shall be required by the sign contractor.

a. Prior to submission of bid for site assessment and evaluation.

b. Post award for the purpose of meeting with Owners and project manager.

c. Final walk-through and punchlist.

2. Programming – contractor shall perform all programming. Programming shall include location plan, message schedule, and/ or plots. All programming materials shall be submitted for approval.

3.2 EXAMINATION

A. Site Verification of Conditions: Verify installation conditions previously established under other sections are acceptable for product installation in accordance with manufacturer.

B. Installer shall examine signs defects, damage and compliance with specifications. Installation shall not proceed until unsatisfactory conditions are corrected.

3.3 INSTALLATION

A. General: Coordinate locations of signs with Owner and Architect prior to installation. Install signs using mounting methods in compliance with the manufacturer's instructions.

1. Install signs level, plumb, and at the height indicated with sign surfaces that are free from distortion or other defects in appearance.

B. Wall Mounted Room Signs: Attach panel signs to wall surfaces using the methods indicated below:

1. Concealed Mounting: Perimeter vinyl tape.

C. Interior and Exterior Dimensional Signage: Installation locations shall be in accordance with drawings. Locate signs where indicated using mounting methods in compliance with manufacturer’s written instructions.

1. The manufacturer shall coordinate installation schedules with the Owner and / or Construction Manager.

2. Installation shall be performed by manufacturer’s personnel trained and certified in manufacturer’s methods and procedures.

3. The manufacturer shall submit a CAD generated location plan noting the location of all signage and cross referenced to message schedule or plots for architect’s approval.

4. Manufacturer to provide full scale plots prior to manufacturing to verify size, copy and letter location. Any location, message or mounting issue shall be submitted to architect for review.

5. Letters shall be level, plumb, and at heights indicated with sign surfaces free from defects.

6. Upon completion of the work, installer shall remove unused or discarded materials, containers and debris from site.

3.4 CLEANING AND PROTECTION

A. At the completion of installation, clean soiled sign surfaces in accordance with the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

B. Package to prevent damage or deterioration during shipment, handling, storage and installation. Products shall remain in original packaging until removal is necessary. Store products in a dry, indoor location.

4.0 PART 4 – SIGNAGE SCHEDULE

4.1 SIGNAGE TYPES

A. General: At locations where rooms have multiple entrances, coordinate quantity of signs with Owner and Architect. Numbers and names below are based on working drawings and will be subject to change.

B. Refer to Room Signage Schedule and Signage Types included in Drawings.

END OF SECTION 101400

SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Washroom accessories.

2. Shower Room accessories

B. Related Requirements:

1. Section 093000 "Tiling" for ceramic toilet and bath accessories.

1.3 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
3. Include electrical characteristics.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.
2. Identify accessories using designations indicated.

1.5 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For accessories to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same Part 2 articles, obtain products from single source from single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.8 WARRANTY

A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, visible silver spoilage defects.
2. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 WASHROOM and SHOWER ACCESSORIES

A. Source Limitations: Obtain public-use washroom accessories from single source from single manufacturer.

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings by the following:

C. Toilet Paper Dispenser: Furnished by Owner, installed by General Contractor.

D. Paper Towel Dispenser: Furnished by Owner, installed by General Contractor.

E. Soap Dispenser: Furnished by Owner, installed by General Contractor.

F. Mirror **(B)**:
1. Basis-of-Design Product: Bobrick #B-165 1836
2. Description: One piece ½”x½”x3/8” channel frame mirror mitered corner stainless steel frame.
3. Mounting: Concealed wall hanger.
4. Size: 18”x36” (46cm x 92cm).
5. Material and Finish: Stainless steel, No. 4 finish (satin).

G. Grab Bar **(L)**:
1. Basis-of-Design Product: Bobrick #B-5806.99 x 42.
2. Description: Stainless steel grab bar with snap flange.
3. Mounting: Concealed.
4. Size: 42" (1066 mm).
5. Material and Finish: Stainless steel, No. 4 finish (satin) with peened gripping surface.

H. Grab Bar **(LA)**:
1. Basis-of-Design Product: Bobrick #B-5806.99 x 36.
2. Description: Stainless steel grab bar with snap flange.
3. Mounting: Concealed.
4. Size: 36" (914 mm).
5. Material and Finish: Stainless steel, No. 4 finish (satin) with peened gripping surface.

I. Vertical Grab Bar (**AE)**:
1. Basis-of-Design Product: Bobrick #B-5806.99 x 18.
2. Description: Stainless steel grab bar with snap flange.
3. Mounting: Concealed.
4. Size: 18" (457 mm).
5. Material and Finish: Stainless steel, No. 4 finish (satin) with peened gripping surface.

J. Shower Grab Bar (**AB**):
1. Basis-of-Design Product: Bobrick #B-5806.99 x As Indicated.
2. Description: Stainless steel grab bar with snap flange.
3. Mounting: Concealed.
4. Size: "L" Shape and Length as indicated in plan.
5. Material and Finish: Stainless steel, No. 4 finish (satin) with peened gripping surface.

K. Sanitary Napkin Disposal (**N)**:
1. Basis-of-Design Product: Bobrick #B-270; Contura Series.
2. Description: Stainless steel sanitary napkin disposal.
3. Mounting: Surface.
4. Material and Finish: Stainless steel, No. 4 finish (satin).

L. Shower Curtain Rod (**V**):
1. Basis-of-Design Product: Bobrick, B6047 Series, ASI 1204 Series
2. Description: Extra heavy-duty, 1-1/4-inch OD; fabricated from 18'gauge, Type 304 stainless steel.
3. Mounting Flanges: Stainless-steel flanges designed for exposed fasteners.
4. Finish: No. 4 (satin)

M. Shower Curtain (Provide at each Shower Curtain Rod Location):
1. Basis-of-Design Product: Bobrick, 204 Series, ASI 1200 Series.
2. Size: Minimum 6 inches wider than the opening indicated by 72 inches high.
3. Material: Opaque, matte white vinyl, 0.008 inch thick with integral antibacterial and flame-retardant agents.
4. Grommets: Nickel-plated brass grommets at minimum 6 inches oc through top hem.
5. Shower Curtain Hooks: stainless-steel, spring wire curtain hooks with snap fasteners, sized to accommodate specified curtain rod. Provide one hook per curtain gromment.

N. Folding Shower Seat (**T)**

1. Basis-of-Design Product: B-5181; ASI 8206.
2. Configuration: L-shaped seat, designed for wheelchair access. Reversible for left or right-hand installation in the field.
3. Seat: One-piece, 1/2 inch thick, solid phenolic with matt-finish, ivory colored, melamine surfaces and black phenolic resin core. Integral slots for water drainage.
4. Frame: 18-8, type-304, stainless steel with satin finish. 16 gauge, 1 1.4 inch squire tubing and 18 gauge, 1 inch diameter seamless tubing.
5. Mounting Flanges: two 18-8 S, type-304, 3/16 inch stainless steel with satin finish. 3 inch diameter with three mounting screw holes.
6. Baseplate: 18-8 S, type-304, heavy-gauge stainless steel.
7. Spring: 17-7, type-301, 24 gauge stainless steel, spot welded to baseplate.
8. Dimensions: 33 inches by 20 15/16 inches, unless otherwise indicated on drawings.

2.2 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch (0.8-mm) minimum nominal thickness unless otherwise indicated.

B. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

C. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.3 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 102800

SECTION 104413 - FIRE EXTINGUISHER CABINETS

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Fire protection cabinets for the following:

a. Portable fire extinguishers.

B. Related Sections:

1. Division 10 Section "Fire Extinguishers."

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire protection cabinets.

1. Fire Protection Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.

B. Shop Drawings: For fire protection cabinets. Include plans, elevations, sections, details, and attachments to other work.

C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Size: 6 by 6 inches (150 by 150 mm) square.

D. Product Schedule: For fire protection cabinets. Coordinate final fire protection cabinet schedule with fire extinguisher schedule to ensure proper fit and function.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For fire protection cabinets to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Fire-Rated, Fire Protection Cabinets: Listed and labeled to comply with requirements in ASTM E 814 for fire-resistance rating of walls where they are installed.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.6 COORDINATION

A. Coordinate size of fire protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate sizes and locations of fire protection cabinets with wall depths and surrounding wall-mounted accessories.

2.0 PART 2 - PRODUCTS

2.1 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.

2.2 FIRE PROTECTION CABINET

A. Cabinet Type: Suitable for fire extinguisher.

1. Products:

a. J. L. Industries, Inc., a division of Activar Construction Products Group, Ambassador Series Model #1816-F-10 or Architect approved equal.

b. Larsen's Manufacturing Company

c. Kidde Residential and Commercial Division, Subsidiary of Kidde plc.

B. Cabinet Construction: 1-hour fire rated.

1. Fire-Rated Cabinets: Construct cabinets with single walls fabricated from 0.0428-inch- (1.1-mm-) thick, cold-rolled steel sheet. Provide factory-drilled mounting holes.

C. Cabinet Material: Cold rolled steel.

1. Shelf: Same metal and finish as cabinet.

D. Recessed Cabinet: Cabinet box recessed in walls of sufficient depth to suit 1-1/2 inch square semi-recessed trim.

E. Cabinet Trim: Square Edge trim in same material and finish as door.

F. Door Material: Cold rolled steel.

G. Door Style: Framed full clear acrylic panel with no exposed hinges.

H. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

1. Provide manufacturer's standard.
2. Provide concealed hinge permitting door to open 180 degrees.

I. Accessories:

1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
2. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle.
3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as directed by Architect.
   a. Identify fire extinguisher in fire protection cabinet with the words "FIRE EXTINGUISHER."
      1) Location: Applied to door.
      2) Color: Black.
      3) Lettering: Type A Die Cut.

J. Finishes:

1. Door and Cabinet: Factory-applied powder coated paint finish.
   a. Optional Color: Red.
2. Interior of cabinet and door: Manufacturer’s standard.

2.3 FABRICATION

A. Fire Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

1. Weld joints and grind smooth.
2. Provide factory-drilled mounting holes.
3. Prepare doors and frames to receive locks.
4. Install door locks at factory.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.

1. Fabricate doorframes with tubular stiles and rails and hollow-metal design, minimum 1/2 inch (13 mm) thick.
2. Fabricate doorframes of one-piece construction with edges flanged.
3. Miter and weld perimeter doorframes.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.4 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire protection cabinets after assembly.

D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.5 STAINLESS-STEEL FINISHES

A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.

B. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.

1. Run grain of directional finishes with long dimension of each piece.

2. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

3. Directional Satin Finish: No. 4.

3.0 PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where semi-recessed cabinets will be installed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for semi-recessed fire protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights indicated below:

1. Fire Protection Cabinets: 54 inches (1372 mm) above finished floor to top of cabinet.

B. Fire Protection Cabinets: Fasten cabinets to structure, square and plumb.

1. Fasten mounting brackets to inside surface of fire protection cabinets, square and plumb.

3.4 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust fire protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of fire protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. Touch up marred finishes, or replace fire protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire protection cabinet and mounting bracket manufacturers.

E. Replace fire protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 104413

SECTION 104416 - FIRE EXTINGUISHERS

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes portable fire extinguishers.

B. Related Sections:

1. Division 10 Section "Fire Extinguisher Cabinets."

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher.

B. Product Schedule: For fire extinguishers. Coordinate final fire extinguisher schedule with fire protection cabinet schedule to ensure proper fit and function.

1.4 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

1. Provide fire extinguishers approved, listed, and labeled by FMG.

1.7 COORDINATION

A. Coordinate type and capacity of fire extinguishers with fire protection cabinets to ensure fit and function.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure of hydrostatic test according to NFPA 10.

b. Faulty operation of valves or release levers.

2. Warranty Period: Six years from date of Substantial Completion.

2.0 PART 2 - PRODUCTS

2.1 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each fire protection cabinet indicated.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. J. L. Industries, Inc.; a division of Activar Construction Products Group.

b. Kidde Residential and Commercial Division; Subsidiary of Kidde plc.

c. Larsen's Manufacturing Company.

2. Valves: Manufacturer's standard.

3. Handles and Levers: Manufacturer's standard.

4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B and bar coding for documenting fire extinguisher location, inspections, maintenance, and recharging.

5. Fire Extinguisher Brackets: Provide manufacturer’s standard mounting bracket for new fire extinguishers that are not stored in fire extinguisher cabinets. See drawings for quantities and locations.

a. Design Make: J. L. Industries, Inc. Model #MB811C

B. Multipurpose Dry-Chemical Type: UL-rated 3A-40B:C nominal capacity, with mono-ammonium phosphate-based dry chemical in manufacturer's standard enameled container.

1. Design Make: J. L. Industries, Inc.; Model # Cosmic 5E (FE05C) - (7-1/4” o/a width x 16-3/8 o/a height)

3.0 PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install fire extinguishers in locations indicated on drawings and in compliance with requirements of authorities having jurisdiction.

END OF SECTION 104416

SECTION 116623 - GYMNASIUM EQUIPMENT

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following gymnasium equipment:

1. Basketball equipment.
2. Wall pads.
3. Volleyball equipment.
4. Wrestling mat lift.

B. Related Sections include the following:

1. Division 26 Sections for electrical service for motor operators, controls, and other powered devices for motorized gymnasium equipment.

