TECHNICAL SPECIFICATIONS

For The
Lenape Regional High School District
Administration Building Various Upgrades

Owner
Lenape Regional High School District Board of Education
93 Willow Grove Road
Shamong, NJ 08088

Prepared By
The Design Collaborative
Architects and Planners, P.A.
1940 Route 9 North,
Cape May Court House
New Jersey 08210-1110

609-465-4111

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Drew C. Dingler, AIA, NCARB,
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September, 2026

Architect's Commission Number 8302
Owner's Project Number Bid No. REF21-42-8302
NJDOE State Plan Number 2610-X02-21-1000

BOOK 1 OF 1

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ADVERTISEMENT FOR BIDS

Lenape Regional High School District Board of Education

LENAPE REGIONAL HIGH SCHOOL DISTRICT BOARD OF EDUCATION hereby requests sealed bids for **Bid No. REF21-42-8302: LRHSD Administration Building Various Upgrades.** Sealed bids will be received for the following contract:

Overall Lump Sum

Bids must be enclosed in a sealed envelope bearing the name of the Bidder and the Work being bid including **Bid No. REF21-42-8302** on the outside lower right-hand corner of the envelope.

BID OPENING DATE: Sealed bids will be received by the Lenape Regional High School District Board of Education, 93 Willow Grove Road, Shamong, NJ 08088; Attention: Ms. Kara Huber, Business Administrator/Board Secretary on **Wednesday, October 7, 2026 at 1:00pm**. Bids will be publicly opened and read aloud immediately thereafter in the School District's Conference Room.

PRE-BID CONFERENCE: A pre-bid meeting will be held at the Administration Building, 93 Willow Grove Road, Shamong, NJ 08088, on **Tuesday, September 22, 2026 at 12:00 Noon**. A walk-through of the building will take place following the Pre-Bid Conference. Bidders are strongly urged to attend.

Bid documents may be obtained on/after **Wednesday, September 9, 2026** for a non-refundable fee of $25.00 from the Architect:

The Design Collaborative, Architects & Planners, PA
1940 Route 9 North
Cape May Court House, NJ 08210-1110
Phone (609) 465-4111
office@tdc-tvc.com

All fees (**deposit checks for plans and specifications**) shall be payable to **LENAPE REGIONAL HIGH SCHOOL DISTRICT BOARD OF EDUCATION**.
DEPOSIT CHECKS ARE TO BE MAILED TO THE DESIGN COLLABORATIVE

Bid documents may be examined **by appointment** at the office of Architect, The Design Collaborative, Architects & Planners, PA, 1940 Route 9 North, Cape May Court House, NJ 08210-1110

The Bidder, or its sub-contractors, shall be classified by the State of New Jersey – Division of Property Management and Construction in the following classification:

C009 General Construction/Alterations & Additions
The Bidder shall further name and include all required pre-qualification information for the following Subcontractors
C032 HVACR*
C047 Electrical*
*Copy of licenses must be included with bid

The Bidder, and any sub-contractor classified under the above categories must present evidence INCLUDED WITHIN THEIR FORM OF BID, of their pre-qualifications, including current Division of Property Management and Construction (DPMC) Copy of "Notice of Classification", Current DPMC Copy of "Total Amount of Uncompleted Contracts" and Business Registration Certificate.

Bidding shall be in conformance with the applicable requirements of *NJSA 18A:18A-1 et. seq.*, the Public School Contracts Law.

All questions pertaining to securing Contract Documents, Bidder's Lists, etc. shall be directed to:

The Design Collaborative, Architects & Planners, PA
1940 Route 9 North
Cape May Court House, NJ 08210-1110
Phone (609) 465-4111
office@tdc-tvc.com

All questions pertaining to the contract documents, technical sections, legal documents, and bid submission shall be directed in writing, no later than **Thursday, September 24, 2026 at 5:00pm** to The Design Collaborative, Architects & Planners, PA: fax: (609) 465-9358; email: Office@tdc-tvc.com.

IF NECESSARY, AN ADDENDUM WILL BE ISSUED on or before **Friday, September 25, 2026.**

The Lenape Regional High School District Board of Education assumes no responsibility whatsoever in connection with any defects arising out of the issuance of the Contract Documents or the receipt or failure to receive bids, including those which may arise from delay for any reason in obtaining the Contract Documents or submitting the Contract Bid Forms, including but not limited to traffic delay, messengering, mis-labeling, mis-directions from any source, mis-delivery or otherwise.

When it is its best interest to do so and to the maximum extent of its discretion under applicable law, the Lenape Regional High School District Board of Education may award the Contract in whole or in part, select any combination of bids and alternates, may waive informalities, and may reject any or all bids:

LENAPE REGIONAL HIGH SCHOOL BOARD OF EDUCATION
KARA HUBER BUSINESS ADMINISTRATOR/BOARD SECRETARY

SECTION 001115 – LIST OF DRAWINGS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section

ARCHITECTURAL, dated 1/2/2025, Rev. 1 9/28/2026

G0.0	COVER SHEET
G1.0	DRAWING NOTE KEY
D1.1	DEMOLITION PLANS AND NOTES
D2.1	DEMOLITION BUILDING ELEVATIONS
A1.0	OVERALL PLANS AND GENERAL NOTES
A1.1	FLOOR PLANS, SCHEDULES AND DETAILS
A1.2	STOREFRONT AND WINDOW DETAILS
A1.3	ROOF PLAN AND SCHEDULES
A4.1	MEETING ROOM ENTRANCE PLANS AND DETAILS
A4.2	MEETING ROOM ENTRANCE SECTIONS AND DETAILS
A4.3	BUILDING AWNING PLANS AND DETAILS
A7.1	ROOF DETAILS
S1.0	STRUCTURAL NOTES AND SCHEDULES
S1.1	STRUCTURAL PLANS AND DETAILS

MECHANICAL dated 9/10/2026

M0.0	MECHANICAL LEAD SHEET
M0.1	MECHANICAL SPECIFICATIONS
MD1.1	MECHANICAL DEMOLITION FLOOR PLANS
M1.1	MECHANICAL NEW WORK FLOOR PLANS
M2.1	MECHANICAL DETAILS

ELECTRICAL, dated 9/10/2026

E0.0	ELECTRICAL LEAD SHEET
E0.1	ELECTRICAL SPECIFICATIONS & DETAILS
ED1.1	ELECTRICAL DEMOLITION FLOOR PLAN
ED1.2	ELECTRICAL DEMOLITION ELEVATIONS
E1.1	ELECTRICAL NEW WORK FLOOR PLAN
E1.2	ELECTRICAL NEW WORK ELEVATIONS
E2.1	ELECTRICAL PANEL SCHEDULES

SECTION 002100 INSTRUCTIONS TO BIDDERS

Instructions to Bidders

For the following Project:
Lenape Regional High School District Administration Building Various Upgrades
93 Willow Grove Road
Shamong, NJ 08088

The Owner:
Lenape Regional High School District Board of Education
93 Willow Grove Road
Shamong, NJ 08088

The Architect:
The Design Collaborative, Architects & Planners, PA
1940 Route 9 North
Cape May Court House, New Jersey 08210-1110

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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 For Bids, Instructions to Bidders, the Bid Form, and other sample bidding and contract forms. The Contract Documents consist of the bidding documents, form of Agreement between the Owner and Contractor, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications and all Addenda issued prior to execution of the Contract, change orders, and modifications.

§ 1.2 Definitions set forth in the Contract Documents and the General Conditions of the Contract for Construction, AIA Document A201 as amended, are applicable to the Bidding Documents.

§ 1.3 Addenda are written and/or graphic instruments prepared and issued by the Architect prior to the execution of the Contract that modify, revise, supplement, clarify, and/or interpret the Bidding Documents by additions, deletions, modifications, clarifications, corrections and prior approvals.

§ 1.4 A Bid is a complete, properly prepared and properly executed responsible and responsive proposal to do the Work for the sums and time stipulated therein, submitted in accordance with the Bidding Documents. All Bids, in order to be entitled to consideration must be made in accordance with the Bidding Documents including these Instructions to Bidder.

§ 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 as the base, to which Work may be added or from which Work may be deleted or substituted for the sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to, deducted from, or substituted for the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted. Alternates may be accepted individually or in any combination as determined by the Owner, that is, accepting a particular alternate shall not be contingent upon selecting any other alternate.

§ 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 Bid Documents.

§ 1.8 A Bidder is a person or entity that possesses the necessary and required qualifications and who submits a bid for a prime contract with the Owner for the Work described in the Bidding Documents.

ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 Each Bidder by making his bid represents that:

§ 2.1.1 The Bidder has carefully read and fully understands all of the Bidding Documents and Contract Documents, to the extent that such documentation relates to the Work for which the Bid is submitted, as well as other portions of the Project, if any, being bid concurrently or presently under construction.

§ 2.1.2 The Bid is made in compliance with the Bidding Documents and all applicable federal, state and municipal statutes and regulations.

§ 2.1.3 The Bidder has visited the site, become completely familiar with the local conditions under which the Work is to be performed and has correlated the Bidder's personal observations with the requirements of the proposed Contract Documents in accordance with §3.2.2.

§ 2.1.4 The Bid is based solely upon the materials, equipment and systems required by the Bidding Documents, as modified by written addenda, without exception.

§ 2.1.5 The Bid is not based on any verbal instructions contrary to or supplementing the Bidding Documents and addenda.

§ 2.1.6 The Bidder is fully qualified under all applicable State and/or local licensing laws for Contractors in effect at the time and at the location of the work before submitting his bid. Bids shall be accepted only from Bidders who are prequalified by the New Jersey Department of the Treasury, Division of Property Management and Construction (DPMC) for the classifications as listed in the Advertisement for Bids. The Contractor shall be responsible for determining that all of his sub-bidders, subcontractors or prospective subcontractors are duly licensed in accordance with law and the NJSDA Grant Agreement.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 COPIES

§ 3.1.1 Bidders may obtain complete sets of Bidding Documents from the issuing office designated in the Advertisement For Bids (Section 001100) for the cost stated therein.

§ 3.1.2 Bidding Documents will not be issued directly to Sub-bidders. No partial sets will be issued.

§ 3.1.3 Bidders shall use complete sets of Bidding Documents in preparing Bids. Neither the Owner, the Architect nor the other Design Professionals assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents. The Project Manual and the drawings are complementary of each other and all work called for or reasonably implied by either shall be performed as if called for by both.

§ 3.1.4 The price of the Bidding Documents does not include mailing or shipping. Requests for mailing or shipping Bidding Documents will be honored using Federal Express, UPS, or similar express delivery service provided the addressee furnishes his account number, "street" address and telephone number. Addressee's account will be used for all charges/costs.