C. Materials furnished and installed by Electrical contractor: The following Gymnasium Equipment shall be furnished EC. General Contractor shall coordinate all furnished items with the EC prior to installation.

1. Scoreboards- Provide by the electrical contractor.
2. Shot Clocks

1.3 DEFINITIONS

A. FIBA: International Basketball Federation (Federation Internationale de Basketball Amateur).

B. FIVB: International Volleyball Federation (Federation Internationale de Volleyball).

C. IBF: International Badminton Federation.

D. NAGWS: The National Association for Girls and Women in Sport.

E. NCAA: The National Collegiate Athletic Association.

F. NFHS: The National Federation of State High School Associations.

G. USAV: USA Volleyball.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. If applicable, include assembly, disassembly, and storage instructions for removable equipment.

2. Motors: Show nameplate data, ratings, characteristics, and mounting arrangements.

B. Shop Drawings: For gymnasium equipment. Include plans, elevations, sections, details, attachments to other work, and the following:

1. Method of field assembly for removable equipment, connections, installation details, mountings, floor inserts, attachments to other work, and operational clearances.

2. Transport and storage accessories for removable equipment.

C. Samples for Initial Selection: For each type of gymnasium equipment indicated.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Court layout plans, drawn to scale, and coordinating floor inserts, game lines, and markers applied to finished flooring.

B. Qualification Data: For Installer

C. Product Certificates: For each type of gymnasium equipment, signed by product manufacturer.

D. Warranty: Special warranty specified in this Section.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For gymnasium equipment to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications:

B. Source Limitations: Obtain each type of gymnasium equipment through one source from a single manufacturer.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not install gymnasium equipment until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Verify position and elevation of floor inserts and layout for gymnasium equipment.

1.9 COORDINATION

A. Coordinate installation of floor inserts with structural floors and finish flooring installation and with court layout and game lines and markers on finish flooring.

B. Coordinate layout and installation of overhead-supported gymnasium equipment and suspension system components with other construction including light fixtures, HVAC equipment, and partition assemblies.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of gymnasium equipment that fail in materials or workmanship within specified warranty period.

1. Basketball Systems:

a. Backstop structure: Twenty-five (25) year limited warranty.

b. Backstops: Limited Lifetime Warranty.

2. Wall Safety Padding: Five (5) Year Limited Warranty.

2.0 PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Products: Subject to compliance with requirements, provide products indicated in this Section from “Porter Athletic Equipment” or a comparable product by one of the following:

1. Porter, Inc. (Design Make)

2. Draper Inc.

3. Jaypro Sports, LLC

2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

1. Extruded Bars, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).

2. Cast Aluminum: ASTM B 179.

3. Flat Sheet: ASTM B 209 (ASTM B 209M).

B. Steel: Comply with the following:

1. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

2. Steel Tubing: ASTM A 500 or ASTM A 513, cold formed.

3. Steel Sheet: ASTM A 1011/A 1011M.

C. Support Cable: Manufacturer's standard galvanized steel aircraft cable with a breaking strength of 7000 lb (3175 kg). Provide fittings complying with cable manufacturer's written instructions for size, number, and method of installation.

D. Support Chain and Fittings: Grade 80 hardened alloy steel chain rated for overhead lifting, ASTM A 391/A 391M, with commercial-quality, hot-dip galvanized steel connectors and hangars.

E. Castings and Hangers: Malleable iron, ASTM A 47/A 47M, grade required for structural loading.

F. Anchors, Fasteners, Fittings and Hardware: Manufacturer's standard corrosion-resistant or non-corrodible units; concealed**;** tamperproof, vandal- and theft-resistant design.

G. Grout: Non-shrink, nonmetallic, premixed, factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C 1107 with minimum strength recommended in writing by gymnasium equipment manufacturer.

2.3 BASKETBALL EQUIPMENT (**BB**):

A. General: Provide equipment complying with requirements in NFHS's "NFHS Basketball Rule Book."

B. Protruding fasteners or exposed bolt heads on front face of backboards are not permitted.

C. Overhead-Supported Basketball Backstops: All tied to central control panel

a. BB-1- New backstop forward folding structure and backboard.

b. BB-2 – New backstop side folding structure and backboard.

2. Power Operated.

3. Forward Fold Type: Porter No. 90949000 Forward Fold Backstops and . Provide manufacturer's standard assembly for backboard, with hardware and fittings to permit folding.

4. Side Fold Type: Porter No. 90955000 Side Fold Backstops and Provide manufacturer's standard assembly for backboard, with hardware and fittings to permit folding.

5. Framing: Steel pipe, tubing, and shapes. Design framing to minimize vibration during play.

a. Center-Mast Frame: Welded with side sway bracing.

b. Finish: Manufacturer's standard powder-coat finish.

D. Backboard Safety Device: Designed to limit free fall if support cable, support chain, pulleys, fittings, winch, or related components fail; with mechanical automatic reset; 6000-lb (2722-kg)

1. Retractor Device: device designed to retract both support and safety cables, chains, and straps away from play of the basketball when backboard is in playing position.

E. Winch: Porter No. 706 ½ H.P. Electric Winch. Hoist, consisting of heavy-duty, fully enclosed worm-gear, brake, cable drum, cable, and fittings, for mounting in the ceiling; designed to move and hold backboard in any raised or lowered position.

F. Height Adjuster: Porter No. 00901506 Center-Struct Height Adjuster. Provides an adjustable, direct mount goal attachment system to eliminate any strain on the backboard should a player hang on the front mounted goal. Incorporates a compact 115-volt gear motor type linear actuator with 600 pound thrust capacity to raise and lower the goal height electronically.

G. Backboard Electric Operator: Provide operating machine of size and capacity recommended by manufacturer for equipment specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, and remote controls. Coordinate wiring requirements and electrical characteristics with building electrical system.

1. Operator Type: Cable drum with grooved drum and cable tension device to automatically take up cable slack and retain cable in grooves.

2. Motor Characteristics: Sufficient to start, accelerate, reverse, and operate connected loads at designated speeds within installed environment and with indicated operating sequence, and without exceeding nameplate rating or considering service factor. Comply with NEMA MG 1, and the following:

3. Voltage: 115 volts

4. Horsepower: ½ H.P.

5. Enclosure: Manufacturer's standard.

6. Duty: Continuous duty at ambient temperature of 105 deg F (40 deg C) and at altitude of 3300 feet (1005 m) above sea level.

7. Service Factor: 1.15 for open drip proof motors; 1.0 for totally enclosed motors.

8. Phase: Single Phase

9. Remote-Control Station: Porter 2.5 Power Touch Key Pad

a. Single Key Pad

b. Provide (2) Control Station Enclosure: Provide prime-painted metal enclosure

c. (2) Relay Panels allowing control of multiple stations simultaneously.

10. Limit Switches: Adjustable switches, interlocked with motor controls and set to automatically stop basketball equipment at fully retracted and fully lowered positions.

H. Basketball Backboard:

1. Shape and Size:

a. Porter No. 208 Glass Backboards 6’-0” x 3’-6”

2. Backboard Material: With predrilled holes or preset inserts for mounting goals, and as follows:

a. Glass: Not less than 1/2-inch- (13-mm-) thick, transparent tempered glass. Provide glass with impact-absorbing resilient rubber or PVC gasket around perimeter in a fully welded, painted steel frame, with steel subframe, reinforcement, and bracing, including center-strut feature and with mounting slots for mounting backboard frame to backboard support framing.

1) Standard Mount: Provide steel corner reinforcement with mounting slots for mounting backboard frame to backboard support framing at standard mounting centers.

2) Direct Mount: Designed for mounting backboard frame to center mast of backboard framing to maximize relief of stresses on backboard frame and glass.

3) Rim-Restraining Device: Complying with NCAA and NFHS rules and designed to ensure that basket remains attached if glass backboard breaks.

3. Target Area and Border Markings: Permanently etched in white color, marked in manufacturer's standard pattern and stripe width.

I. Goal Mounting Assembly: Porter No. 233 Power Flex

1. Direct Mount: Designed for mounting goal directly and independently to center mast of backboard support framing so no force, transmitted by ring, is directly applied to backboard and rigidity and stability of goal are maximized.

2. Generally, retain subparagraph above for complying with any rule book for competition play, and delete subparagraph below. Double-rim basket rings below are sometimes specified for locations where only noncompetition play is anticipated and heavy-duty use or abuse is expected.

3. Net Attachment: Tube-tie for attaching net to rim

4. Finish: Powder-coat- Color to be chosen by owner.

J. Basketball Nets: 12-loop-mesh net, between 15 and 18 inches (400 to 450 mm) long, sized to fit rim diameter, and as follows:

1. Cord: Made from white nylon.

2. Competition Cord: Antiwhip, made from white nylon cord not less than 120- or more than 144-gm thread.

K. Backboard Safety Pads: Designed for backboard thickness indicated and extending continuously along bottom and up sides of backboard and over goal mounting and backboard supports as required by referenced rules.

1. Attachment: Bolt-On Padding Porter No. 326

2. Color: As selected by the architect from the standard manufacturers color selection.

L. Shot Clocks Supports

1. Description: Porter shot clock supports No. SCS002212

2. Location: Main court Basketball backstops

2.4 WALL PADS (**GWP**):

A. Basis of Design: Porter Fire Safe Wall Pads No. 5751XX

B. Safety Pad Surface-Burning Characteristics: ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Flame-Spread Index: 25 or less.

2. Smoke-Developed Index: 450 or less.

C. Pad Coverings: Provide safety pad fabric covering fabricated from puncture- and tear-resistant, not less than 19-oz./sq. yd PVC-coated polyester or nylon-reinforced PVC fabric treated with fungicide for mildew resistance; with surface-burning characteristics indicated.

1. Pad fabric covering to be 100PSI tensile strength with leather-like finish.

D. Wall Safety Pads: Padded wall wainscot panels designed to be attached in a continuous row; each panel section consisting of fill laminated to backer board with visible surfaces fully covered by seamless fabric covering, free of sag and wrinkles and firmly attached to back of backer board.

1. Backer Board: Not less than 7/16-inch- thick OSB

2. Fire-Resistive Fill: Multiple-impact-resistant foam not less than 2” Thick Class A Certified Foam filler.

a. Provide with ASTM F2440 Impact Protection and ASTM NFPA 286

Certification.

3. Size: Each panel section, 24 inches (600 mm) wide by not less than 72 inches unless otherwise indicated.

4. Number of Panel Sections: As indicated on drawings

5. Installation Method: 4 sets of Furring strips running parallel to floor. Screw wall pads to furring using screws.

6. Fabric Covering Color(s): As selected by the architect from the standard manufacturers color selection but no fewer than (14) fourteen.

7. Provide with multi-color (four) custom graphics printing as indicated.

E. Custom Sewn padding- Door Mullion Safety Pads

1. Provide removable pads on face of mullions where indicated.

2.5 VOLLEYBALL EQUIPMENT

A. Floor Insert: Porter No. 00872200 with 8" brass cover plates

1. Floor Plate: hinged access cover, designed to be flush with adjacent flooring. Provide 1 tool for unlocking access covers.

2.6 WRESTLING MAT LIFT

A. Basis-of-design-Product: Subject to compliance with requirements, provide the following wrestling mat lift system as manufactured by Porter Athletic, 1-800-637-3090, www.porterathletic.com, or approved equal:

1. Model: Porter No. 911107000 Ceiling Mounted Stationary Mat Mover for Single Mat

B. Source Limitations: Obtain from single source from single manufacturer.

C. Mat Lift System: Electronically operated with motor drive unit and at least two lifting drum units, capable of lifting and supporting one standard 45'x45' wrestling mat weighing one pound per square foot.

1. Mat Sling: 19 ounce vinyl in color selected by Architect from Manufacturer's full range. Sling shall be attached to load bar by nylon straps encompassing the full perimeter and terminating at the load bar with a load-rated ring at each end.

D. Hoist System: Two 5/16" diameter, 6-strand, 37 wires per strand fiber core 4.26 ton breaking strength steel cables secured to a 4" diameter drum and terminating load bar.

E. Motor: 3 HP motor operating on 208V or 460V 3-phase power with integrated brake and automatic overload protection. Motor shall operate with a 187.5:1 ratio gearbox assembly. Under no load, RPM of motor is 1725 RPM and RPM of drum is 9.2 RPM. Approximate hoist speed shall be 9ft/min.

1. Motors shall be controlled by a momentary switch that cannot be instantly reversed.

F. Control Panel: Lock and key steel enclosure with cover-mounted main disconnect switch, control circuit transformer with primary and secondary protection and audible alarm that activates when unit is raising and lowering.

1. Mount in close proximity to Mat Mover.

3.0 PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for play court layout, alignment of mounting substrates, installation tolerances, operational clearances, accurate locations of connections to building electrical system, and other conditions affecting performance.

1. Verify critical dimensions.

2. Examine supporting structure and subfloors and footings below finished floor.

3. Examine wall assemblies, where reinforced to receive anchors and fasteners, to verify that locations of concealed reinforcements have been clearly marked. Locate reinforcements and mark locations.