§ 3.1.5 The Owner and Architect make copies of the Bidding Documents available on the above terms for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by issuance of copies of the Bidding Documents.

§ 3.1.6 Bidding Documents may be examined at the office of the Architect. See the beginning of these Instructions to Bidders for the address and telephone number of each. Please call ahead for an appointment to examine the Bidding Documents.

§ 3.1.7 The copyrights to the Bidding Documents are the property of the Lenape Regional High School District Board of Education. The Bidding Documents are not to be copied or transmitted in any form, including manually or electronically, without the express written consent of the Owner. The Bidder is hereby issued a license to reproduce the documents for the purpose of bidding the project and receiving bids from subcontractors. The Bidding Documents are not to be publicly displayed and are to be kept secured.

§ 3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

§ 3.2.1 The Bidder shall carefully study and compare the Bidding Documents with each other, with existing conditions at the site, and with other Work being bid concurrently or presently under construction to the extent that it relates to the Work of this Project for which the Bid is submitted.

§ 3.2.2 The Bidder shall visit the Project site and fully inform and acquaint themselves of all existing conditions and limitations under which the Work is to be performed. Contractor shall fully acquaint himself with all surface and subsurface conditions as they exist so that he will fully understand the facilities, difficulties and restrictions attending the execution of the Work under this Contract. The Bidder shall promptly report to the Architect errors, inconsistencies or ambiguities discovered in the Contract Documents.

§ 3.2.3 Bidders requiring clarification or interpretation of the Bidding Documents or having any question shall make a written request to the Architect which must be received by the Architect at least twelve (12) calendar days prior to the date for receipt of Bids.

§ 3.2.4 Interpretations, corrections and changes of the Bidding Documents will be made by Addendum. Interpretations, corrections and changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon them.

§ 3.2.5 Any aspect of the Bidding Documents that is subject to more than one reasonable interpretation must be interpreted by the Architect. The Bidder/Contractor does not have the right to choose an interpretation or to form his/her own interpretation. The Architect shall be the sole interpreter of the Documents.

§ 3.2.6 Bidders shall carefully study and consider federal, state and local laws and regulations that may affect cost, progress, and performance in performance of the Work.

§ 3.3 SUBSTITUTIONS

§ 3.3.1 It is understood and agreed that the Bid submitted is based on furnishing "Standards" as specified and entitles the Owner to require that such materials and/or methods be incorporated in the Work, except substitutions as may be approved in writing by the Architect.

§ 3.3.2 Contractor may offer substitutions for materials, products and equipment. Contractor shall present to the Architect a written guarantee or certification that the substituted material meets the standard of the material specified. See Section 016000, Section 2.2.

§ 3.3.3 Substitution requests will not be considered during bidding. No substitution will be considered unless the Contractor has submitted a written request for approval after the completion of the bidding phase of the Project in accordance with all requirements of Section 016000. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including model numbers, drawings, cuts, performance and test data and any other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or work that incorporation of the substitute would require shall be included. See detailed substitution request requirements in Section 0160000. It shall be the responsibility of the Contractor to include in his request all changes required of the Contract Documents if the substitute proposed product is used. Substitution approval is given contingent upon Contractor being responsible for any costs that may be necessary to modify the space or facilities needed to accommodate the materials and equipment approved. Any and all substitution requests may or may not be considered, at the sole discretion of the Architect. The Architect will be the sole judge of whether a substitution request will or will not be considered and will the sole judge of whether a substitution under consideration is acceptable or not acceptable. Request for substitutions will only be accepted from the prime contractors, not from manufacturers, suppliers or subcontractors.

§ 3.3.4 Products, materials, and equipment required in the Bidding Documents establish minimum quality "Standards" of required function, dimension, appearance, utility, performance and quality that proposed substitutions must meet in order to be considered acceptable. The burden of proof of quality and equality of substitutions rests with the Contractor. The Architect reserves the sole right to determine if the material, products, systems and/or equipment is equal to the specified and is acceptable under this Contract. The right to require the specified products, materials, equipment and systems is reserved to the Architect alone.

§ 3.3.5 If the Architect approves a proposed substitution, such approval will be set forth in writing. Contractor shall not rely upon approvals made in any other manner.

§ 3.4 ADDENDA

§ 3.4.1 Addenda will be transmitted to all that are known by the issuing office to have received a complete set of Bidding Documents. All Addenda will be issued electronically via email or hightail with confirmation of receipt required. Only written Addenda prepared and issued by the Architect shall become part of the Bidding Documents. Bidders are responsible for distributing Addenda to their sub-bidders, subcontractors, sub-subcontractors, material suppliers and any other entity affected by the Addenda.

§ 3.4.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

§ 3.4.3 Addenda will not be issued less than seven (7) days, Saturdays, Sundays and holidays excepted, prior to the date of acceptance of Bids except an Addendum withdrawing the request for Bids or which includes postponement of the date for receipt of Bids.

§ 3.4.4 Each Bidder may ascertain from the Architect prior to submitting a Bid that the Bidder has received all Addenda issued. The Bidder shall acknowledge receipt of all Addenda on the Bid Form. It is incumbent upon each Bidder to be proactive and take the effort to ensure that he has received all Addenda.

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 PREPARATION OF BIDS

§ 4.1.1 Bids shall be submitted on the form included in the Bidding Documents (Specification Section 004100, One Lump Sum Bid appropriate to the prime contract the contractor is submitting a bid for).

§ 4.1.2 All blanks on the bid form shall be filled in by typewriter or manually in ink. Bid must be signed in ink.

§ 4.1.3 Sums shall be expressed in both words and figures. In case of discrepancy, the amount written in words shall govern.

§ 4.1.4 Interlineations, alterations or erasures must be initialed and dated by the signer of the Bid or his authorized representative.

§ 4.1.5 All alternates and/or unit prices shall be bid. Failure to submit alternate prices and/or unit prices will render the bid informal and may cause its rejection. If no change in the Base Bid is required, enter "No Change".

§ 4.1.6 Bidder shall make no additional stipulations on the Bid Form nor qualify his bid in any other manner.

§ 4.1.7 Each copy of the bid shall include the legal name of the Bidder and the nature of legal form of the Bidder. The bidder shall provide evidence of legal authority to bid, contract and perform the Work. Each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract.

§ 4.2 BID SECURITY

§ 4.2.1 Each Bid shall be accompanied by a bid security in the form and amount equal to 10% of the Base Bid, not in excess of $20,000.00, as required by N.J.S.A. 18A:18A-24. The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and to 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, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty.

§ 4.2.2 A surety bond shall be consistent with the requirements of New Jersey law, including but not limited to N.J.S.A. 18A:18A-24. AIA Document A310 is not acceptable as it is not compliant with N.J.S.A. 18A:18A-24. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the power of attorney. The Bid Security shall be in favor of the Owner.

§4.2.3 The Bidder's surety company must appear on the New Jersey Department of Banking and Insurance List of Approved Sureties as of the day that the bids are opened and must be listed currently on the U.S. Department of Treasury Financial Management Service List (Treasury Department Circular 570) as approved for an amount equal to or greater than the Contract amount. No individual acting as a surety will be accepted.

§ 4.2.4 Bid security furnished by the Bidder shall guarantee that the Bidder will, if awarded the Work according to the terms of his Bid, enter into the Contract and furnish Performance and Payment Bonds as required by these Bidding Documents, within ten (10) business days after receipt of the Notice of Award and the Contract. Should the Bidder refuse to enter into such Contract or fail to furnish the required bonds, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as penalty.

§ 4.2.5 The Bidder shall submit proof of the ability to receive performance and payment bonding for the entire contract sum.

§ 4.2.6 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until either (a) the Contract has been executed and bonds have been furnished, (b) the specified time has elapsed so that Bids may be withdrawn or (c) all Bids have been rejected.

§ 4.3 SUBMISSION OF BIDS

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

§ 4.3.2 Bids shall be deposited at the designated location prior to the time and date for receipt of Bids indicated in the Advertisement For Bids, or any extension thereof made by Addendum. Bids properly received prior to the time and date for the bid opening submitted by invited bidders in accordance with the Bid documents will be opening in public and read aloud at the location designated in the Advertisement for Bids. Bids received after the time and date for receipt of bids will not be accepted and will be returned unopened.

§ 4.3.3 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids. Late delivery of a bid for any reason, including late delivery by United States Postal Service Mail, or express delivery service, shall disqualify the bid.

§ 4.3.4 Oral, telephonic, telegraphic, facsimile, or electronically transmitted bids are invalid and shall not receive consideration. Owner shall not consider notations written on the outside of the bid envelope which have the effect of amending the bid. Written modifications enclosed in the bid envelope, and signed or initialed by the Contractor or his representative, may be considered, in accordance with §4.1.

§ 4.3.5 The Bidder shall submit one (1) complete original of Bid, with original signatures, plus one (1) complete copy including all attachments. All documents shall be in the order on the Bid Submittal Checklist.

§ 4.4 MODIFICATION OR WITHDRAWAL OF BIDS

§ 4.4.1 A bid may not be modified, withdrawn or canceled by the Bidder during the stipulated time in Paragraph 4.4.5 below, for the period following the time and bid date designated for the receipt of bids, and Bidder so agrees in submitting his Bid.

§ 4.4.2 Prior to the time and date designated for receipt of Bids, a bid submitted may be modified or withdrawn only by notice to the party receiving Bids at the place designated for receipt of bids. Such notice shall be in writing over the signature of the Bidder. Written confirmation over the signature of the Bidder shall be received and date- and time-stamped by the receiving party on or before the date and time set for receipt of Bids. A change shall be so worded as not to reveal the amount of the original bid.

§ 4.4.3 Withdrawn bids may be resubmitted up to the date and time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

§ 4.4.4 Bid Security shall be in an amount sufficient for the Bid as modified or resubmitted.

§ 4.4.5 Bids shall be maintained and held good and may not be withdrawn or modified for a period of sixty (60) calendar days after the scheduled closing time for receiving bids.

§ 4.4.6 The Bid and all documents submitted in connection with the Bid shall, upon opening, become the property of the Owner.

ARTICLE 5 CONSIDERATION OF BIDS

§5.1 OPENING OF BIDS

In accordance with the Advertisement for Bids, properly submitted Bids received on time will be publicly opened and will be read aloud. The bids may be reviewed immediately upon the conclusion of the reading of the bids. An abstract of the Bids and a copy of any individual bid will be made available to Bidders upon written request to the Owner. A charge may apply for a copy of any document requested.

§5.2 REJECTION OF BIDS

Pursuant to New Jersey law, including but not limited to N.J.S.A. 18A:18A-22, the Owner shall have the right to reject any or all Bids. A Bid not accompanied by the required bid security or by other data required by the Bidding Documents or a Bid which is in any way incomplete or irregular is subject to rejection.