4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Comply with manufacturer's written installation instructions and competition rules indicated for each type of gymnasium equipment. Complete equipment field assembly, where required.

B. Unless otherwise indicated, install gymnasium equipment after other finishing operations, including painting, have been completed.

C. Permanently Placed Gymnasium Equipment and Components: Rigid, level, plumb, square, and true; anchored securely to supporting structure; positioned at locations and elevations indicated on Shop Drawings; in proper relation to adjacent construction; and aligned with court layout.

1. Floor Insert Location: Coordinate location with application of game lines and markers, and core drill floor for inserts after game lines have been applied.

2. Floor Insert Elevation: Coordinate installed heights of floor insert with installation and field finishing of finish flooring and type of floor plate.

3. Operating Gymnasium Equipment: Verify clearances for movable components of gymnasium equipment throughout entire range of operation and for access to operating components.

D. Wall Pads: Mount with bottom edge at 4 inches (102 mm) above finished floor, unless otherwise noted on drawings.

E. Anchoring to In-Place Construction: Use anchors and fasteners where necessary for securing built-in and permanently placed gymnasium equipment to structural support and for properly transferring load to in-place construction.

F. Connections: Connect automatic operators to building electrical system.

G. Removable Gymnasium Equipment and Components: Assemble in place to verify that equipment and components are complete and in proper working order. Instruct Owner's designated personnel in properly handling, assembling, adjusting, disassembling, transporting, storing, and maintaining units. Disassemble removable gymnasium equipment after assembled configuration has been approved by Owner, and store units in location indicated on Drawings.

3.3 ADJUSTING

A. Adjust movable components of gymnasium equipment to operate safely, smoothly, easily, and quietly, free from binding, warp, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Lubricate hardware and moving parts.

3.4 CLEANING

A. After completing gymnasium equipment installation, inspect components. Remove spots, dirt, and debris and touch up damaged shop-applied finishes according to manufacturer's written instructions.

B. Replace gymnasium equipment and finishes that cannot be cleaned and repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain gymnasium equipment.

END OF SECTION 116623

SECTION 116633 – GYMNASIUM DIVIDER SAFETY SYSTEM

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:

1. Automatic Infrared Sensor Systems.
    a. Safety detection system shall create an infrared barrier at each side of the entire operation path so that immediate shut down will occur if any obstruction enters into the operating path.
    b. When an obstruction is detected, the movement of the door shall instantly and automatically stop regardless of the direction the door is traveling and an alarm shall sound.
    c. For continued operation of the folding door, system must be manually re-armed by provided constant pressure control pad.

B. Stack area safety sensor mat.

C. This project requires:
1. One Divider Curtain Safety System.

1.3 REFERENCES

A. ASTM E 557- Standard Practice for Architectural Application and Installation of Operable Partitions.

B. NYS Education Law, Article 9, §409-F, Section 155.25 Safety Requirements for Electrically Operated Partitions.

C. As used in this Section, “Divider” means any partition, curtain, or similar device controlled through the operation of an electrical motor.

1.4 SUBMITTALS

A. Product Data: For each type of product required.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Indicate location and installation requirements, including required clearances.
2. Wiring Diagrams: For power, signal, and control wiring.

C. Qualification Data: For qualified Installer.

D. Product Certificates: For each type of system, from manufacturer.
   1. Submit written certification, in Manufacturer's letterhead, stating that system meets the requirements of NYS Education Law, Article 9, §409-F, Section 155.25.

E. Submit list a minimum of ten (10) safety systems previously installed, similar in scope to that of this Project. Include names and telephone numbers of Owner and Architect of those projects.

F. Operation and Maintenance Data: To include in maintenance manuals.

G. Warranty: Sample of special warranty.

1.5 QUALITY ASSURANCE

A. The safety system shall be marketed and obtained as a fully tested system for this purpose. Hardware assembled from various sources to serve the installation needs is specifically unacceptable.

B. Manufacturer Qualifications: Company specializing in manufacturing of safety system for a minimum five (5) years of documented experience.

C. Installer Qualifications: An employer of workers trained and approved by manufacturer.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by qualified testing agency, and marked for intended location and application.

E. Pre-installation Conference: Conduct conference at Project site, to review and discuss existing conditions.

F. Warranty: Materials, hardware and safety sensors shall be guaranteed for a period of no less than two (2) years against defects in materials and workmanship, from the date of the entire project's Substantial Completion.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide "Safe Path System", by Gym Door Repairs, Inc., Great River, New York, or comparable system by one of the following.
   1. Optex Incorporated, Torrance, California
   2. N-Control Gym Systems, Grand Island, New York.
   3. BEA Industrial, Pittsburgh, Pennsylvania.
   4. Architect approved equal.

2.2 INFRARED SAFETY SYSTEM

A. Each divider shall operate by two (2) constant pressure key control stations, wired in series and located on opposite sides of the divider.

B. Provide and install a sensor control panel that can accept various line voltages, therefore making it compatible with divider systems. Control panel must have “fail safe” wiring and each exterior component of the system must have “on board, self-checking, fail safe” design that will render the electric divider inoperable if any of the component parts malfunction. The control panel shall also reduce the line voltage out to the infrared sensors and arming station down to 24 volts.

C. The infrared safety system must be designed to work as an integral part of the divider system. While the divider is in operation a minimum of two infrared sensors shall monitor each side for movement, and immediately disengage the motor upon the “safety zone” being interrupted. These infrared beams must span the entire path of the dividers, on both sides.

D. Additional sensors shall be installed as site conditions warrant.

E. Long range sensors shall be installed 9-12 feet from floor and be covered by a protective housing.
   1. Point to point sensors mounted 18 to 24 inches above floor will not be acceptable.

F. Units must also be equipped with an alarm that will sound in the event that the system is activated.

G. Provide and install required signage for safe operating procedures.

2.3 COMPONENTS

A. Passive Infrared Detectors

   1. Capable of wall or ceiling surface mounting, self-contained, self-monitoring circuit operating on 12 VDC input power, with adjustable internal optics. A solid infrared barrier must be achieved and be free of voids between detection zones. PIR detectors which permit voids in the infrared barrier and do not provide 100% coverage are unacceptable.

B. Alarm Device:

   1. Device to be activated for fifteen (15) seconds when system senses any obstruction and stops the movement of divider.
   2. 100 decibels output, with high and low settings.

C. Master Controls:

   1. Provide two (2) push button, tamper-proof, constant pressure control stations, wired in series, remotely located at opposite ends and opposite sides of (and in view of) the divider.
      a. To be compatible with Master Control System

b. Basis of Design: Porter No. 2550 Power Touch 2.5, with custom Equipment Legend.

D. Signage:

1. Provide a prominent safety sign at each key control station location.
2. Sign shall be of durable construction, professional in manufacture and appearance, and securely fastened in place.
3. Sign shall read:

Warning
Electrically Powered Gymnasium Divider

Only appropriately trained staff may operate this divider.

Control stations must be attended by staff members while the divider is in motion.

Staff members must stand on opposite sides of divider during stacking or extending procedures.

Students must stay away from divider while it is in motion.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Strictly follow manufacturer's written installation instructions.

1. Coordinate work with Gymnasium Divider Curtains installer.
2. Coordinate work with Electrical Contractor.

3.2 DEMONSTRATION

A. Engage factory authorized service representative to train Owner's Maintenance and Physical Education personnel to adjust, operate, reset and maintain system.

B. Deliver to Owner four (4) sets of keys for the entire system, and a set of operation instructions/owner's manual.

PART 4 - ADDITIONAL INFORMATION

4.1 NYS EDUCATION LAW, ARTICLE 9, §409-F, SECTION 155.25

A. **Purpose.** The purpose of this subdivision is to establish standards pursuant to Education Law section 409-f, relating to the construction, maintenance and operation of electrically operated partitions located in classrooms or other facilities used by students in public and nonpublic schools or educational institutions within the State.

B. **Definitions.** As used in this section, "electrically operation partition" means any partition, room divider, curtain or other similar device which is controlled through the operation of an electrical motor.

C. Minimum construction, maintenance, and operation standards for electrically operation partitions.

1. Every electrically operated partition shall be equipped with two (2) key-operated, tamper-proof, constant pressure control stations that are wired in series, remotely located at opposite ends and opposite sides of, and in view of, the partition, and which are designed and constructed so as to require simultaneous activation of both control stations to operate the partition.

2. The electric device controlling the operation of the partition shall be capable of being reversed at any point in the extend or stack travel cycle.

3. Device(s) shall be provided for all partitions that will stop the forward or backward motion of the partition and stop the stacking motion of the partition when a body or object passes between the leading panel of such partition and a wall or other termination point, or when a body or object is in the stacking area of such partition.

D. Safety requirements and operation guidelines for electrically operated partitions. The board of education, trustees, principal, or other person in charge of every public or private school or educational institution within the State shall ensure that:

1. Appropriate and conspicuous notice regarding the safe and proper operation and supervision of the electrical device operating such partition shall be posted in the mediate vicinity of each operating mechanism, on both sides of the separation and adjacent to the operating mechanism.
2. A procedure is established for the notification of all school employees and all other persons who regularly make se of the area where such device is located of the safe and proper procedure for the operation of the mechanism. Staff shall be apprised of safety features and trained in the safe operation of the partition. In addition, such training shall include discussion of past accidents and the potential and possibility of serious injury or death, and information regarding the administrative and civil penalties and accountability for non-compliance with legal requirements, including the penalties for disabling safety equipment required pursuant to Education Law section 409-f. Records shall be maintained regarding the training provided.
3. Students shall not be permitted to operate such partition. Any students present while the partition is being operated shall be under the direct supervision of trained staff and shall be required to stand away from and not allowed to cross the path of the moving partition.
4. Safety features shall not be tampered with, overridden or by-passed. All equipment must be maintained in accordance with the manufacturer's instructions, including the manufacturer's recommended service interval, and records of such maintenance shall be permanently retained at the district or private school.

SECTION 116643 – ELECTRONIC INDOOR SCOREBOARDS

1.0 PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following gymnasium equipment:
   1. Single-sided LED integrated sports matrix display
   2. Single-sided LED basketball scoreboards
   3. Pair single-sided LED shot clocks
   4. Decorative Accents
   5. Network Interface Equipment and Controllers

1.3 REFERENCES

A. Standard for Electric Signs, UL 48
B. Standard for Control Centers for Changing Message Type Signs, UL-1433, 1st Edition
C. Standard for CSA C22.2 #207
D. Federal Communications Commission Regulation Part 15
E. National Electric Code

1.4 SUBMITTALS

A. Product data: Submit manufacturer's product illustrations, data and literature that fully describe the scoreboards and accessories proposed for installation.
B. Shop drawings: Submit mechanical and electrical drawings.
C. Maintenance data: Submit manufacturer's installation, operation, and maintenance manuals.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Product delivered on site
B. Scoreboard and equipment to be housed in a clean, dry environment

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install scoring equipment until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for project when occupied for its intended use.
B. Field Measurements: Coordinate scoreboard location and height with the customer. Verify dimensions by field measurements.
C. Supply weight and mounting method for owner to verify that building structure is capable of supporting the scoreboard's weight in addition to the auxiliary equipment.

1.7 QUALITY ASSURANCE

A. For indoor use only
B. Source Limitations: Obtain each type of scoring equipment and electronic displays through one source from a single manufacturer.
C. Scoreboard manufacturer must design the LED scoreboard and display modules and digits, design and build the circuitry and circuit boards, take the core components (discreet LEDs, transistors, resistors, circuit boards, power supplies, etc.), assemble and integrate the units,

calibrate for uniformity, and assemble into the mounting structure in facility(s) located within the United States.

D. All proposed equipment and models of equipment must be standardized, previously designed, and documented with current reliability records, product cut sheets and shop drawings. Custom designed equipment will not be acceptable.
E. ETL listed to UL 48
F. NEC compliant
G. FCC compliant
H. ETLC listed to CSA 22.2 #207
I. All internal scoreboard drivers must be identical and interchangeable between all specified
J. Installer's qualification: Business familiar in the installation of systems similar in complexity to those essential for this project; and fulfillment of the following:
   1. At least (5) five years' experience with systems of the specified types and products included.
   2. Provide examples of three (3) previous installations of similar stadium scoreboard designs – integrating Real Time Data from a fixed digit LED scoreboard and controller within the digital display of an LED video/matrix display, allowing the video display to act as a "virtual scoreboard".
   3. Retain a fully staffed and equipped service facility within 150 miles of project.
   4. Installer to be factory educated in the installation and maintenance of any digital signal processed based control systems.
   5. At the request of the owner, the Installer must demonstrate that he has:
      a. Sufficient plant and equipment to complete the work within the agreed timetable
      b. Sufficient staff with commensurate technical experience
      c. Appropriate financial status to meet the obligations of the work

1.8 WARRANTY
A. Provide 5 years of coverage.
B. Provide an exchange program to supply replacement parts for components that fail during the coverage period. To minimize downtime, the exchange parts will be shipped on the same day the order is received or on the following day. The manufacturer will also enclose an air bill for return of the defective components.
C. Provide access to a local Authorized Service Company with offices located within 150 miles of the school.
D. Provide a help desk staffed by experience technicians and coordinators who are thoroughly familiar with the scoreboard and available for technical support. This staff must be available at no additional cost to the customer and provide an "on-call" service during weekends.