§5.3 ACCEPTANCE OF BID (AWARD)

§5.3.1 The Contract shall be awarded pursuant to the requirements of New Jersey law. This award should be to the lowest responsive and responsible Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. However, the Owner shall incur no obligation to any Bidder or any other third party until the Agreement Between Owner and Contractor is fully executed. 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 The Owner shall have the sole right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

§6.1 CONTRACTOR'S QUALIFICATION STATEMENT

Bidders to whom award of a Contract is under consideration shall, with 48 hours of request, submit to the Architect, a properly executed AIA Document A305, Contractor's Qualification Statement, unless such a statement has been previously required and submitted as a prerequisite to the issuance of Bidding Documents.

§6.1.1 RECORD RETENTION

In accordance with NJAC 17:44-2.2, the OSC has authority to audit or review contract records (a) Relevant records of private vendors or other persons entering into contracts with covered entities are subject to audit or review by OSC pursuant to N.J.S.A. 52:15C-14(d). (b) As of (the effective date of these rules), all covered entities shall insert the following language in any new contract: "(The contract partner) shall maintain all documentation related to products, transactions or services under this contract for a period of five years from the date of final payment. Such records shall be made available to the New Jersey Office of the State Comptroller upon request.

§6.2 POST AWARD SUBMITTALS

§6.2.1 The Bidder shall, within ten (10) business days after receipt of the Notice of Award of a Contract, furnish to the Owner through the Architect in writing:

- **.1** Executed form of Contract (4 originals);
- **.2** Performance and Payment bonds in the amount of one hundred percent (100%) of the contract amount (1 original and 3 copies);
- **.3** Certificate of Insurance (ACORD form is acceptable) and copy of additional insured endorsement. The Owner additionally reserves the right to request a certified copy of the Contractor's insurance policies;
- **.4** N/A.
- **.5** New Jersey Division of Contract Compliance Form AA-302; Employee Information Report (if no Certificate of Employee Information has been furnished with the bid documents);
- **.6** New Jersey Division of Contract Compliance Form AA-201; Initial Project Workforce Report; and
- **.7** if a corporation, the bylaws and a corporate resolution authorizing the signing of the contract.
- **.8** if an LLC or limited partnership, a copy of the operating or partnership agreement and a company resolution.

§6.2.2 The Bidder shall, with ten (10) business days after receipt of the Notice to Proceed, furnish to the Owner through the Architect in writing:

- **.1** a directory of the names of all key employees;
- **.2** a designation of the Work to be performed with the Bidder's own forces;
- **.3** names of the manufacturers, products, and the suppliers of principal items or systems of materials and equipment proposed for the Work; and
- **.4** 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.

Pursuant to the requirements of New Jersey law, all information provided must be consistent with the information provided in the Bidding Documents.

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

§6.2.4 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 CONTRACTOR'S INSURANCE

The successful Bidder, as determined by the Owner, shall provide evidence of insurance coverage, including the New Jersey Workers' Compensation Certificate, within ten (10) business days after receipt of the Notice of Award. Reference Article 11 of the General Conditions and Section 007316 / Insurance for specific insurance requirements and limits for this Project.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§7.1 BOND REQUIREMENTS

§7.1.1 The Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Bonds may be secured through the Bidder's usual sources. The required bonds shall be consistent with the requirements of New Jersey law, including but not limited to the Public School Contracts Law.

§7.1.2 As the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid.

§7.1.3 The Bidder's bonding company must appear on the New Jersey Department of Banking and Insurance List of Approved Sureties as of the day that the Agreement is signed and must be listed currently on the U.S. Department of Treasury Financial Management Service List (Treasury Department Circular 570) as approved for an amount equal to or greater than the Contract amount. No individual sureties will be accepted.

§7.2 TIME OF DELIVERY AND FORM OF BONDS

§7.2.1 The Bidder shall deliver the required Bond to the Owner within ten (10) business days after receipt by the Bidder of the Notice of Award, but not later than the date of execution of the Contract.

§7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond. Both bonds shall be written in the amount of the Contract Sum. The required bonds shall be consistent with the requirements of New Jersey law, including but not limited to N.J.S.A. 2A:44-147.

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

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

§7.2.5 Simultaneously with the delivery of the Performance and Payment Bonds, the Bidder shall deliver to the Owner a letter from the surety company stating that the Performance and Payment Bonds provide for or that the surety company will provide the Contractor with a Maintenance Bond. The Maintenance Bond shall be in the amount of 10% of the Contract for the maintenance of any defect which may develop during a period of two years from the date as provided for in the contract for the work performed, provided such defects, in the judgment of the Owner, are caused by defective or inferior materials or workmanship. The Maintenance Bond shall be submitted to and approved by the Owner before the Final Application for Payment is certified by the Architect.

ARTICLE 8 FORM OF AGREEMENT BETWEEN OWNER AND CONTRCTOR

The Agreement of the Work will be written on AIA Document A101-2017, Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment Is a Stipulated Sum, as modified herein. The form of Agreement is in Section 005200 of the Project Manual.

ARTICLE 9 OTHER ITEMS

§9.1 CONSTRUCTION FEES & PERMITS

Bidders are reminded that pursuant to the General Conditions, Paragraphs 2.2.2 and 3.7.1 the Contractor shall secure the Building Permit and shall secure and pay for all other permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required at the time the bids are received. The Owner shall pay for the Building Permit.

§9.2 PENALTIES FOR FALSE STATEMENTS

Bidders are reminded that they are subject to substantial penalties under N.J.S.A. 18A:18A-33 for making false statements.

END OF SECTION 002100

SECTION 003110 - PROJECT SCHEDULE

PART 1-GENERAL

1.1 SUMMARY

A. This Section includes:

1. Work Sequence.
2. Contractors Construction Schedule submittal.
3. Contractor's use of premises.
4. Owner Occupancy.

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.

1. Refer to Section 003120 – Milestone Dates and Liquidated Damages.
2. Refer to Section 013216 – CPM Schedule.

1.3 WORK SEQUENCE

A. Project Start: Commence construction activity at the site as soon after the issuance of the Notice to Proceed as required to comply with the specified Project Milestone Dates.

1. Schedule material deliveries to correspond with starting dates so that materials are on site on the required start date.

B. Coordination:

1. Schedule all construction activities at the Site through the Architect to avoid, to maximum extent, interference with other Contractors and the Owner's operations and to meet specified completion dates. It is the responsibility of the Contractor to meet the Milestone Dates in coordination with the Owner's educational schedule.

a. Coordinate construction activities through the Architect with school calendar issued by Owner to Contractor to avoid interference with Owner's educational process and operations within building.

2. Coordinate, through the Architect, all interruptions of building services or shutdown of building systems and obtain, through the Architect, prior written approval of proposed schedule of interruptions or shut-downs.

a. If, in the Owner's opinion, any such interruption or shut-down will affect the life safety of building occupants, Contractor shall schedule interruption or shut-down at a time acceptable to Owner, at times when classes are not in session, or after normal working hours. Coordinate all changes through the Architect.

b. Owner will not make extra payment for overtime outside of normal working hours required by any such interruption or shutdown. If the Contractor requires overtime, this shall be at his own cost and the Contractor shall be responsible for extra costs.
c. Insure all equipment, fittings, pipe, and similar items required are available before interrupting or shutting-down existing systems.
d. Notify all inspectors and representatives of utility companies, municipal officials, Architect and similar parties by letter in advance of required changeovers, tie-ins, removals, and similar operations.

C. Construction Schedule: At the end of this Section the Owner has attached a preliminary schedule representing an overview of how the project could be scheduled. The Contractor is not bound to this preliminary schedule, but is bound to the Milestone Dates established in Section 003120. The purpose of this schedule is to give each Prime Contractor a foundation for developing their initial schedule. This preliminary schedule does not contain all construction activities required to complete all work shown on the drawings or included in the specifications, however each Prime Contractor shall be responsible to complete all of these required activities within the Milestone Dates established, notwithstanding their omission from Section 003120.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE SUBMITTAL

A. The General Work Contractor, with the cooperation and input from the other Prime Contractors, shall prepare a CPM Construction Schedule in accordance with the requirements of Paragraph 3.10 of the General Conditions and the requirements of SECTION 013216 – CPM SCHEDULE.

1.5 CONTRACTOR'S USE OF PREMISES

A. Access to Building: Schedule all construction activities with Owner, through the Architect, to allow Owner full use of building areas and systems for normal educational process.

1. Owner acknowledges the Contractor will require access to Owner-occupied areas, rooms and systems, and intends to cooperate in making rooms and systems available for construction activities.
2. Notify Architect in advance of any requirements for access to any existing building outside of normal working hours and days.

B. School Year: The school calendar can be found on the districts website.

C. Regular Hours: Regular hours at the schools are 7:20 AM – 2:12 PM

D. Work Outside Regular Hours: On days when the Contractor is performing work within occupied portions of a school building, no work shall take place before 3:00 PM. The Contractor shall give the Architect at least seven (7) days notice in such event.

E. Building Security: Owner will maintain building security at all times for his sole benefit. The Contractor shall adhere to the Owner’s security program. Each Prime Contractor retains full responsibility for security and protection of his Work until final acceptance by the Owner.

F. Visitor Management - All visitors to the site, including the Contractor’s personnel, employees, subcontractors and suppliers shall be required to be check in at the Main Office to be checked in and badged through the District’s Visitor Management System. Individuals shall be required to provide a current, valid Driver’s License or other acceptable photo ID. Individuals without valid

identification, or those refusing to be checked in via the District's Visitor Management System shall be required to leave the property.

G. Maintenance of Building Circulation and Exits: Maintain circulation corridors, exits, and exit stairs unobstructed from equipment and materials, except in areas of construction activity enclosed by temporary partitions.

1.6 OWNER OCCUPANCY

A. Normal School Year: Owner must maintain a full educational program during the normal school year throughout the duration of the Project and will make full use of buildings and sites, unless otherwise specified.

1. School and special activities may be conducted within the buildings and on sites after regular school hours and on weekends during the normal school year.
2. Each Prime Contractor shall maintain free access for Owner's personnel to building and site areas not scheduled for alteration or dimensional change.
3. Owner's personnel will perform normal custodial and maintenance services for building areas and systems not involved in construction activities, unless otherwise indicated.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 003110

LENAPE REGIONAL HIGH SCHOOL DISTRICT 2026 - 2027

August 2026

S	M	T	W	T	F	S
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

September 2026

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

October 2026

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

November 2026

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

December 2026

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

January 2027

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Aug 24-25 New Teacher Orientation
Aug 25 **Freshman & New Student Orientations**
Time TBD for All Schools
Aug 26 **All Staff In-Service**
@ Home School 8 AM-3:30 PM
Aug 27 **All Staff In-Service**
@ Lenape 8 AM-1 PM
Aug 28 School Closed Students & Staff
Aug 31 First Day of Classes – All Students
Sept 4 School Closed Students & Staff
Sept 7 Labor Day
Sept 21 School Closed Students & Staff
Oct 12 Staff In-Service
Oct 30 Single Session Day – Students
Nov 5-6 NJEA Convention
Nov 25 Single Session Students & Staff
Nov 26-27 Thanksgiving Break
Dec 9 Staff In-Service
Dec 23 Single Session Students & Staff
Dec 24 Winter Break Begins
Jan 4 Winter Break Ends – Classes Begin
Jan 18 Martin Luther King Day
Jan 22 Single Session Day – Students
Jan 25 Single Session Day – Students
Feb 12 Staff In-Service
Feb 15 Presidents' Day
Mar 10 Staff In-Service
Mar 26 Spring Break Begins
April 5 Spring Break Ends – Classes Begin
May 31 Memorial Day
June 9-15 **Single Session Day – Students***
June 15 **Last Day for Students & Staff***
6:00 PM Graduation*
June 18 Juneteenth

SCHOOLS CLOSED (STUDENTS & STAFF)
SCHOOLS CLOSED (STUDENTS ONLY)
SINGLE SESSION

Emergency/Weather Make-Up Days

1. February 12*
2. June 16
3. June 17
4. March 10*
5. June 21
6. June 22

Subject to change pending need for additional emergency/weather closings

Total Student Days in Session = 180
(# days in session per month)

Aug 1				
Sept 19	Nov 17	Jan 19	Mar 18	May 20
Oct 21	Dec 16	Feb 18	Apr 20	June 11

February 2027

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

March 2027

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

April 2027

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

May 2027

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

June 2027

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

July 2027

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

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SECTION 003120 – MILESTONE DATES AND LIQUIDATED DAMAGES

PART 1-GENERAL

1.1 SUMMARY

A. This Section describes the requirements for completion of interim milestone events and final completion of all work required by the Contract Documents.

B. This Section also establishes the relationship of liquidated damages for failure to complete the interim milestone events or final completion requirements within the time requirements stated herein.

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.

1. Refer to the Section 003110 – Project Schedule.
2. Refer to the Section 013216 – CPM Schedule.

1.3 TIME OF COMPLETION

A. The Contractor shall complete its work in coordination with the work of its subcontractors and provide his forces and his subcontractors with access to the site so that they may complete their work within the times established.

B. If the Architect determines that a Contractor is falling behind schedule for any phase of the Work, than the Contractor, upon receipt of a written directive from the Architect shall provide sufficient manpower in order to complete the current Phase on time for occupancy, at no additional cost to the Owner.

C. Each Contractor shall work overtime, additional shifts, weekends, and/or holidays to complete the work with no additional cost to the Owner.

1. Scarce resources shall not be an excuse for not completing the work on time.

D. Each Contractor shall execute all required subcontracts and order all materials and equipment required for delivery to the project site to insure that it will meet all milestones on the project schedule in accordance with this Section and the Contract Documents.

1.4 MILESTONE DATES AND LIQUIDATED DAMAGES

A. Access to Building: Contractor shall schedule all construction activities with Owner, through the Architect, to allow Owner full use of building areas and systems for its use and normal educational process.

1. Owner acknowledges the Contractor will require access to Owner-occupied areas, rooms and systems, and will endeavor to make rooms and systems available for construction activities.

B. Contractor shall coordinate its work with all other Contractors.

1.5 OWNER OCCUPANCY

A. The Contractor acknowledges that the liquidated damages are not a penalty, but are utilized because of the difficulty in assessing damages where there is not timely performance of the Work required herein. The Contractor further acknowledges that the Owner will suffer from the disruption in its education program and incur added costs, including, but not limited to, administrative, inspection costs, testing costs, interest, professional fees, etc because of any delays.

B. The “Substantial Completion” dates noted are dates the referenced spaces are to be made fully available to the Owner for their complete use for the purpose intended, with all required approvals and certificates of occupancy.

C. In accordance with *N.J.S.A 18A:18A-19*, the Owner shall deduct from the Contract Price any wages paid by the Owner to any inspectors, Architect and Architect's Consultants necessarily employed by it on the work of this Project, for any number of days in excess of the number of days or indicated dates allowed in the milestones herein.

D. In the event of the failure of the Contractor to timely complete the work of any milestone listed herein, the Contractor shall be liable to the Owner for the sum indicated herein for each milestone and shall pay to the Owner the specified sum as liquidated damages for each calendar day of delay until the milestone task is substantially completed.

E. In the event the Contractor shall miss any milestone dates, no subsequent milestone dates shall be changed as a result there from. In the event of the failure of the Contractor to complete the work of any milestone listed herein, the Contractor is responsible for providing a recovery schedule to meet the remaining original milestone dates, which shall not change.

F. The liquidated damage amounts are fixed and agreed upon by and between the Contractor and the Owner due to the impracticality and extreme difficulty of fixing and ascertaining the actual damages the Owner would sustain by delays in the project. Such amounts may be retained from time to time by the Owner from the current periodical payments, at the Owner’s sole discretion.

G. The Owner shall have the right to deduct the total amount of any liquidated damages from which the Contractor may be liable from any monies otherwise due the Contractor, including any retainage under control of the Owner.

H. The Contractor’s surety shall be liable for any liquidated damages for which the Contractor may be liable.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION

3.1 PROJECT MILESTONE DATES

LENAPE REGIONAL HIGH SCHOOL DISTRICT – DISTRICT OFFICE EXTERIOR RENOVATIONS AND IMPROVEMENTS. The scope of this Contract shall address all work necessary to complete the exterior renovations and improvements to the existing District Office for the Lenape Regional High School District:

Milestone No.	Task (Base Bid)	Start Date	Milestone Completion Date
1a	All submittals, shop drawings and product data.	NTP	28 Calendar Days (NTP)
	Liquidated Damages - $500 / calendar day of delay		
1b	Delivery of all roofing and siding materials (including the new roof shingles, weather barrier, and siding).	Completion of Milestone 1a	28 Calendar Days
	Liquidated Damages - $500 / calendar day of delay		
1c	Substantial completion of all work, including masonry restoration at the chimneys, roofing, siding, door and windows, and other work of the contract.	Completion of Milestone 1b	140 Calendar Days
	Liquidated Damages - $500 / calendar day of delay		
1d	Completion of all work, including final cleaning and punchlist completion	Completion of Milestone 1c	28 Calendar Days
	Liquidated Damages - $500 / calendar day of delay		

CONTRACT I NOTES:

1.) The date of the formal "Notice to Proceed" for the Contract is anticipated to be issued on or about **Friday, October 9, 2026**.

2.) Construction within the spaces included within this scope of the work may be performed first shift unless specifically noted otherwise within the schedules above. Any noise, smoke or dust generating activities, or any other construction activities that may disrupt the District's use of adjacent spaces must be performed second shift or during non-school hours. Work may be permitted within other non-occupied spaces and on the roof during the school day with the written permission of the owner, with limitation delineated elsewhere within these Contract Documents.

3.) Doors communicating to adjacent owner-occupied spaces must be secured and sealed to prevent migration of smoke, dust or construction related fumes.

4.) The above Milestone Schedule and requirements for Temporary Facilities shall be fully applicable to the complete scope of the Contract work unless specifically noted otherwise.

GENERAL NOTES, APPLICABLE TO ALL CONTRACTS:

1.) The above Milestone Schedules and requirements for Temporary Facilities shall be fully applicable to the complete scope of the work unless specifically noted otherwise.

2.) Work may be performed first shift over any District Holiday or Break, when staff are not present.
3.) All work shall be performed second shift while school is in session, in accordance with the School Districts academic calendar. Work may be permitted within non-occupied spaces and on the roof during the day with the written permission of the owner, with limitation delineated elsewhere within these Contract Documents.
4.) Work may be permitted on Saturdays and Sundays, in accordance with the District's use of the building.
5.) The use of cranes shall not be permitted under any circumstance at any time on days when the Building is occupied. Crane operations may only be scheduled to occur on school holidays or on weekends as expressly approved by the LRHSD.
6.) The contractor shall provide adequate manpower, and schedule work as necessary at no additional cost to the Owner as necessary to meet all milestones and completion dates referenced.
7.) All existing utility services to areas outside the limit of this contract shall be protected and shall remain in service remain throughout the duration of this contract. The LRHSD will restrict access to the surrounding grounds throughout the duration of the project. At no time shall the owner's full use of the facility be impacted.
8.) Heating must be available to all Owner-occupied spaces between October 10th and April 20th at all times.
9.) Ventilation must be available to all Owner-occupied spaces at all times. In the event that permanent mechanical systems are not available, the contractor shall be responsible for the supply of temporary mechanical systems capable of providing adequate ventilation.
10.) Liquidated damages shall be waived and will not be enforced in the event of delays due to manufacturing or shipping delays beyond the Contractor's control. The Date of Substantial Completion will be revised by way of a formal change order once written confirmation of ship dates have been received from the manufacturer(s) for all equipment required for the completion of the project. Material and / or equipment fabrication or delivery delays shall not be considered grounds for claims for additional cost.
11.) The cost for premium time labor shall be included within the Contractor's Base Bid where work is permitted to be performed at times other than first shift within this specification section and the applicable attachments. Additional costs for premium time labor will only be considered when work beyond first shift, other than that referenced within this specification section, is authorized by the Owner in writing, in accordance with The General Conditions of the Contract for Construction, AIA Document A201, subparagraph 7.5, "Overtime Authorized By Owner".

END OF SECTION 003120

SECTION 003132 – GEOTECHNICAL DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

1.2 TEST BORINGS:

A. Geotechnical Investigations were made at the Administration Building by Atlas, project number 206TDC2602, dated September 8, 2026.

1. The soil reports are attached herein, and summarizes a subsurface investigation and provides foundation support for the proposed porch rebuilding.

B. This report is included for informational purposes only and should not be considered part of the contract documents. The opinions expressed in this report are those of the Geotechnical Engineer and represent their interpretation of the subsurface conditions, field and laboratory testing, and the results of analyses which they have conducted. Should the data contained in this report not be adequate for the Contractor's purposes, the Contractor may make, prior to bidding, his own investigation. The borings indicate subsurface conditions only at the boring locations noted

C. It is recommended that the Contractor consider employing his own experts to analyze the available information and so be responsible for any conclusions drawn there from.

D. Neither the OWNER, CONSTRUCTION MANAGER or the ARCHITECT assumes any responsibility for soil borings data. Any information derived from the geotechnical report will not, in anyway, relieve a CONTRACTOR from any risk, or from properly fulfilling the terms of the CONTRACT.