2.0 <u>PRODUCTS</u>

2.1 MANUFACTURER
A. Basis-of-Design Products: Subject to compliance with requirements, provide products indicated in this Section from "Daktronics" or an approved equal:
   1. Daktronics, Inc., 201 Daktronics Drive, P.O. Box 5128, Brookings, SD 57006-5128
   2. Or approved equal.

2.2 PRODUCTS
A. Daktronics BB-2107 single-sided basketball scoreboards display period time to 99:59, HOME and GUEST scores to 199, PERIOD to nine, team FOULS to 19, PLAYER number to 99, player FOUL to nine and indicates possession and bonus. During the last minute of the period, scoreboard displays time to 1/10 of a second. Scoreboard can also score volleyball,

wrestling and any sport requiring a clock, score and period function. The scoreboards must fully integrate with all products in this section.

B. One (1) pair BB-2115 single-sided basketball shot clock timer displays shot times up to a value of 99 seconds. It can also count down from any preset time between 0 and 99 seconds. A hand-held start/stop/reset switch is included. The shot clocks must fully integrate with all products in this section

2.3 BB-2107-PV SCOREBOARDS (**SB-1**)

A. General information
   1. Dimensions: 6'-0" high, 10'-0" wide, 0'-6" deep
   2. Base weight: TBD – options may increase weight
   3. Base power requirement: 200 W
   4. Color: provide over 150 colors to choose from
   5. Must fully integrate with all scoring equipment specified in this section.

B. Construction
   1. All-aluminum construction. Steel frames are not acceptable.
   2. Scoreboard back, face, and perimeter: 0.063" (1.60 mm) thick
   3. Cabinet withstands high-velocity impact from air-filled sports balls.

C. Digits, Drivers & Indicators
   1. LED digit technology:
      PanaView® (PV) – discrete LEDs protrude through the scoreboard face]
   2. LED color: White
   3. Clock and score digits: 13" (330 mm) high
   4. PERIOD, FOULS and PLAYER/FOUL digits: 10" (254 mm) high
   5. Bonus indicators: 4" (102 mm) high
   6. Possession arrows: 3" (76 mm) high
   7. Seven bar segments per digit
      a. All digit drivers must be fully protected from moisture, dirt and dust by encapsulating each entire driver in a waterproof potting material at least 1/8” in thickness on the front and on the back.

D. Captions
   1. Vinyl applied directly to scoreboard face
   2. HOME and GUEST captions: 6" (152 mm) high
   3. PERIOD, FOULS/SCORE and PLAYER/FOUL/MATCH captions: 4" (102 mm) high
   4. Color: standard white or others available upon request

E. Horn
   1. Vibrating horn mounted inside the scoreboard cabinet behind the face
   2. Sounds automatically when period clock counts down to zero
   3. Sounds manually as directed by operator

F. Power Cord
   1. Cord is 11' (3.35 m) long
   2. Cord plugs into a standard grounded outlet

G. Additional Required Equipment
   1. Vinyl striping applied around the clock and scoreboard face
   2. Double bonus indicators in place of single bonus indicators
   3. Two 17" (432 mm) high, 21" (533 mm) wide aluminum panels in upper corners of each scoreboard with vinyl logo/sponsor decoration
   4. Two 7" (178 mm) T.O.L. digits and two 3" (76 mm) vinyl captions
   5. Standalone Time of Day (scoreboard is capable of acting as a clock when control console is unplugged/off)
   6. 2.4 GHz spread spectrum radio controls mounted within the scoreboard cabinet.

7. Hinged metal mesh protective screens – painted to match scoreboard

2.1 BB-2115-PV SHOT CLOCKS (**SC-1**) – QTY 1 PAIR

A. General information
   1. Dimensions: 1'-7" (483 mm) high, 1'-10" (559 mm) wide, 0'-6" (152 mm) deep
   2. Weight: 15 lb (7 kg)
   3. Power requirement: 30 W
   4. Color: Semi-gloss black
B. Construction
   1. All-aluminum construction
   2. Scoreboard back, face, and perimeter: 0.063" (1.60 mm) thick
   3. Cabinet withstands high-velocity impact from air-filled sports balls without the need for protective screens
C. Digits
   1. LED digit technology
      PanaView® (PV) – discrete LEDs protrude through the scoreboard face
   2. Shot clock digits: 13" (330 mm) high
   3. Shot clock digits: red LEDs
   4. Seven bar segments per digit
D. Horn
   1. Internal horn sounds automatically when shot clock counts down to zero
   2. Sound is distinctly different from the game-clock horn
E. Accessory Equipment
   1. Hinged metal mesh protective screen – painted to match scoreboard
   2. 2.4 GHz spread spectrum radio controls mounted within the shot cabinet.

2.2 SCORING CONSOLES – ALLSPORT 5000 AND MX-1 FOR HANDHELD PORTABILITY

A. Consoles shall be an All Sport® AS5010 controller and mobile scoring from smartphone.
B. Controls multiple scoreboards and displays, including other scoreboards provided in this project and existing stadium scoreboard.
C. Full Feature AS-5010 Console includes:
   1. Capability of scoring basketball, volleyball and wrestling through the use of keyboard inserts
   2. Capability to operate the fixed-digit portion of the scoreboard system as a standalone system, from the scoring location.
   3. Maximum power requirement of 5 watts
   4. Ability to recall clock, score, and period information if power is lost
   5. A rugged aluminum enclosure to house electronics
   6. A sealed membrane water-resistant keyboard
   7. A 32-character liquid crystal prompting display to verify entries and recall information currently displayed
   8. A 6' (1829 mm) power cord to plug into a standard grounded 120 V AC outlet
   9. A 20' (6096 mm) control cable to connect to the control receptacle junction box
   10. A practice timer mode
      a. Can sound the horn at the end of each segment
      b. Has 99 programmable segments
      c. Displays the segment number and segment length
      d. Has a programmable interval time
   11. Carrying case for console

12. 2.4 GHz spread spectrum radio system with frequency hopping technology and 64 non-interfering channels; system includes a transmitter installed inside the console enclosure and a receiver installed inside the scoreboard
    a. Encapsulated Protective Molded PVC external antenna enclosure affixed to control console.

D. MX-1 Portable Control shall allow function of the scoreboard from within the gymnasium from a smart phone or mobile device. Shall be downloadable to any Apple or Android phone or tablet.

3.0 PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that mounting surface is ready to receive scoreboard. Verify that placement of conduit and junction boxes are as specified and indicated in plans and shop drawings.

3.2 INSTALLATION

A. Power conduit, cables and outlet boxes to be provided and installed by the electrical contractor. Signal raceways, conduit and boxes to be provided by the electrical contractor. Electrical contractor is also responsible for any required wire and terminators between each scoreboard and control location.

B. Mount scoreboards and interior displays to wall in location detailed and in accordance with manufacturer's instructions. Unit to be plumb and level.

C. Mount shot clock to backstop in location detailed and in accordance with manufacturer's instructions. Unit to be plumb and level.

D. Provide boxes, cover plates and jacks as required to meet control specification requirements. Control cables to control panels shall be concealed.

3.3 INSTALLATION—CONTROL CENTER

A. Provide boxes, cover plates and jacks as required to meet control specification requirements. Control cables to control panels shall be concealed.

B. Test the operation of the scoreboard, controller and all control jacks; leave control unit in carrying case and other loose items with owner's designated representative.

C. Conduct operator training on the scoreboard/controller operation.

END OF SECTION 116643

SECTION 116653 - GYMNASIUM DIVIDERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Center Roll divider systems.
2. Electric operators.
3. Divider curtains.
4. Divider system accessories.
5. Safety system for operable curtain.

B. Related Sections:

1. Section 116633 “Gymnasium Divider Safety System”.
2. Division 05 Section "Metal Fabrications" for supports that attach supporting tracks to overhead structural system.
3. Divisions 26 and 27 Sections for electrical service and connections for motor operators, controls, and limit switches; and for system disconnect switches and other powered devices for motorized gymnasium dividers.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Motors: Show nameplate data, ratings, characteristics, and mounting arrangements.

B. Shop Drawings: For gymnasium dividers.

1. Include plans showing alignment of curtains in relation to sport-court layout and overhead structural supports.
2. Include elevations, sections, details, and attachments to other work.

3. Include system clearances, stacking requirements, and limits for fitting into adjacent construction.

4. Include point loads and locations for attachment of gymnasium dividers to structure.

5. Include diagrams for power, signal, and control wiring.

C. Samples: For each exposed product and for each item and color specified.

D. Samples for Initial Selection: For each type of gymnasium divider curtain fabric.

E. Samples for Verification: For divider curtain fabrics, not less than 12 inches (305 mm) square of mesh and of solid fabric.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans with divider-curtain layouts, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

1. Structural members to which divider-curtain systems will be attached.

2. Suspended ceiling components, if any.

3. Items supported from building structure, including the following:

a. Lighting fixtures.

b. Air outlets and inlets.

c. Speakers.

d. Sprinklers.

e. Smoke detectors.

f. Acoustical treatments or panels.

g. Access panels.

B. Qualification Data: For Installer.

C. Product Certificates: For each type of gymnasium divider.

D. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For gymnasium dividers to include in operation and maintenance manuals, including the following:

1. Seals, hardware, track, carriers, and other operating components.

2. Electric operator.

3. Obstruction-Detection Devices.

4. Limiting Switches.

5. Emergency Release Mechanism.

6. Safety System.

B. Warranty.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Source Limitations: Obtain each type of gymnasium equipment through one source from a single manufacturer.

C. 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.

D. Preinstallation Conference: Conduct conference at Project site.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not install gymnasium equipment until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Verify position and elevation of floor inserts and layout for gymnasium equipment.

1.9 COORDINATION

A. Coordinate installation of floor inserts with structural floors and finish flooring installation and with court layout and game lines and markers on finish flooring.

B. Coordinate layout and installation of overhead-supported gymnasium equipment and suspension system components with other construction including light fixtures, HVAC equipment, and partition assemblies

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of gymnasium dividers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Faulty operation of gymnasium dividers.

b. Tearing or deterioration of fabric, seams, or other materials beyond normal use.

2. Warranty Period: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CENTER ROLL DIVIDER SYSTEMS (**MDC-1**)

A. Basis-of-design-Product: Subject to compliance with requirements, provide the following center roll divider system as manufactured by Porter Athletic, 1-800-637-3090, www.porterathletic.com, or approved equal:

1. Model: 92085000 Series Center-Roll.

B. Source Limitations: Obtain from single source from single manufacturer.

C. Divider-Curtain System: Electrically operated, with center-drive tube rolling the upper and lower sections of the curtain simultaneously; and as follows:

1. Upper Curtain, Mesh: Woven fabric of 100 percent polyester yarn coated with PVC weighing not less than 6.5 oz./sq. yd (220 g/sq. m).

2. Mesh Color: White.

3. Lower Curtain, Solid: Woven polyester coated with PVC, 18 oz./sq. yd (610 g/sq. m), embossed, height above floor as shown on drawings.

4. Fabric Color(s): selected by Architect from manufacturer's full range of colors

5. **Option:** School Logo/Mascot screen to be printed in full/4-color on lower half of one side of curtain selected by Owner. Digital file of logo/mascot to be provided by District.

6. Divider Curtain Flame-Resistance Ratings: Passes NFPA 701, inherently and permanently flame resistant.

7. Permanently attach label to each fabric of curtain assembly indicating whether fabric is inherently and permanently flame resistant or treated with flame-retardant chemicals, and whether it will require retreatment after designated time period or cleaning.

8. Size: See Drawings.

9. Height: +/- 25’-6”, verify in field.

D. Curtain Fabrication: Fused seams and the following:

1. Top Hem: Reinforce with double thickness mesh for continuous pipe batten.

2. Bottom Hem for Roll-up Curtains: Floor-length curtains with hems 2 inches (50 mm) above finished floor and with manufacturer's standard 3-1/2- to 4-inch- (89- to 102-mm) roll-up tube and lifting tape.

E. Accessories:

1. Grommets: Manufacturer's standard size and spacing, for snaps or S-hooks.

2. Proof Coil Chain: Grade 30, No. 8, zinc plated, 3/16 inch (4.7 mm), ASTM A 413/ A 413M.

3. Curtain Battens: Fabricate battens from steel pipe with a minimum number of joints. As necessary for required lengths, connect pipe with drive-fit pipe sleeve not less than 18 inches (450 mm) long, and secure with 4 flush rivets, plug welds, threaded couplings, or another equally secure method. Shop-paint completed pipe battens with black paint.

4. Steel Pipe: ASTM A 53/ A 53M, Grade A, standard weight (Schedule 40), black, 1-1/2-inch (40-mm) nominal diameter, unless otherwise indicated.