E. The accuracy or completeness of the test boring and probes their Consulting Engineers, and in no event are they to be considered as part of the Contract Documents provided by the Architect. However, work recommended to be done in the geotechnical report shall be considered part of the Contact Documents for which the Contractor is responsible. If there are any contradictions between the recommendations of the geotechnical report and the remainder of the Contract Documents, the Contractor shall assume that direction providing the higher standard is correct, and shall contact the Architect for verification. The Contractor must assume all risk in excavating for this project and shall, therefore, make its own investigation of existing conditions. The Contractor agrees that it will make no claims against the Owner, Construction Manager, Architect or the Consulting Engineers if, in carrying out the project, it finds that the actual conditions encountered do not conform to those indicated by the borings or geotechnical reports or other subsurface investigations.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)
END OF SECTION 003132

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September 8, 2026

Mr. Drew C. Dingler, AIA, NCARB
The Design Collaborative
1940 Route 9 North
Cape May Court House, NJ 08210

Subject: **Limited Geotechnical Summary Report**
Proposed Entrance Porticos
Lenape Regional High School District Board of Education Admin. Bldg.
Shawnee High School Main Entrance
93 Willow Grove Road, Shamong, NJ 08088
600 Tabernacle-Medford Lakes Road, Medford, NJ 08055
Atlas Project Number: 206TDC2602

Dear Mr. Dingler:

Atlas Technical Consultants LLC (Atlas) is pleased to submit this limited geotechnical summary report for the proposed new entrance porticos located at the above referenced project sites. Work was initiated in general accordance with the scope of work presented in our proposal dated March 20, 2026 and your subsequent authorization to proceed. The goal of this limited geotechnical investigation was to assess the general subsurface site conditions at each site, evaluate them relative to the construction of the new entrance porticos, and provide geotechnical recommendations including earthwork as well as foundation options.

BACKGROUND

Atlas understands this project involves the construction of two (2) new wood framed entrance porticos. The entrance portico at the Lenape Regional High School District (LRHSD) Board of Education Admin. Bldg. will be approximately 310 sq. ft. in plan area. The entrance portico at the Shawnee High School Main Entrance will be approximately 864 sq. ft. in plan area.

FIELD PROGRAM

Atlas completed a total of two (2) soil test borings (one at each site), B-1-AB (Admin. Bldg.) and B-1-HS (Shawnee HS), each performed within the general footprint of the proposed entrance portico and advanced to an approximate depth of 20 feet below the existing grade. The boring locations were established in the field by Atlas personnel based on offsets from existing site features, as shown on the attached Boring Location Plans, Figures 2 and 3. Existing survey information was not available at the time of this report. Therefore, the referenced boring elevations were estimated from Google Earth™ referencing the WGS 84 (G873) with EGM96 Geoid vertical datum.

Additionally, prior to drilling, a private utility subcontractor performed Ground Penetrating Radar (GPR) and Electromagnetic (EM) scans to locate the presence of any underground utilities in the vicinity of the proposed boring locations. Following the completion of the drilling, boreholes were backfilled with soil cuttings and patched with concrete and asphalt.

The Standard Penetration Test (SPT) drilling and sampling was performed in general accordance with ASTM standard D1586. The drilling was performed using a truck-mounted drilling rig with an automatic safety SPT hammer. At regular intervals, soil samples were obtained with a standard 2.0 inch O.D., split barrel sampler. The sampler was driven 24 inches into the soil with blows of a 140 pound hammer falling 30 inches. The number of blows required to drive the sampler 6 to 18 inches was recorded and is designated the "Standard Penetration Test" resistance (N-value). SPT resistance, when properly evaluated, is an index of the soil's strength, density, and foundation support capability.

LABORATORY TESTING

Representative soil samples obtained during drilling with the split barrel sampler were transported to our laboratory, visually examined by Atlas' Geotechnical Engineer, and classified in general accordance with the Modified Burmister as well as Unified Soil Classification System (USCS). In general, the soil descriptions and classifications presented on the boring logs are based on visual examination and should be considered approximate. Laboratory testing was assigned to select samples for soil classification purposes and the results are summarized in the table below.

Soil Laboratory Test Results Summary

Boring No.	Sample Depth, ft.	Liquid Limit, %	Plasticity Index, %	Moisture Content, %	% Gravel	% Sand	% Silt/Clay	USCS Classification
LRHSD Admin. Bldg.								
B-1-AB	2 – 4	19	6	9.4	5.6	55.0	39.4	SC-SM
B-1-AB	6 – 8	NV	NP	4.1	3.3	93.2	3.5	SP
Shawnee High School								
B-1-HS	4 – 6	NV	NP	6.6	0.0	91.7	8.3	SP-SM
B-1-HS	14 – 16	NV	NP	-	0.0	67.7	32.3	SM

SOIL STRATIGRAPHY

LRHSD Admin. Bldg.

Boring B-1-AB was performed near the existing main entrance to the administration building and disclosed a bituminous pavement layer approximately 4 inches thick. The underlying subsoils generally consisted of fine to medium SANDS with trace amounts of gravel and silt. A thin layer of fine to medium SAND with SILT/CLAY and trace fine gravel was encountered between approximately 3 and 4 feet below the existing grade, below which the soils transitioned back to predominantly fine to medium SANDS. The gravel content was observed to have increased at 15 feet and fine to medium SANDS with some gravel and trace silt extended to the termination depth of the boring. The SPT blow counts ranged from 9 to 49 blows per foot.

Groundwater was encountered in the boring at an approximate depth of 11.5 feet below the existing grade. Given the soil profile observed in the boring, perched and/or trapped water near the surface is not expected. Generally, seasonal and yearly fluctuations of the water table should be expected with variations in precipitation, surface runoff, evaporation, pumping, and other similar factors.

Shawnee High School

Boring B-1-HS was performed in the sidewalk near the existing main entrance to the school building and disclosed a cement concrete layer approximately 4 inches thick. The underlying subsoils generally consisted of fine to medium SANDS with trace amounts of silt to an approximate depth of 15 feet below the existing grade. The fines content (silt/clay) was observed to have increased at 15 feet and fine to medium SANDS with some silt/clay extended to termination depth of the boring. The SPT blow counts ranged from 3 to 18 blows per foot.

Groundwater was encountered in the boring at an approximate depth of 9 feet below the existing grade. Given the soil profile observed in the boring, perched and/or trapped water near the surface is not expected. Generally, seasonal and yearly fluctuations of the water table should be expected with variations in precipitation, surface runoff, evaporation, pumping, and other similar factors.

DISCUSSION & RECOMMENDATIONS

The following discussion and recommendations are applicable to both sites, the LRHSD Board of Education Admin. Bldg. and the Shawnee High School.

Site Preparation

Atlas understands this project involves the construction of new wood framed entrance porticos, one at the LRHSD Board of Education Admin. Bldg. and the other one at the Shawnee High School. Prior to construction, each site will require demolition and removal of existing concrete sidewalk and/or bituminous pavement. Atlas noted existing underground utilities traversing the footprint of each proposed portico, as shown on the attached Boring Location Plans, Figures 2 and 3. Utilities that conflict with the proposed foundations or construction should be relocated outside the proposed foundation areas or properly abandoned in place, as appropriate. This may result in some isolated deeper excavations. Backfilling will be required using site soils and/or imported structural fill.

After clearing the area of each proposed portico, areas that are at rough finished subgrade or requiring fill should be leveled, compacted, and proofrolled using a loaded tandem dump truck or a heavy-duty vibratory roller. If the work area prevents conventional proofrolling, the exposed subgrade should be evaluated by Atlas' Geotechnical Engineer or a qualified field representative.

If soft or otherwise unsuitable areas are encountered, the site may require isolated undercutting to remove soft/loose or unsuitable soils prior to placing new fill and planned structures/pavements. The Atlas Geotechnical Engineer may provide alternate recommendations based on the actual conditions encountered at time of construction which may include the use of geotextiles or geogrids as well as special stabilization techniques such as use of lime and/or cement.

As site conditions dictate, the contractor may be required to install temporary groundwater controls such as well points during construction operations. For below-grade excavations that encounter water, slope stabilization or shoring will be required. The contractor should include in their bid provisions for adequate sheeting and shoring as needed for the required site excavations. The backfilling of trenches with shallow groundwater conditions should be accomplished using ASTM No. 57 stone.

Any unsuitable materials exposed should be removed and replaced with approved granular fill material. The soil should be compacted to a minimum depth of 24 inches below stripped grade to a dry density of at least 98% of the Standard Proctor or 95% of the Modified Proctor maximum dry density to a distance of at least 5 feet beyond the proposed footprint of the structures. Any areas where the recommended density has not been achieved should be undercut to firm soils and backfilled with structural fill.

Placement and Compaction

During fill placement, density tests should be performed by a qualified soil technician to determine the degree of compaction and compliance with the project specifications. All fill should be placed and compacted in loose lifts not to exceed 12 inches. Field density tests should be made within the footprint of the proposed floor slab, at least two (2) tests for every 2,500 square feet (sq. ft.). Additionally, a minimum of one density test per foundation bearing wall and/or column footing should be performed in foundation excavations to confirm compliance with project specifications. All areas beneath the concrete pad and footings should be compacted, to a depth of at least 24-inches, to a minimum dry density of 98% of the Standard Proctor maximum density determined in accordance with ASTM D698 or 95% of the Modified Proctor maximum density determined in accordance with ASTM D1557.

For proper and timely construction of the fills, the soils should be placed at or near the optimum moisture content as determined by the specified Proctor test. Fill placement and compaction operations should be monitored by the Atlas' Geotechnical Engineer or a qualified field representative. Oversize rubble fragments and boulder/cobbles greater than 6 inches (if encountered) should be separated and removed prior to using the fill soils as compacted fill.

Fine-grained soils (silts/clays) are not expected but if encountered, these soils are not recommended for use as structural fill. We recommend any fine-grained soils, if encountered, be limited to non-load-bearing fill in landscaped areas.

In general, any non-organic, naturally occurring soils with a Liquid Limit (LL) less than 30 percent and a Plasticity Index (PI) less than 10 percent can be used as structural fill. The fill should not contain pieces with dimensions that are greater than two-thirds of the lift thickness being placed. If new fill construction takes place during the winter months, fill should not be placed over frozen soil, nor should frozen materials be used within the fill.

Suitable equipment for either aerating or adding water should be available as the soil moisture and weather conditions dictate. In general, we recommended that fills supporting the structures extend a minimum of 5 feet beyond the exterior foundation lines.

FOUNDATION RECOMMENDATIONS

Based on the information obtained in the test borings as well as the anticipated site improvements, *the proposed entrance portico at each site (LRHSD Admin. Bldg. & Shawnee HS) can be supported on shallow spread footings designed using a net allowable soil bearing pressure of up to 3,000 psf. Additionally, some of the near surface site soils at the Shawnee HS site appear to be loose to an approximate depth of 6 feet and may require isolated over-excavations at footing locations during foundation excavations.* The recommended bearing capacity should be verified at the time of construction during foundation excavations by a qualified representative of Atlas' Geotechnical Engineer.

The presented allowable bearing capacity includes a factor of safety of at least 3.0. The minimum width of isolated column spread footings should be 30 inches. Continuous wall footings are not anticipated. The minimum embedment depth of the footings should be at least 30 inches and/or comply with local building code, whichever is greater. Interior footings in heated areas may be placed at any convenient depth provided that they bear within the designated and approved foundation soils, as recommended herein. In applying "net" allowable soil bearing pressures during footing design, the weight of the footings and backfill over the footings, including the floor slab, need not be included in total loads for dimensioning of footings.

Resistance to lateral loads will likely be provided by frictional resistance between the base of the concrete and the underlying structural fill. We recommend that an allowable soil friction factor of 0.35 be used for the design. This recommended friction factor includes a factor of safety of 1.5. Additional resistance to lateral loads will be provided by passive pressure of the granular backfill adjacent to the perimeter of the footings.

Settlement

Detailed settlement analysis was beyond the scope of this report. However, based on the anticipated behavior of soil types encountered in the borings and our experience with similar projects, we expect that total and differential settlements will not exceed 1 and 0.5 inches, respectively, provided that the recommendations presented in this report are followed.

Floor Slab

The area underneath each portico can be considered a floor slab and may be designed as a slab-on-grade. After the slab subgrade is prepared in accordance with the recommendations of this report, a modulus of subgrade reaction (k) of 175 psi/inch may be used for the design. The slab should include control joints to preclude random cracking. Particular attention should be paid to the placement of backfill against existing foundation walls where equipment access is difficult, as inadequate compaction at these locations may cause cracking of the edges and corners of the slab as a result of backfill settlement. The slab should be designed to be structurally independent of any building footings or walls and should be appropriately reinforced to support the proposed loads. Furthermore, we recommend that the slab be supported on a minimum 6-inch thick layer of compacted granular base material. A vapor barrier can be placed immediately beneath the slab to facilitate the application of moisture sensitive floor coverings if desired. If curling of the slab edges is of greater concern, the vapor barrier can be placed below the granular base material.

Seismic Site Classification

Based on the results of our exploration, it is our professional opinion that the subsurface conditions within the site are generally consistent with the characteristics of Site Class “D” in accordance with Section 1613.3.2 of the 2018 Edition of the IBC and as defined in Table 20.3-1, Chapter 20 of ASCE 7-16.

Groundwater Conditions and Control

Groundwater readings were recorded in the borings at approximate depths of 11.5 and 9 feet below the existing grades at the LRHSD Admin. Bldg. and Shawnee HS, respectively. Static groundwater is not expected during shallow excavations (less than 5 feet). Perched and/or trapped water is also not expected; however, if encountered, the contractor is responsible to ensure adequate groundwater control is in place and functioning prior to the start of any work then allowing all work to be performed in a dry (free from flowing or standing water) condition. The contractor is responsible for establishing the means and methods of groundwater control and to include all such items in his bid and scope of work. If the static groundwater table is encountered, it has been our experience that groundwater levels when lowered and maintained at a depth of at least 3 feet below the limits of subgrade excavation and undercutting elevation typically provide a stable working platform. A site drainage scheme should be implemented and maintained at all times by the contractor to redirect all off site drainage away from the limits of construction. Ponding or standing water may result in softening of soils that will require additional remedial work to facilitate construction.

GENERAL REMARKS/REPORT LIMITATIONS

An inherent limitation of any geotechnical engineering exploration is that conclusions must be drawn on the basis of data collected at a limited number of locations. The recommendations provided in this report were developed from the information obtained from the test borings, which depict subsurface conditions only at the specific locations and at the time designated on the logs. Soil conditions at other locations and times may differ from conditions encountered

at these locations. The nature and extent of variations between the borings may not become evident until construction. If variations then appear evident, the recommendations in this report may need to be re-evaluated.

Atlas' professional services have been performed, the findings obtained, and the recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied. Atlas is not responsible for the independent conclusions, opinions or recommendations made by others based on the field exploration and laboratory test data presented in this report.

The scope of this geotechnical exploration did not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in the soil, groundwater or surface water within or beyond the site studied.

We trust that the information presented in this report is what you require at this time and we appreciate the opportunity to be of service to you with this project. If you have any questions, or if you need any further assistance with this project, please feel free to contact us at your earliest convenience.

Respectfully Submitted,

Atlas Technical Consultants LLC

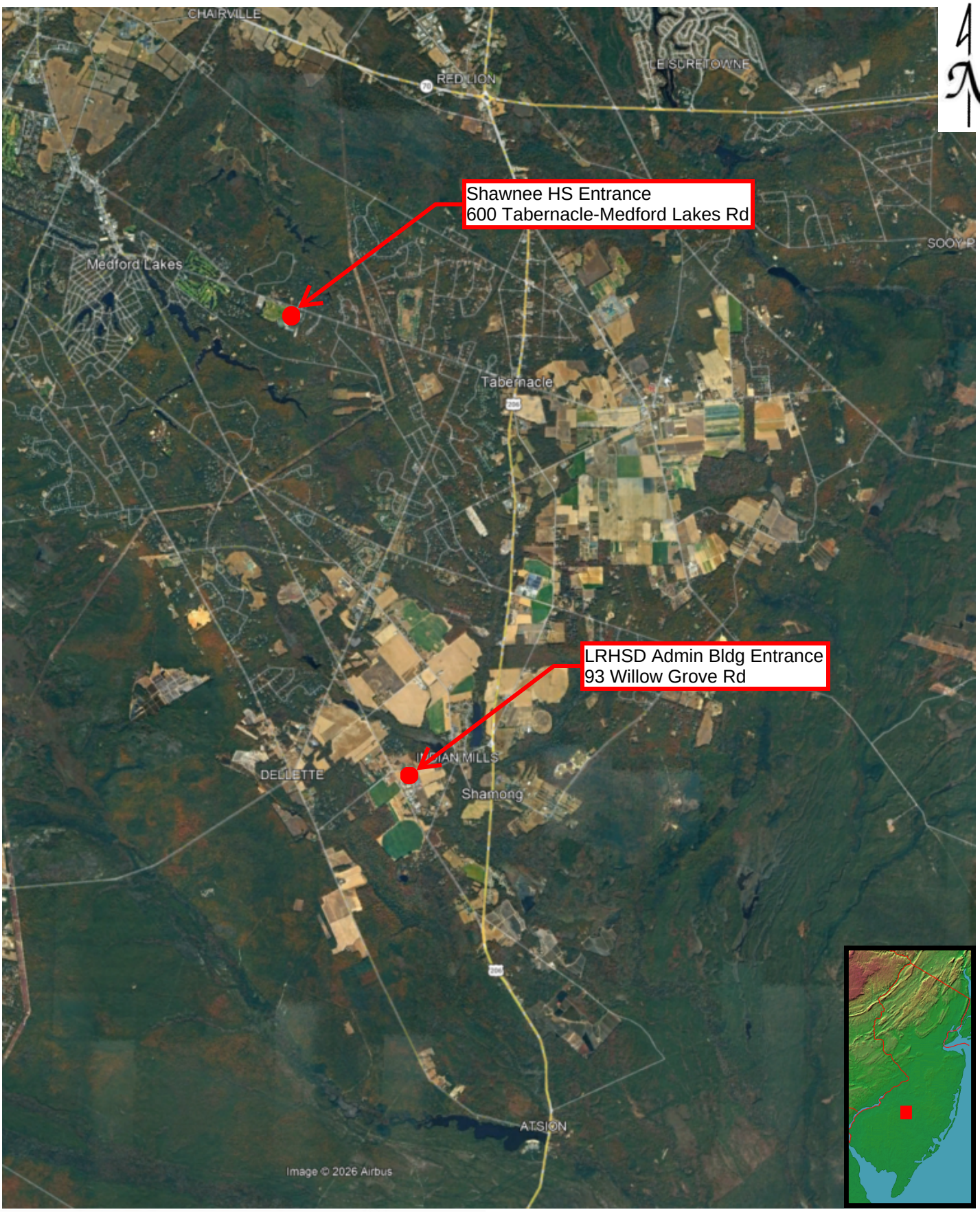
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NJ Certificate of Authorization No. 24GA28350600

Attachments:

A. *Site Vicinity Map, Figure 1*
B. *Boring Location Plan, Figure 2 (LRHSD Admin. Bldg.)*
C. *Boring Location Plan, Figure 3 (Shawnee HS)*
D. *Boring Logs*
E. *Laboratory Test Results*
F. *Atlas Field & Unified Soil Classification Systems*
G. *GBA Important Information About This Geotechnical Report*