F. Divider Curtain Operator: Roll-up drive tube.

G. Divider Curtain Electric Operator: Provide operating machine of size and capacity recommended by manufacturer for equipment specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, and remote controls. Coordinate wiring requirements and electrical characteristics with building electrical system.

1. Operator Type: Electric motor, belt-reduction drive, with chain and sprocket secondary drive.

2. Two (2) required.

3. Motor Characteristics: Sufficient to start, accelerate, reverse, and operate connected loads at designated speeds within installed environment and with indicated operating sequence, and without exceeding nameplate rating or considering service factor. Comply with NEMA MG 1, and the following:

4. Voltage: 115V, Single phase 5.3 amps.

5. Horsepower: 1 hp.

6. Enclosure: Totally enclosed.

7. Duty: Continuous duty at ambient temperature of 105 deg F (40 deg C) and at altitude of 3300 feet (1005 m) above sea level.

8. Service Factor: 1.15 for open drip-proof motors; 1.0 for totally enclosed motors.

9. Phase: One.

H. Divider Curtain Safety Devices:

1. Provide Porter Safety Device or equal. Curtain-Lok to be directly speed sensitive to automatically lock divider curtain in position at any time during storage or operation. In the event of an over-speed situation (greater than 1.5 feet per second) caused by malfunction of the hoisting apparatus, whether sudden or gradual, device will immediately activate. Curtain-Lok work regardless of direction of rotation and automatically resets when load is reversed or removed.

2. <u>Provide Gymnasium Divider Safety System per Section 116633</u>
Furnish, locate, install all safety system equipment and devices. Provide wiring diagrams

and coordinate with Electrical Contractor for all required raceways, wiring, and final connections.

a. Passive Infrared Detectors

b. Alarm Device

c. Master Controls

d. Required Control Panels

e. Signage

I. Obstruction-Detection Devices: Provide each motorized operable gymnasium divider with automatic safety sensor that causes operator to immediately stop and reverse direction.

J. Limit Switches: Adjustable switches interlocked with motor controls and set to automatically stop operable gymnasium divider at fully extended and fully stacked positions.

K. Emergency Release Mechanism: Quick disconnect-release of electric-motor drive system, permitting manual operation in event of operating failure.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for alignment of mounting substrates, installation tolerances, operational clearances, locations of connections to building electrical system, and other conditions affecting performance of the Work.

1. Verify critical dimensions.

2. Examine supporting structure.

3. Examine wall assemblies, where reinforced to receive anchors and fasteners, to verify that locations of concealed reinforcements are clearly marked. Locate reinforcements and mark locations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written installation instructions.

B. Install gymnasium dividers after other finishing operations, including painting, have been completed unless otherwise indicated.

C. Install gymnasium dividers level, plumb, square, and true; anchored securely to supporting structure; positioned at locations and elevations indicated; in proper relation to adjacent construction; and aligned with sport-court layout.

1. Verify clearances for movable components of gymnasium dividers throughout entire range of operation and for access to operating components.

D. Electric Operators Installation: Connect electric operators to building electrical system.

3.3 ADJUSTING

A. Adjust movable components of gymnasium dividers to operate safely, smoothly, easily, and quietly, free from binding, warp, distortion, uneven tension, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range; and lubricate as recommended in writing by manufacturer.

B. Limit Switch Adjustment: Set and adjust upper and lower limit controls.

3.4 CLEANING

C. After completing gymnasium equipment installation, inspect components. Remove spots, dirt, and debris and touch up damaged shop-applied finishes according to manufacturer's written instructions.

D. Replace gymnasium equipment and finishes that cannot be cleaned and repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain gymnasium dividers.

END OF SECTION 116653

SECTION 122413 - ROLLER WINDOW SHADES

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Manually operated roller shades with single rollers.

B. Related Requirements:

1. Division 06 Section "Miscellaneous Rough Carpentry" for wood blocking and grounds for mounting roller shades and accessories.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.

B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.

C. Samples for Verification: For each type of roller shade.

1. Shadeband Material: Not less than 3 inches (76 mm) square. Mark inside face of material if applicable.

2. Roller Shade: Full-size operating unit, not less than 16 inches (400 mm) wide by 36 inches (900 mm) long for each type of roller shade indicated.

3. Installation Accessories: Full-size unit, not less than 10 inches (250 mm) long.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of shadeband material, signed by product manufacturer.

C. Product Test Reports: For each type of shadeband material, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roller shades to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Roller Shades: Full-size units equal to 5 percent of quantity installed for each size, color, and shadeband material indicated, but no fewer than two units.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Fire-Test-Response Characteristics: Provide roller shade band materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Flame-Resistance Ratings: Passes NFPA 701.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.10 WARRANTY

A. Roller Shade Hardware, Chain and Shadecloth Manufacturer's standard non-depreciating twenty-five year limited warranty.

B. Roller Shade Installation: One year from date of Substantial Completion, not including scaffolding, lifts or other means to reach inaccessible areas.

2.0 PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Draper Inc. (Design Make: Clutch-Operated FlexShade)

2. MechoShade Systems, Inc.

B. Source Limitations: Obtain roller shades from single source from single manufacturer.

2.2 MANUALLY OPERATED SHADES WITH SINGLE ROLLERS

A. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.

1. Bead Chains: Stainless steel.

a. Loop Length: Full length of roller shade.

b. Limit Stops: Provide upper and lower ball stops.

c. Chain-Retainer Type: Clip, jamb mount.

2. Spring Lift-Assist Mechanisms: Manufacturer's standard for balancing roller-shade weight and lifting heavy roller shades.

a. Provide for shadebands that weigh more than 10 lb (4.5 kg) or for shades as recommended by manufacturer, whichever criteria are more stringent.

B. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.

1. Roller Drive-End Location: Right side of inside face of shade or Left side of inside face of shade.

2. Direction of Shadeband Roll: Regular, from back of roller

3. Shadeband-to-Roller Attachment: Manufacturer's standard method

C. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.

D. Shade Fabric: Phifer, Sheerweave Infinity 2, 1% Openness, 100% TPO Composition, Fire Classification NFPA 701-10 TM#1, Certified Greenguard and Greenguard Gold.

1. Color: To be Selected from manufacturer's full range.

E. Installation Accessories:

1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.

a. Shape: L-shaped.

b. Height: Manufacturer's standard height required to conceal roller and shadeband when shade is fully open, but not less than 4 inches (102 mm).

2. Endcap Covers: To cover exposed endcaps.

3. Installation Accessories Color and Finish: As selected from manufacturer's full range.

2.3 ROLLER-SHADE FABRICATION

A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):

1. Outside of Jamb Installation: Width and length as indicated, with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.

C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible except as follows:

1. Fabricate shadecloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed edges to hang straight without curling or raveling. Fabricate unguided shadecloth to roll true and straight without shifting sideways more than 1/18 inch (3.18mm) in either direction per 8 feet (2438 mm) of shade height due to warp distortion or weave design.

2. Railroaded Materials: Railroad material where material roll width is less than the required width of shadeband and where indicated. Provide battens and seams as required by railroaded material to produce shadebands with full roll-width panel(s) plus, if required, one partial roll-width panel located at top of shadeband.

3.0 PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER-SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.

1. Opaque Shadebands: Located so shadeband is not closer than 2 inches (51 mm) to interior face of glass. Allow clearances for window operation hardware.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller-shade surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-operated roller shades.

END OF SECTION 122413

SECTION 123216 - MANUFACTURED PLASTIC-LAMINATE-CLAD CASEWORK

1. GENERAL

1. RELATED DOCUMENTS

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

2. SUMMARY

A. Section Includes:

1. Plastic-laminate-clad casework, hardware, and accessories as shown and listed on drawings and specified herein. Include all countertops, splashes, supports, shelving, and filler panels necessary for a complete casework installation. Work includes standard items, modified standard items, and custom items, as detailed on the drawings and indicated as work of this section.

B. Related Requirements:

1. Section 061000 "Rough Carpentry"

2. Section 061053 "Miscellaneous Rough Carpentry" for wood blocking for anchoring casework.
3. Section 092216 "Non-Structural Metal Framing" for reinforcements in metal-framed partitions for anchoring casework.
4. Section 096513 "Resilient Base and Accessories" for resilient base applied to plastic-laminate-clad casework.
5. Division 22 “Plumbing” for sinks, fittings, traps, stops, and service lines.
6. Division 26 “Electrical” for fixtures service lines, conduit wiring.

3. DEFINITIONS

A. Definitions in the AWI/AWMAC/WI's "Architectural Woodwork Standards" apply to the Work of this Section.

1. Exposed Portions of Casework: Surfaces visible when doors and drawers are closed, including bottoms of cabinets more than 48 inches above floor, and visible surfaces in open cabinets or behind glass doors.

a. Ends of cabinets indicated to be installed directly against and completely concealed by walls or other cabinets after installation shall not be considered exposed.

2. Semi-exposed Portions of Casework: Surfaces behind opaque doors, such as interiors of cabinets, shelves, dividers, interiors and sides of drawers, and interior faces of doors. Tops of cases 78 inches or more above floor are defined as semi-exposed.

3. Concealed Portions of Casework: Include sleepers, web frames, dust panels, and the surfaces not usually visible after installation.

4. PREINSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

B. Keying Conference: Conduct conference at Project site. Incorporate keying conference decisions into final keying requirements.

5. COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that casework can be supported and installed as indicated.

6. ACTION SUBMITTALS

A. Product Data: For each type of product including but not limited to casework, hardware, core material, and accessory.

B. Shop Drawings: For plastic-laminate-clad casework.

1. Include plans, elevations, sections, and attachments to other work including blocking and reinforcements required for installation.
2. Indicate types and sizes of casework.
3. Indicate manufacturer's catalog numbers for casework.
4. Show fabrication details, including types and locations of hardware.
5. Indicate locations of and clearances from adjacent walls, doors, windows, other building components, and equipment.

C. Shop Drawings: For countertops.
1. Include plans, elevations, section, and attachments to other work including casework and reinforcements required for installation.
2. Indicate shapes, edge and backsplash profiles.
3. Indicated cutouts for plumbing fixtures, heating grilles, electrical devices, etc.
4. Show methods of joining and installation details.

D. Keying Schedule: Include schematic keying diagram, and index each key set to unique designations that are coordinated with the Contract Documents.

E. Samples for Initial Selection: For casework exterior and interior, countertops and edging, and hardware finishes.

F. Samples for Verification: For the following:

1. Plastic Laminates: 8 by 10 inches, for each type, color, pattern, and surface finish required.

    a. Provide one Sample applied to core material with specified edge material applied to one edge.

2. Thermoset Decorative Panels: 8 by 10 inches, for each color, pattern, and surface finish.

    a. Provide edge banding on one edge.

3. Hardware: One unit of each type of exposed hardware.

4. Grilles: One unit of each type of specified grille for countertop and ventilated toe board.

G. Full-Size Samples for Verification Purposes: If requested, the architect reserves the right to thoroughly review full cabinet samples to the point of dismantling the cabinets if deemed necessary to verify materials and construction details. Full size units shall be of each type of material indicated, showing the full range of variations expected.

1. Base Cabinet: One full-size, 16-inch-wide, finished base cabinet complete with hardware, doors, and drawers but without countertop.
2. Wall Cabinet: One full-size, 12-inch-wide, finished wall cabinet complete with hardware, doors, and adjustable shelves.
3. Full-Size Samples: Maintain at Project site during construction in an undisturbed condition as a standard for judging the completed Work. Unless otherwise indicated, approved sample units may become part of the completed Work if in undisturbed condition at time of Substantial Completion. Notify Architect of their locations.

7. INFORMATIONAL SUBMITTALS

A. Qualification Data: For casework manufacturer and Installer and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience.

B. Sample Warranty: For special warranty.

C. AWI Quality Certification: Casework manufacturer must be duly certified for premium grade from the AWI Quality Certification Program for sections 400 (Architectural Cabinets) and 1600 (Modular Cabinets).

8. QUALITY ASSURANCE

A. Manufacturer and Installer upon request must provide the following proof of ability to perform under this contract.

1. Casework of a nationally recognized casework manufacturer who has been providing and installing products in the projects vicinity for at least five (5) years may be considered for approval providing it is equal in construction and design according to the drawings and specifications.

2. Minimum of five (5) completed installations of equal size and educational requirements that can be inspected prior to the award of the contract.

3. Financial and technical resources of sufficient scope to assure prompt and satisfactory performance in the production, delivery and installation of all work specified under this section so as not to delay the progress of the work.

4. Failure to meet any of these requirements and qualifications may be sufficient cause for the rejection of proposed supplier.

B. The specifications and drawings define and show the essential minimum requirements as to the quality of materials, hardware, finish, construction design, function, and overall workmanship of the equipment. All equipment and casework must strictly comply with these specifications.

C. Where a definite material or manufacturer is specified, it is not the intent to discriminate against any product of another manufacturer. However, it is the intent of this specification to provide for the Owner a quality and educationally functional installation of equipment and casework, and to exclude inadequate or inferior products.

D. The use of catalog numbers and specific requirements set forth in drawings and specifications are not intended to preclude the use of acceptable casework manufacturers' products. Named manufacturers are used for the purpose of establishing quality of material, construction, and workmanship.

E. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated without delaying the Work, as documented according to ASTM E 548.

F. Single-Source Responsibility: Obtain plastic laminate casework from one source of a single manufacturer.

9. DELIVERY, STORAGE, AND HANDLING

A. All casework specified herein shall be delivered to the job site as required, received, and handled by the contractor or his authorized agent.

B. All casework shall be delivered in one piece where possible. When it is impractical to do so, such casework may be delivered in sections and assembled in position. An authorized factory mechanic shall supervise assembly.

C. Protect finished surfaces during handling and installation with protective covering of polyethylene film or other suitable material.

10. FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during remainder of construction period.

1. Relative humidity shall be maintained between 30% and 55%, and temperatures between 60 and 70 degrees F.

B. Established Dimensions: Where casework is indicated to fit to other construction, establish dimensions for areas where casework is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

C. Field Measurements: Where casework is indicated to fit to existing construction, verify dimensions of existing construction by field measurements before fabrication and indicate measurements on Shop Drawings. Provide fillers and scribes to allow for trimming and fitting.

D. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before enclosing them, and indicate measurements on Shop Drawings.

11. WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of casework that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Delamination of components or other failures of glue bond.
b. Warping of components.
c. Failure of operating hardware.
d. Deterioration of finishes.

2. Warranty Period: Five (5) years from date of Substantial Completion. Defects reported within the guarantee period will be corrected without charge.

3. All non-casework items not manufactured by the casework supplier such as sinks, fixtures, apparatus, equipment and accessories shall be covered under the original manufacturer's warranty.

4. Warranty shall be in the form of a letter addressed to the Owner and Architect, signed by an officer of the company responsible for fabrication of the casework.

2. PRODUCTS

1. MANUFACTURERS

A. Casework Manufacturers: Subject to compliance with requirements, provide products by one of the following or an architect approved equal:

1. Case Systems, Inc., 2700 James Savage Road, Midland, Michigan 48642. (Design Make)

2. TMI Design, 50 South Third Avenue West Avenue West, Dickinson, ND 58601.

3. LSI Corporation of America, Inc., 2100 Xenon Lane, Minneapolis, MN 55441

4. Stevens Industries, Inc., 704 W Main Street, Teutopolis IL 62467

B. Listing of manufacturers does not imply the standard product of that manufacturer is acceptable. Upgrading or performance enhancements may be required; refer to specifications and drawings for product requirement.

2. GENERAL REQUIREMENTS FOR CASEWORK

A. Quality Standard: Unless otherwise indicated, comply with the AWI/AWMAC/WI's "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.

1. Grade: **Premium**.
2. Provide labels and certificates from certification program indicating that casework complies with requirements of grades specified.
   a. Contractor shall register the Work under this Section with AWI's Quality Certification Program at www.awiqcp.org or by calling 855-345-0991.

B. Product Designations: Drawings indicate sizes, configurations, and finish materials of manufactured plastic-laminate-clad casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish materials, and complying with the Specifications may be considered. See Section 016000 "Product Requirements."

3. PLASTIC-LAMINATE-CLAD CASEWORK

A. Design: Frameless cabinet construction with the following door and drawer-front style:
1. **Flush Overlay**.

B. Exposed Materials:

1. Plastic-Laminate Grade: **VGS**.

   a. For exposed surfaces unless otherwise indicated. Meeting the definition and performance requirements of ANSI/NEMA 3 LD - 2005. GP-28 balanced with a minimum grade CLS.

   b. Colors and Patterns: As selected by Architect from manufacturer's full range.

   c. Grain Direction for Wood-Grain Plastic Laminate:

      1) Doors: Vertical with continuous vertical matching.
      2) Drawer Fronts: Vertical with continuous vertical matching.
      3) Face Frame Members: Lengthwise.
      4) End Panels: Vertical.
      5) Bottoms and Tops of Units: Side to side.
      6) Knee Space Panels: Vertical.
      7) Aprons: Horizontal.

2. Edgebanding: **PVC**.

a. Provide 3mm and .020” PVC that is color-through, satin finish, and applied using hot melt adhesive and radiuses by automatic trimmers. Hand tool applying and trimming of edge shall not be allowed.

b. PVC Edgebanding Color: As selected by Architect from casework manufacturer's full range but no less than 50 color coordinated options.

C. Semi-exposed Materials:

1. Thermally Fused Melamine Laminate: For semi-exposed and concealed surfaces unless otherwise indicated. Meeting the definition and performance requirements of ANSI/NEMA 3 LD - 2005 for GP-28. Cabinet manufacturer shall submit panel manufacturer’s current published specification stating ANSI core properties and NEMA finish properties.

a. Color shall match interior, Almond, Grey, or White. Surface texture shall be similar to exterior finish.
b. Provide plastic laminate of same grade as exposed surfaces for interior faces of doors and drawer fronts and other locations where opposite side of component is exposed. All panels must be of balanced construction.

2. Cabinet Liner: For semi-exposed and concealed surfaces where exterior surface is GP-28 laminate for proper balancing such as semi-exposed face of doors, drawer heads, finished end panels. Meeting the definition and performance requirements of ANSI/NEMA 3 LD - 2000, CLS.

a. Color shall match interior, Almond, Grey, or White. Surface texture shall be similar to exterior finish.

3. Unless otherwise indicated, provide specified edge banding on all semi-exposed edges.

D. Miscellaneous Concealed Materials:

1. Solid Wood: With no defects affecting strength or utility.
2. Plywood: Hardwood plywood.
3. Hardboard: Use only for specialty cabinet components where specifically indicated.
   a. Hardboard shall not be used as the back panel for casework.

4. CABINET HARDWARE AND ACCESSORIES

A. Hardware, General: Unless otherwise indicated, provide manufacturer's standard satin-finish, commercial-quality, heavy-duty hardware.

1. Use threaded metal or plastic inserts with machine screws for fastening to particleboard except where hardware is through-bolted from back side.

B. Butt Hinges: Stainless steel, .095” thick, semi-concealed, five-knuckle hinges complying with ANSI/BHMA A156.9, Institutional Grade 1, with anti-friction bearings, non-removable pin and hospital tips. Each hinge shall be secured with a minimum of nine No. 8 screws.

1. Provide two hinges for doors less than 48 inches high, and provide three hinges for doors more than 48 inches high.

2. Degrees of Opening: 270 degrees without binding.

C. Pulls: For use at base and wall cabinets; use solid stainless steel, 5/16” diameter, wire pulls, fastened from back with two screws.

1. For sliding doors, provide recessed stainless steel flush pulls.
2. Locate one pull at centerline of drawer regardless of width to ensure was of operation and maximize drawer slide life.

D. Pulls: For use at tall cabinets; use 3-point locking system consisting of dummy handle on left hand door and 3-point locking handle on right hand door, providing positive latching engagement at top, bottom and middle of door. Rod ends for 3-point system to extend into cabinet body and have a steel plate guide to protect the anchoring hole from wear. Exterior handle finished to match adjacent casework hardware.

E. Door Catches: Powder-coated, dual, self-aligning, heavy-duty permanent magnet catch. Provide two catches on doors more than 48 inches high.

F. Door and Drawer Bumpers: Self-adhering, clear silicone rubber.

1. Doors: Provide one bumper at top and bottom of closing edge of each swinging door.
2. Drawers: Provide one bumper on back side of drawer front at each corner.

G. Drawer Slides: ANSI/BHMA A156.9, Type B05091.

1. Heavy Duty: (Grade 1HD-100) Epoxy-coated steel, bottom mount, full-extension, self-closing with captive polymer roller and positive stop, extending up the side of drawer. Slide shall be 100-lb. load rating and must prevent drawer from contacting cabinet body.
2. File Drawer Slides: (Grade 1HD-100) Epoxy-coated steel, bottom mount, full-extension, self-closing with captive polymer roller and positive stop, extending up the side of drawer. Slide shall be 100-lb. load rating and must prevent drawer from contacting cabinet body, for drawers more than 6 inches high or 24 inches wide.
3. Pencil Drawer Slides: Grade 2, for drawers not more than 3 inches high and 24 inches wide.
4. Keyboard Slides: Grade 1HD-100, for computer keyboard shelves.
5. Trash Bin Slides: Grade 1HD-100, for trash bins not more than 20 inches high and 16 inches wide.

H. Label Holders: Stainless steel, sized to receive standard label cards approximately 1 by 2 inches, and attached with screws or brads.

1. Provide label holders where indicated on drawings.

I. Drawer and Hinged-Door Locks: Cylindrical (cam) type, five-pin tumbler, brass with chrome-plated finish, and complying with ANSI/BHMA A156.11, Grade 1. Lock core is removable with a control key, permitting Owner to easily change lock arrangements without tools.

1. Provide a minimum of two keys per lock and six master keys for each system.
2. Provide locks where indicated on drawings.

3. Inactive door of base and wall cabinets shall be secured by using an elbow catch. Tall cabinets may use a catch chain release.

   a. Master key for up to 225 key changes. Master key one level with the potential of 40 different, non-interchangeable master key groups.

J. Sliding-Door Hardware Sets: Manufacturer's standard, to suit type and size of sliding-door unit.

K. Adjustable Shelf Supports: Two-pin-locking injection molded clear plastic shelf rests complying with ANSI/BHMA A156.9, Type B04013. Shelf support shall have anti-tip locking tabs as approved in AWI 400B-T-9 for premium grade. Clips shall be rated for a minimum of 300 pounds per clip.

   1. Shelf supports at hardboard shelves shall be matching single pin with anti-tip locking taps.

L. Cable Grommets: Where indicated on the drawings, provide a molded plastic grommet with 2 inch hole and plastic cap with slot for wire passage.

   1. Design Make: Mockett and Company, Inc. #TG or equal.

   2. Color to be selected from manufacturer’s standard colors.

M. Coat Hooks: Double prong zinc plated.

N. Closet Rods: One inch diameter zinc plated rod with captive sockets.

O. Mirrors: Teacher wardrobe mirror to be 8 inch by 10 inch tempered safety glass.

P. Countertop Supports: Aluminum 2 inch by 2 inch by 1/4 inch “T” extrusion. Provide 18 inch by 18 inch deep bracket for 25 inch deep countertops and 18 inch by 24 inch deep bracket for 30 inch deep countertops.

   1. Design Make: Rakks Bracket #EH in clear anodized finish.

5. MATERIALS

A. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.

B. Hardwood Plywood: HPVA HP-1, particleboard core except where veneer core is indicated.

C. Softwood Plywood: DOC PS 1.

D. Particleboard: ANSI A208.1, Grade **M-2 Industrial**, according to the American National Standard (ANSI) for Mat-Formed Wood Particleboard, ANSI/NPA A208.1-2009 and shall meet or exceed the following:

   1. Density: 45 lbs/cu. ft.

   2. Moisture Content: 6%

3. Modulus of Rupture: 2400 psi.

4. Internal Bond: 80 psi.

5. Hardness: 500 pounds.

6. Linear Expansion: 0.35%

7. Thickness Tolerance: +/- 0.008" panel average.

8. Face Screw Holding: 247 pounds.

9. Edge Screw Holding: 225 pounds.

10. Formaldehyde Content: Provide only particleboard with no added urea formaldehyde content in adhesives or binder.

E. MDF: Medium-density fiberboard, ANSI A208.2, Grade 130.

F. Hardboard: ANSI A135.4, Class 1 tempered with a S2S surface finish and must meet or exceed the hardboard product standard ANSI-A135.5.

G. Glass for Glazed Doors: Clear tempered glass complying with ASTM C1048, Kind FT, Condition A, Type I, Class 1, Quality-Q3; not less than 5.0 mm thick.

H. Adhesives: Do not use adhesives that contain urea formaldehyde. PVA and EVA adhesives shall be mechanically applied. Use of contact adhesives will not be permitted.

6. FABRICATION

A. General Plastic-Laminate-Clad Cabinet Construction: As required by referenced quality standard, but not less than the following for <u>all</u> cabinets:

1. Structural Components: All structural components shall be 3/4-inch particleboard with balanced surfaces unless indicated otherwise. All body components shall be secured utilizing concealed interlocking mechanical fasteners as approved by the Architectural Woodwork Standards 1st Edition-2009 Section 10 subsection 4.4.20.4. They shall be especially designed for the use of joining particleboard panels.

   a. All joints are to be tight-fitting and will not rupture or loosen due to dimensional changes in the particleboard, racking of casework during shipment or installation, or normal use

2. Back Panels: All back panels shall be 1/2-inch thick particleboard surfaced both sides for balanced construction. Fully captured on both sides and bottom with continuous adhesive bead at joint. Face-mounted, stapled backs are not acceptable.

   a. Mounting Stretchers are 3/4-inch thick structural components fastened to end panels by mechanical fasteners, and are concealed by the cabinet back.

b. When cabinet backs are exposed, a finished 11/16-inch thick decorative laminate back panel shall be substituted for stretchers.

3. Doors: All door fronts shall be balanced construction with high-pressure laminate bonded to both sides of a 11/16-inch particleboard core with an overall finished dimension of 3/4-inch except as noted below:

   a. Doors over 48-inches in height shall be high-pressure laminate bonded to both sides of 1-1/8-inch particleboard core with an overall finished dimension of 1-3/16-inch. Cabinet depths shall be adjusted so all door and drawer fronts align.

   b. All doors shall be a maximum of 24-inches wide.

   c. Stiles and Rails of Glazed Doors 48-inches high or less shall be 3/4 inch thick, with particleboard cores. Glazed doors more than 48-inches high shall be 1-1/8 inches thick.

4. Shelves: Whether adjustable or fixed shall be 1-inch-thick particleboard, balanced surfaces and have a .020-inch thick PVC front edge matching the shelf. Special-use cabinets such as cubical compartments, mail, or locker type may require 3/4-inch shelves of other thickness. Coordinate with drawings.

   a. Shelving Adjustability: A 5mm diameter row hole pattern 1-1/4-inch on center shall be forced in cabinet ends for adjustable shelves. This row-hole pattern shall also serve for hardware mounting and replacement and/or relocation of cabinet components.

5. Base / Toe Kick: Shall be individually attached exterior grade plywood, 4-inches high for base cabinets and tall cabinets. Base shall support and carry the load of the end panels and the cabinet bottom, directly to the floor. The base shall be let-in from the sides and back of the cabinet to allow cabinets to be installed tightly together and tight against the wall. There shall be a front-to-back center support for all bases over 30-inches wide.

6. Drawer Fronts: 3/4-inch balanced particleboard, removable and attached to drawer box sub-front with screws from inside of drawer. Drawer fronts shall be balanced with high-pressure laminate bonded to both sides.

7. Drawer Sides, Backs, and Sub-front: 1/2-inch particleboard surfaced both sides for balanced construction, with glued multiple, fluted dowel joints at a minimum of 32mm on center. Top edge shall be nominal .020-inch PVC matching the drawer color.

8. File Drawer Sides: Shall have full height sides supporting a heavy-duty support rail for hanging file folders. Painted steel supports or metal file frames set into the drawers are not acceptable.

9. Drawer Bottoms: 1/2-inch-thick particleboard glued and dadoed into front, back, and sides of drawers to create a non-racking, non-deflecting platform that is carried directly by “L” shaped, bottom mount drawer glides. Glides are secured with 1-1/2-inch long screws driven through the platform and into the drawer sides.

10. Drawer Parting Rails: Horizontal parting rails between drawers shall be 3/4-inch particleboard with balanced surfaces, secured to and further reinforcing cabinet ends. When drawer stacks are keyed individually, the parting rail shall run full depth of cabinet to prevent pilfering.

11. Filler Strips: Provide as needed to close spaces between casework and walls, ceilings, and equipment. Fabricate from same material and with same finish as casework.

B. Wall Cabinet Construction: Additional requirements specific to wall cabinets:

1. All wall cabinets bottoms shall be of 1" thick particleboard core mechanically fastened to end panels and secured to the bottom stretcher.

2. An upper 3/4-inch thick stretcher shall be located behind the back panel with two mechanical fasteners per end and secured to the cabinet top with #8 x 2" plated flat head screws.

a. A lower 3/4-inch thick stretcher shall be located behind the back panel and attached to the end panels with mechanical fasteners.

C. Base Cabinet Construction: Additional requirements specific to base cabinets:

1. All based cabinets, except sink cabinets, shall have a solid ¾-inch thick sub-top fastened to the ends with mechanical fasteners.

2. All sink cabinets shall have a vertically mounted front stretcher panel supporting the countertop, a split removable back panel, and four steel corner gussets used to secure the countertop.

a. An upper ¾-inch thick stretcher shall be located behind the back panel and attached to the end panels with mechanical fasteners. This stretcher is also fastened to the full sup-stop thus capturing the back panel.

D. Tall Cabinet Construction: Additional requirements specific to tall cabinets:

1. An intermediate fixed shelf shall be provided on all general storage cabinets to maintain internal dimensional stability under heavy loading conditions.

2. A ¾-inch top and intermediate stretcher shall be located behind the back panels and attached to the end panels with mechanical fasteners.

a. The intermediate stretcher is secured to the intermediate shelf, thus capturing the back panel, with #8 x 2" plated flat head screws.

7. PERFORMANCE

A. Materials shall be tested and certified to meet the following burning properties:

1. Flame Spread (ASTM E84): Class C, not more than 200.

2. Smoke Density: (ASTM D2843) not over 75; or (ASTM E84) not over 450.

3. Self-Ignition Temperature: (ASTM D1929) not less than 600 deg F.

B. Adhesives shall be UL listed as part fo the laminate application.

C. Five Knuckle Institutional Hinge: ANSI 156.9.4.1, 2, 3, 4: Two hinges mounted 23" on center on a 23-7/16 inch wide x 19-11/16 inch high cabinet door shall be capable of supporting 100 pound test load located 1-inch from the outside edge of the door.

1. Cycle, open and close, from 5 degrees open through 95 degrees open with no failure to hinges, door, or cabinet end panel.

2. The maxium horizontal permanent hinge set shall not exceed .030 inch.

D. Adjustable Cabinet Shelving: When supported only at the ends, shelving shall not deflect in excess of 1/4-inch when loaded as follows:

1. Standard School or Library Shelving – 50 pounds/square foot.

E. Wall Hung Cabinet Load Test: Earthquake test procedure developed by the "Woodwork Institute of California" (Woodwork Institute) for casework used in California schools and hospitals.

1. A 48-inch high x 12-inch deep x 48-inch wide wall hung cabinet using mechanical fastening devices shall support 2,000 pound dead load concurrently with 982 pound lateral pull out load. Tese complies with loads specified in Title 17 with safety factor of two.

8. COUNTERTOPS, CAPS or STOOLS

A. Solid-Surface Resin Polymer: Cast acrylic type with integral coloring, stain resistant to domestic chemicals and cleaners meeting ANSI Z124-1980 and ANSI SS1. Performance Standards complying with Class A surface burning characteristics per ASTM E84. Flame Spread Index: 25 or less. Smoke Developed Index: 450 or less. Matt Finish.

1. Fabricate of ½-inch thick, solid-surface material with front edge built up with same material and front profile as detailed.

2. Countertops shall be 1-1/4 inch thick at all exposed edges composed of 1/2 inch solid surface and ¾ inch particle board or 7-ply hardwood veneer plywood substrate. Provide with ½ inch thick loose splashes, 4" high unless noted otherwise.

3. Integral sink bowls complying with ISSFA-2 and ANSI Z124.3, Type 5 or Type 6, without a precoated finish. Sizes as indicated.

4. Basis of Design: E.I. du Pont de Nemours and Company, or equal.

a. Provide colors from manufacturer's full range or as indicated.

3.EXECUTION

1. EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

2. INSTALLATION

A. Grade: Install casework to comply with same quality standard grade as item to be installed.

B. Install casework level, plumb, and true in line; shim as required using concealed shims. Where casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical. Comply with SEFA 2.3.

C. Base Cabinets: Set cabinets straight, level, and plumb. Adjust subtops within 1/16 inch of a single plane. Align similar adjoining doors and drawers to a tolerance of 1/16 inch. Bolt adjacent cabinets together with joints flush, tight, and uniform.

D. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten cabinets to hanging strips, masonry, framing, wood blocking, or reinforcements in walls and partitions. Align similar adjoining doors to a tolerance of 1/16 inch.

E. Fasten casework to adjacent units and to masonry, framing, wood blocking, or reinforcements in walls and partitions to comply with the AWI/AWMAC/WI's "Architectural Woodwork Standards."

F. Install hardware uniformly and precisely. Set hinges snug and flat in mortises unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.

G. Adjust operating hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

H. Countertop installation shall comply with SEFA 2.3. Abut top and edge surfaces in one true plane with flush hairline joints with internal supports placed to prevent deflection.

1. Field Jointing: Where possible, make in same manner as shop-made joints using dowels, splines, fasteners, adhesives, and sealants recommended by manufacturer. Prepare edges in shop for field-made joints.

2. Provide required holes and cutouts for service fittings provided under other scopes of work.

3. Provide scribe moldings for closures at junctures of countertop, curb, and splash with walls as recommended by manufacturer for materials involved. Match materials and finish to adjacent casework. Use chemical-resistant, permanently elastic sealing compound where recommended by manufacturer.

4. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

3. FIELD QUALITY CONTROL

A. Inspections: Provide inspection of installed Work through AWI's Quality Certification Program certifying that woodwork, including installation, complies with requirements of the Architectural Woodwork Standards for the specified grade.

1. Inspection entity shall prepare and submit report of inspection.

4. CLEANING AND PROTECTION

A. Empty drawers of dirt and dust. Wipe out cabinets' interiors to remove dirt and dust. Remove pencil or other marks, excessive adhesive, etc. from cabinets and countertops. Remove all packaging, scraps, and debris resulting from casework installation activities.

B. Make final adjustments to doors and drawers. Doors shall swing freely, catches shall hold securely, and all other doors shall be aligned both vertically and horizontally. Drawers shall open and close smoothly, without binding and without excessive slide play.

C. Keys shall be appropriately labeled and turned over to the Owner.

D. Repair or remove and replace defective work as directed on completion of installation.

E. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

F. Protect countertop surfaces during construction with self-adhering plastic, water-resistant covering. Remove upon space turn-over.

END OF SECTION 123216

SECTION 124813 – ENTRANCE FLOOR MATS AND FRAMES

1.0 PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Entrance mats in new recessed frames.

1.3 SUBMITTALS

A. Product Data: Submit for specified floor mat and frame, including manufacturer's specifications and installation instruction, details of construction relative to materials, dimensions of individual components, profiles and finishes.

B. Shop Drawings: Show the following:

1. Show layout and types of floor mats and frames, full-scale sections of typical installations, details of pattern or designs, anchors, and accessories.

2. Coordinate shop drawings submittal with concrete work shop drawings showing oversized recess for deferred installation of frames.

C. Samples for Initial Selection: For each type of product indicated.

D. Samples for Verification: For each type of product indicated.

1. Floor Mat: 12-inch- square, assembled sections of floor mat.

E. Maintenance Data: For floor mats and frames to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain floor mats and frames through one source from a single manufacturer.

B. Accessibility Requirements: Provide installed floor mats that comply with Sections 302 and 303 in ICC/ANSI A117.1-2003.

C. Flammability Performance: Flammability in accordance with ASTM E648, Class 1, Critical Radiant Flux, minimum 0.45 watts/m^2.

D. Slip Resistance: Slip resistance in accordance with ASTM D-2047-96, Coefficient of Friction, minimum 0.60 for accessible routes.

E. Loading: Standard Rolling performance to be 1000lb./wheel (load applied to a solid 5” x 2” wide polyurethane wheel, 1000 passes without damage).

1.5 MATERIALS

A. Aluminum – ASTM B 221, alloy 6105-T5, 6105-T6 for extrusions.

B. Rigid Vinyl – High impact, rigid PVC.

C. Flexible Vinyl – 80 Durometer, flexible PVC.

1.6 PROJECT CONDITIONS

A. Field Measurements: Check actual openings for mats/grids by accurate field measurements before fabrication. Record actual measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of work.

B. Recessed Conditions: Concrete recess must be flat and smooth throughout. The recess may require leveling grout to achieve the proper depth and a smooth finish. For proper frame installation, the side walls of the concrete must also be straight and smooth. Inconsistencies with the recess or side walls must by remediated prior to product installation.

1.7 COORDINATION

A. Coordinate size and location of recesses in concrete with installation of finish floors to receive floor mats and frames.

2.0 PART 2 – PRODUCTS

A. Basis-of-Design Product: As manufactured by Pawling Corp. or as equal, subject to aesthetic and performance, provide a comparable product by one of the following:

1. Pawling Corporation.

a. Design Make: EM-650 Maxi-Tuft Long Wear Insert (MLW)

2. C/S Group.

3. Balco, Inc.

2.2 RIGID ENTRANCE MATT AND GRATING

A. Rigid extruded aluminum tread-rail at 1-7/8 inch centers and cross supports spaced at 6 inch centers to provide drainage. Tread rails to include continuous rigid vinyl backing and flexible vinyl cushion for contact with substrate and tread rail insert for exposed walking surface. Fasteners shall be anti-vibrational blind fasteners.

1. Mat System Depth: 7/16 inches.

2. Tread Inserts: Maxi-Tuft Long Wear "MLW" Carpet – Space dyed, 100% polyamide nylon, tetra-lobal fibers, 5/32 (4) pile height, 30 oz/sq yd. Static Coefficient of Friction (ASTM D-2047-82_ Dry: 0.49, Wet: 0.77. Passes 16 CFR Part 1630 (FF 1-70) and 16 CFR Part 1631 (FF 2-70) flammability. Carpet fibers to be fusion bonded to continuous two-ply rigid backing. Fibers are waterproof and incorporate UV inhibitors for exterior use.

   a. Color: To be selected from the manufacturer's full range but no fewer than 9 standard colors.

3. Frame Type: Recessed level bed frame 7/16" High designed for use with specified mat. Finish: Mill Finish Aluminum.

   a. Model: SSF 125; Pawling Corp.