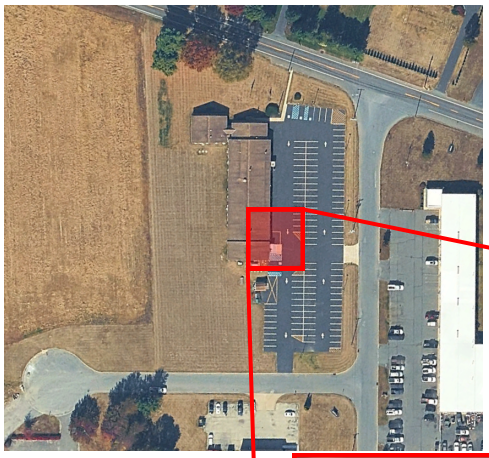
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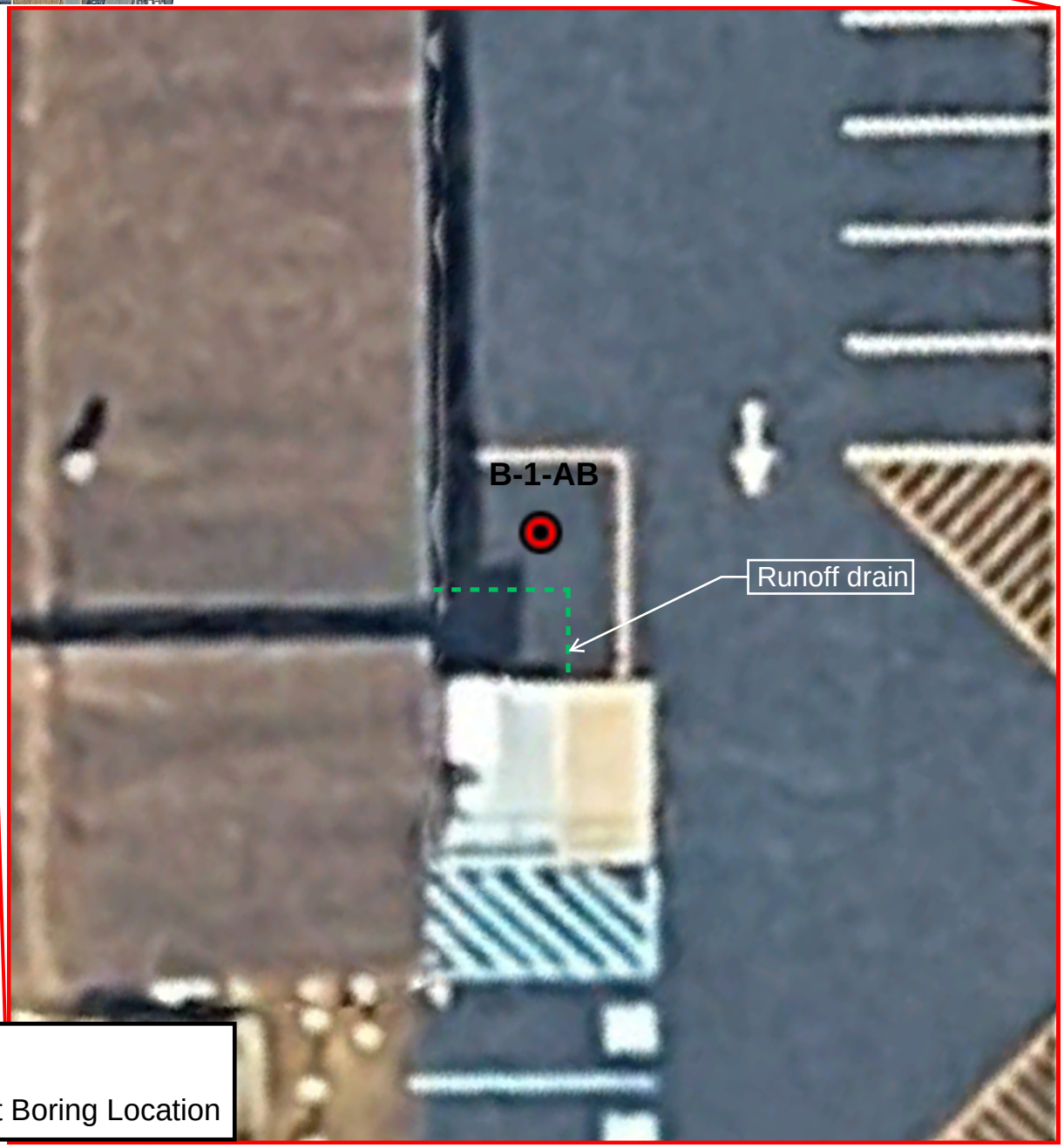
Site Vicinity Map
Lenape Regional
High School District

Entrance Portico Renovations
Dated: 7/22/26

FIGURE 1

Atlas Project No.: 206TDC2602





LEGEND

= Soil Test Boring Location

ATLAS

3 Terri Lane, Suite 4
Burlington, NJ 08016

Boring Location Plan

LRHSD Admin Bldg Entrance
93 Willow Grove Rd,
Shamong, NJ 08088
Dated: 7/23/26

FIGURE 2
LRHSD Admin Bldg Entrance

Atlas Project No.: 206TDC2602





LEGEND

= Soil Test Boring Location

ATLAS

3 Terri Lane, Suite 4
Burlington, NJ 08016

Boring Location Plan

Shawnee HS Entrance
600 Tabernacle-Medford Lakes Rd
Medford, NJ 08055
Dated: 7/23/26

FIGURE 3
Shawnee HS Entrance

Atlas Project No.: 206TDC2602

BORING NUMBER B-1-AB

CLIENT The Design Collaborative
PROJECT NAME LRHSD Admin Bldg Entrance
PROJECT NUMBER 206TDC2602
PROJECT LOCATION 93 Willow Grove Rd, Shamong, NJ 08088
DATE STARTED 6/29/26 **COMPLETED** 6/29/26
GROUND ELEVATION 85 ft 0 **HOLE SIZE** 2.25
DRILLING CONTRACTOR Enviroprobe
GROUND WATER LEVELS:
DRILLING METHOD Direct Push w/Auto Hammer
▽ **AT TIME OF DRILLING** 11.50 ft / Elev 73.50 ft
LOGGED BY MC **CHECKED BY** JHR
AT END OF DRILLING ---
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION	
0					0.3 4" Bituminous Pavement	84.7
	SS S1	89	5-5-4 (9)		Light orange brown fine to medium SAND, trace silt	
	SS S2	83	8-4-5-7 (9)		3.0 Light brown fine to medium SAND and SILT/CLAY, trace fine gravel	82.0
					4.0	81.0
5	SS S3	88	8-10-15-19 (25)		Orange brown fine to medium SAND, trace gravel, trace silt	
					6.0	79.0
	SS S4	92	22-20-26-28 (46)		Light orange brown to light gray brown fine to medium SAND, trace gravel, trace silt 7.0'-8.0': light gray mottles	
10	SS S5	83	10-14-28-21 (42)			
	SS S6	75	18-18-23-22 (41)		▽ Wet @11.5'	
	SS S7	92	13-15-11-19 (26)		14.0	71.0
15	SS S8	100	9-10-11-12 (21)		Light gray medium to coarse SAND, some gravel, trace silt, wet	
	SS S9	79	11-10-16-16 (26)		17.0 Light brown fine to coarse SAND, some gravel, trace silt	68.0
	SS S10	50	8-12-37-40 (49)			
20					20.0	65.0

Bottom of borehole at 20.0 feet.

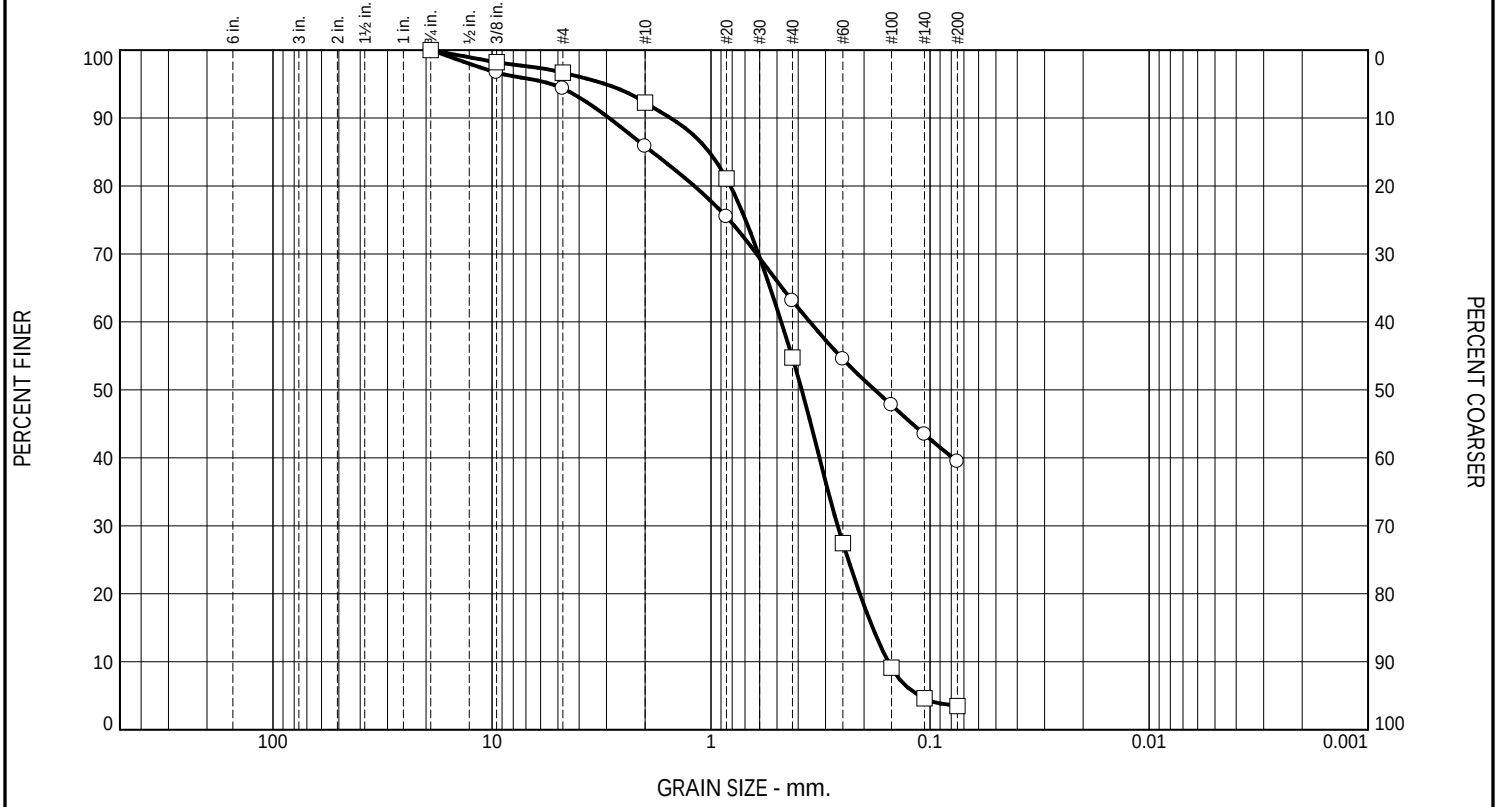
BORING NUMBER B-1-HS

CLIENT The Design Collaborative
PROJECT NAME Shawnee HS Entrance
PROJECT NUMBER 206TDC2602
PROJECT LOCATION 600 Tabernacle-Medford Lakes Rd, Medford, NJ 08055
DATE STARTED 6/29/26 **COMPLETED** 6/29/26
GROUND ELEVATION 102 ft 0 **HOLE SIZE** 2.25
DRILLING CONTRACTOR Enviroprobe
GROUND WATER LEVELS:
DRILLING METHOD Direct Push w/Auto Hammer
▽ **AT TIME OF DRILLING** 9.00 ft / Elev 93.00 ft
LOGGED BY MC **CHECKED BY** JHR
AT END OF DRILLING ---
NOTES

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION
0					0.3 4" Concrete Sidewalk 101.7
					Light brown to gray fine to medium SAND, trace silt, light gray mottles
	SS S1	50	2-3-3 (6)		
	SS S2	83	3-2-2-2 (4)		
5	SS S3	83	1-1-2-7 (3)		
	SS S4	92	4-6-6-5 (12)		6.0'-7.0': Orange brown mottles
					7.0 Light gray fine SAND, trace silt 95.0
	SS S5	100	5-5-5-4 (10)		▽ Wet @ 9.0'
10					
	SS S6	100	3-4-5-7 (9)		
	SS S7	100	7-10-7-6 (17)		
15	SS S8	79	3-3-2-4 (5)		15.0 87.0
					Light gray to brown fine to medium SAND, some silt/clay (organic odor)
	SS S9	63	7-8-9-11 (17)		
	SS S10	63	4-7-11-15 (18)		
20					20.0 82.0

Bottom of borehole at 20.0 feet.