4. Filler: Square nosing. Factory trimmed to accommodate slight irregularities in the recess opening.

5. Colors, Textures, and Patterns of Inserts: As selected by Architect from manufacturer's full range.

6. Rail Color: As selected by Architect from manufacturer's full range.

7. Mat Size: As indicated in plan. Field verify all conditions.

2.3 CONCRETE FILL AND GROUT MATERIALS

A. Provide concrete grout and fill equivalent in strength to cast-in-place concrete slabs for recessed mats and frames. Use aggregate no larger than one-third fill thickness.

2.4 FABRICATION

A. Floor Mats: Shop fabricate units to greatest extent possible in sizes indicated. Unless otherwise indicated, provide single unit for each mat installation; do not exceed manufacturer's recommended maximum sizes for units that are removed for maintenance and cleaning. Where joints in mats are necessary, space symmetrically and away from normal traffic lanes. Miter corner joints in framing elements with hairline joints or provide prefabricated corner units without joints.

B. Recessed Frames: As indicated, for permanent recessed installation, complete with corner pins or reinforcement and anchorage devices.

   1. Fabricate edge-frame members in single lengths or, where frame dimensions exceed maximum available lengths, provide minimum number of pieces possible, with hairline joints equally spaced and pieces spliced together by straight connecting pins.

C. Coat surfaces of aluminum frames that will contact cementitious material with manufacturer's standard protective coating.

2.5 ALUMINUM FINISHES

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

C. Class II, Black Anodic Finish: Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, coating 0.010 mm or thicker) complying with AAMA 611.

3.0 PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates and floor conditions for compliance with requirements for location, sizes, minimum recess depth, and other conditions affecting installation of floor mats and frames.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install recessed mat frames to comply with manufacturer's written instructions. Set mat tops at height recommended by manufacturer for most effective cleaning action; coordinate top of mat surfaces with bottom of doors that swing across mats to provide clearance between door and mat.

1. Install necessary shims, spacers, and anchorages for proper location and secure attachment of frames.

2. Install grout and fill around frames and, if required to set mat tops at proper elevations, in recesses under mats. Finish grout and fill smooth and level.

3.3 PROTECTION

A. After completing frame installation and concrete work, provide temporary filler of plywood or fiberboard in recesses and cover frames with plywood protective flooring. Maintain protection until construction traffic has ended and Project is near Substantial Completion.

END OF SECTION 124813

SECTION 126600 – TELESCOPING STANDS

1.0 PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Wall-attached telescoping stands.

a. Location: Homer Brink Elementary School

B. The Bleacher system shall be comprised of multi-tiered, closed deck seating rows operating in a telescopic manner.

C. The first moving row shall be secured with mechanical locks. Other rows shall be mechanically locked, operable only upon unlocking and cycling the first row.

D. Each bleacher row shall be comprised of risers, seat and deck components, and a complete set of supportive columns and braces.

E. The telescopic bleacher shall incorporate a locking system permitting the use of one, several, or all rows, each locked in the extended position.

1.3 PERFORMANCE REQUIREMENTS

A. Telescopic gymnasium seating shall be designed to support a vertical live load of 100 PSF, but not less than 120 PLF on both seat boards and footboards. Seating shall also be designed to carry a horizontal sway force of 24 PLF parallel to the seating and 10 PLF perpendicular to the seating.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for telescoping stands.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Include structural analysis data signed and sealed by the qualified professional engineer licensed in New York State responsible for their preparation.

2. Include wiring diagrams for electrically operated units.

C. Samples for Initial Selection: For each type of exposed finish required.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.

1. Decking: 3-inch- (75-mm-) square samples of finished material.

2. Metal Components: 3-inch- (75-mm-) square sample of each color and finish indicated.

3. Seating: 3-inch- (75-mm-) square sample of each seating material, color, and finish indicated.

E. Qualification Data: For Installer.

F. ICC 300 and NFPA 102 require manufacturer to transmit maintenance and operation instructions to Owner and require Owner to maintain telescoping stands and perform an annual inspection.

G. Operation and Maintenance Data: For telescoping stands to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Manufacturer’s Qualifications: Manufacturer’s shall be regularly engaged in the design and manufacturing of telescopic seating with requirements similar to this Project for a period not les than ten years.

C. Manufacturer's Engineering Responsibility: Preparation of data for telescoping stands, including Shop Drawings, and comprehensive engineering analysis by a qualified professional engineer that state the product supplied has been tested by an independent testing facility and meets all applicable code requirements.

D. Safety Standard: Provide telescoping stands that comply with requirements in NFPA 102.

E. Welding: Qualify procedures and personnel according to AWS D1.1 "Structural Welding Code - Steel" and AWS D1.3 "Structural Welding Code - Sheet Steel."

F. Accessibility Requirements: Provide telescoping stands that comply with requirements in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)".

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls, columns, and other construction that will interface with telescoping stands by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents:

1. Full-size units of seating equal to 10 percent of amount installed for each type and finish installed, but no fewer than five units.

a. Each approved seat color as shown on drawings.

1.8 WARRANTY

A. Special Warranty: The manufacturer shall guarantee all work performed under this section, to be free from defects in materials and workmanship as follows:

B. 1. Warranty Period: One year starting upon the Substantial Completion date.

2.0 PART 2 – PRODUCTS

2.1 MATERIALS

A. Wood:

1. Lumber: Kiln-dried, surfaced four sides; southern pine complying with SPIB's "Standard Grading Rules for Southern Pine Lumber" for B&B Finish (B and better) grade-of-finish requirements.

2. Plywood: APA grade trademarked, DOC PS 1.

B. Steel:

1. Structural Steel Shapes, Plates, and Bars: ASTM A 36/A 36M.

2. Galvanized Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation.

3. Uncoated Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold-rolled commercial steel), or ASTM A 1011/A 1011M, Designation CS (hot-rolled commercial steel).

4. Tubing: ASTM A 500, cold formed; ASTM A 501, hot formed; or ASTM A 513, mechanical.

C. Extruded Aluminum: ASTM B 221 (ASTM B 221M), alloy as standard for manufacturer.

2.2 TELESCOPING STANDS

A. Basis-of-design-Product: Subject to compliance with requirements, provide telescoping seating as manufactured by Interkal (5981 East Cork St., Kalamazoo, Michigan 49048 - #1.269.349.1521) or approved equal by one of the following:

1. Audience Systems Inc.

2. Kotobuki Seating Co. .

B. Model: Wall-Attached, forward-fold, telescoping bleacher system, in which the rear of understructure permanently attaches to wall construction.

C. Dimensions:

1. Row to row spacing: 22 inches.

2. Rise per row: 10 1/4 inches.

3. Length: as indicated on drawings.

D. Seats: Provide "ContourSeat Modules" as follows;

1. Seats and front risers shall be one-piece injection molded high strength polyethylene. 18" wide seat modules with 10" standard seat depth shall be anatomically contoured and provide a minimum seat height of 17". Provided internally with five vertical and lateral structural ribs.

2. Color: To be selected by Architect from manufacturer's standard colors but no fewer than 15 colors.

E. Propulsion / Operation:

1. Friction Power: Furnish friction power, integrated automatic electo-mechanical propulsion system to open and close telescopic seating system. Operation shall assure full visual control of the seating bank. The wide track system shall incorporate two friction drive roller assemblies as an integral part of both first row vertical column assemblies. Each section of bleacher shall have a power system that shall consist of two vertical column roller assemblies which shall include two 6-inch diameter by 2 ½-inch wide cast drive wheels for a minimum of four friction roller contact points per section of bleacher. Each roller shall have a rubber covering to grip the floor as the units roll in and out.

a. Electrical power operation drive units to be fitted under each Row 1 platform assembly. The system is by the "friction drive" method, driving onto the hall floor with No.4 vulcanized rubber covered, cast iron drive rollers per unit. There is generally one power unit per telescope platform unless the manufacturer determines a second is required due to platform size.

2. Motors: ½ HP (208V, 3-phase motor)

3. Pendent Control: Provide pendent control style operation for bleachers. Extension and retraction shall be accomplished by use of the pendent control plugged into a single receptacle. The receptacle shall be mounted behind the first row kickboard. The pendent control voltage shall be 24 VAC at less than 50 MA for the safety of all operating personnel.

4. Drive Roller 6" dia. x 4" long (4 driving through 2 No. drive shafts)

a. Motor: 3 ph, 240v, 60Hz, 0.5Hp, 1.25 SF, 1425 rpm.

b. Gearbox: Output Ratio = 87:1

F. Recoverable ADA Notch-outs 36” x 2 Rows Deep- Recoverable seating can be retracted and used if needed.

G. Deck:

1. Deck: 19mm [0.75”] thick, tongued and grooved, Spruce plywood, bonded to Class 3, BS EN314:1993, listed in BS 5268, Part 2, Section 4 for structural building use and orientated for grain to run front to back on platform space-frame for extra stiffness. Carpet: Selected from full Range

H. Deck Supports: Shall be of structural steel, 11 gauge spaced not greater than 60-inches on center for maximum deck stiffness.

I. Rollers: Every deck support not attached to a vertical post shall have an integral nylon roller to avoid steel-to-steel friction points.

J. Nose Beam: Shall be one-piece, 13-gage galvanized steel.

K. Rear Risers: Shall be one-piece, formed 14-gage, grade 50, galvanized steel with continuous access joint to fully encapsulated footrest panel.

L. Splice Plates: Each section joint shall be tied together with two structural steel members per row, employing a minimum of four steel-to-steel through-bolt connections at the nose-beam and a minimum of eight steel-to-steel through-bolt connections at the lower steel rear riser. Gage of splice plates to match the gage of the nose-beam and rear riser. Splice plates employing steel to plywood deck board attachments will not be acceptable.

M. Understructure:

1. Continuous Wheel Channel: Wheel channels shall consist of a one-piece formed steel channel welded to the base of a vertical column. Each wheel channel shall be fitted with not less than eight wheels under each moving row for rows 1-10, ten wheels under each moving row for rows 11-15, and twelve wheels starting with row 16.

2. Wheels: 3 ½-inch diameter with 1 1/8-inch non-maring soft rubber face with rounded edges designed to protect wood flooring. Provide ½-inch diameter axle for all wheels.

3. Columns: Welded, closed rectangular steel tube, 2”x3” minimum size, 14-gage steel fitted with rear welded gusset at the wheel channel.

4. Row Interlocks: Join each row structure front to rear by means of two intersecting steel connections, plus automatic gravity row locks, where required. Lower track guides shall be an external superslide rod to ensure positive engagement of vertical supports without binding and assures smooth operation over uneven floor conditions. Upper track guides shall completely interlock

adjacent understructure support. A welded stop to ensure correct extension of bleacher unit on deck support. Use of bolt and nut stops are not acceptable.

5. Diagonal Bracing; Structural formed steel truss fitted to rows three and beyond. Bracing shall be attached to the rear riser at optimum locations to ensure structural integrity. Bracing shall be designed and shaped to support a minimum load of 1000 LBS of both compression and tension.

6. Finish: Manufacturer's standard with rust-inhibiting finish.

N. Aisle Closures: Manufacturer's standard that produce flush vertical face at aisles when system is stored.

O. Fasteners: Vibration proof, in manufacturer's standard size and material.

P. Accessories:

1. Slip-resistant, abrasive tread surfaces at vertical aisles.

2. Intermediate aisle steps, fully enclosed, at each vertical aisle.

3. Transitional top step, fully enclosed, at each vertical aisle where last row of telescoping stands is adjacent to a cross aisle.

4. Removable front steps, fully enclosed, at each vertical aisle, that engage with front row to prevent accidental separation or movement and are equipped with a minimum of four skid-resistant feet.

5. Self Storing End rails (guards) that are telescoping and self-storing.

6. Back rails (guards) along rear of units where required by referenced safety standard.

7. Front rails (guards) along front of units where required by referenced safety standard.

8. Rear fillers including supports for closing openings between top row and rear wall of adjoining construction. Provide grilles for heating ventilation.

9. Gap fillers for closing openings between stand units or between stand units and adjoining construction. Provide grilles for heating ventilation.

10. End panels: Vinyl End Curtains with custom Logo

11. Self Storing Aisle Rails- No Labor to set up aisle rails.

2.3 FABRICATION

A. Fabricate understructure from structural steel members in size, spacing, and form required to support design loads specified in referenced safety standard.

B. Round corners and edges of components and exposed fasteners to reduce snagging and pinching hazards.

C. Seating Supports: Fabricate supports to withstand, without damage to components, the forces imposed by use of stands without failure or other conditions that might impair the usefulness of seating units.

1. Cantilever bench seat supports to produce toe space uninterrupted by vertical bracing.

3.0 PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine areas where telescoping stands are to be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install telescoping stands to comply with referenced safety standard and manufacturer's written instructions.

3.3 ADJUSTING AND CLEANING

A. On completion of installation, lubricate, test, and adjust each telescoping stand unit so that it operates according to manufacturer's written operating instructions.

B. Clean installed telescoping stands on exposed and semi-exposed surfaces. Touch up shop-applied finishes or replace components as required to restore damaged or soiled areas.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain telescoping stands. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION 126600