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	LL	PL	PI
○	0.0	5.6	55.0	39.4		SC-SM	19	13	6
□	0.0	3.3	93.2	3.5					

SIEVE inches size	PERCENT FINER ○	PERCENT FINER □
.75"	100.0	100.0
.375"	96.7	98.2
GRAIN SIZE		
D_{60}	0.3535	0.4782
D_{30}		0.2643
D_{10}		0.1553
COEFFICIENTS		
C_c		0.94
C_u		3.08

SIEVE number size	PERCENT FINER ○	PERCENT FINER □
#4	94.4	96.7
#10	85.8	92.3
#20	75.5	81.1
#40	63.1	54.8
#60	54.5	27.5
#100	47.8	9.1
#140	43.4	4.6
#200	39.4	3.5

Material Description
○ silty, clayey sand
□

REMARKS:
○ Moisture: 9.4%
□ Moisture: 4.1%

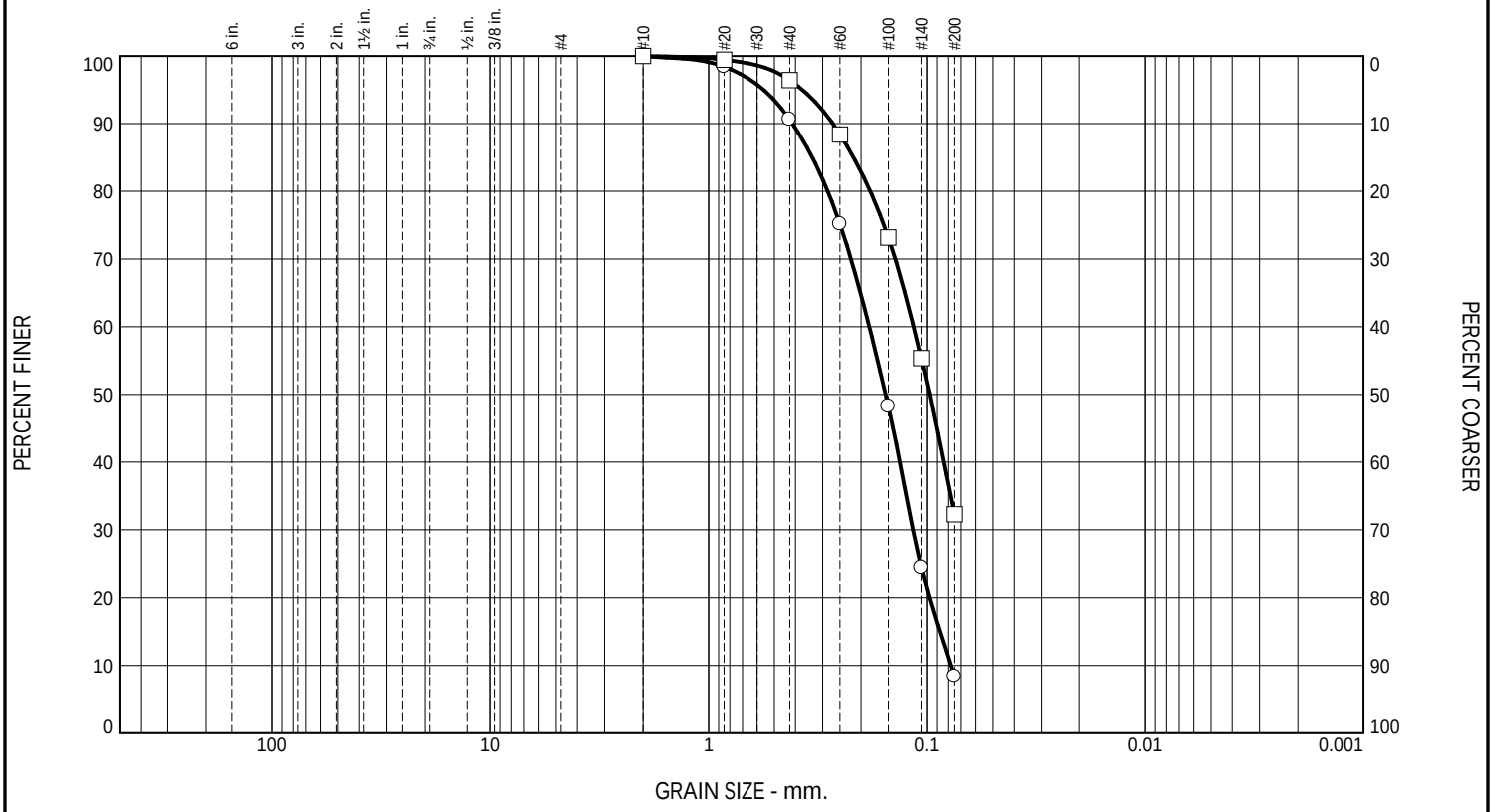
○ Location: B-1-AB Depth: 2-4' Sample Number: S-2
□ Location: B-1-AB Depth: 6-8' Sample Number: S-4

ATLAS

Client: The Design Collaborative
Project: LRHSD BOE Admin Building Main Entrance Portico
Shamong, NJ
Project No.: 206TDC2602 Figure

Tested By: Chuck R Checked By: Scott M

Particle Size Distribution Report



	+3"	% GRAVEL	% SAND	% SILT	% CLAY	USCS	LL	PL	PI
○	0.0	0.0	91.7	8.3					
□	0.0	0.0	67.7	32.3		SM	NV	NP	NP

SIEVE inches size	PERCENT FINER ○	PERCENT FINER □
GRAIN SIZE		
D_{60}	0.1834	0.1149
D_{30}	0.1157	
D_{10}	0.0778	
COEFFICIENTS		
C_c	0.94	
C_u	2.36	

SIEVE number size	PERCENT FINER ○	PERCENT FINER □
#10	100.0	100.0
#20	98.4	99.5
#40	90.6	96.4
#60	75.1	88.4
#100	48.2	73.2
#140	24.4	55.4
#200	8.3	32.3

Material Description

○

□silty sand

REMARKS:

○ Moisture: 6.6%

□

○Location: B-1-HS Depth: 4-6' Sample Number: S-3

□Location: B-1-HS Depth: 14-16' Sample Number: S-8

ATLAS

Client: The Design Collaborative

Project: Shawnee High School Main Entrance Portico
Medford, NJ

Project No.: 206TDC2602 Figure

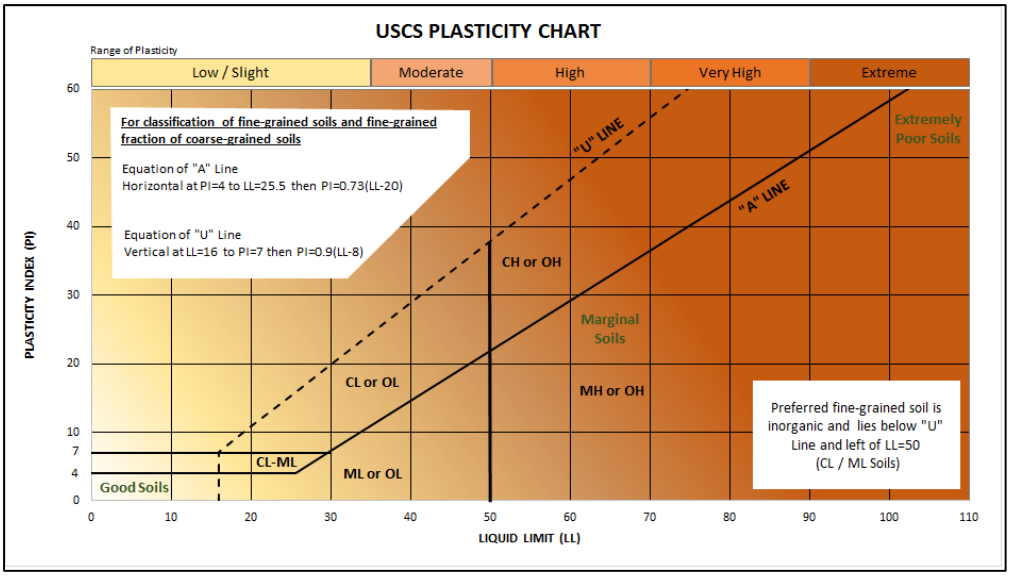
Tested By: Chuck R Checked By: Scott M

SOIL DESCRIPTIONS BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

ASTM D 2487 and D 2488

Major Division			Group Symbol	Letter Symbol	Group Name*
Coarse Grained Soils Less Than 50 Percent Passing the # 200 Sieve	GRAVEL - Percent GRAVEL > percent SAND	Gravel with < 5% Fines		GW	Well Graded GRAVEL
				GP	Poorly Graded GRAVEL
		Gravel with Between 5 and 15% Fines		GW-GM	Well Graded GRAVEL with silt
				GW-GC	Well Graded Gravel with clay
				GP-GM	Poorly Graded GRAVEL with silt
				GP-GC	Poorly Graded GRAVEL with clay
		Gravel with ≥ 15% Fines		GM	Silty GRAVEL
				GC	Clayey GRAVEL
				GC-GM	Silty, Clayey GRAVEL
	SAND - Percent SAND ≥ percent GRAVEL	Sand with < 5% Fines		SW	Well Graded SAND
				SP	Poorly Graded SAND
		Sand with Between 5 and 15% Fines		SW-SM	Well Graded SAND with silt
				SW-SC	Well Graded SAND with clay
				SP-SM	Poorly Graded SAND with silt
				SP-SC	Poorly Graded SAND with clay
		Sand with ≥ 15% Fines		SM	Silty SAND
				SC	Clayey SAND
				SC-SM	Silty, Clayey SAND
Fine Grained Soils 50 percent or more Passing the # 200 Sieve	SILT and CLAY	Liquid Limit Less Than 50		ML	SILT
				CL	Lean CLAY
				CL-ML	SILTY CLAY
				OL	Organic SILT, CLAY, or SILTY CLAY
		Liquid Limit 50 or Greater		CH	Fat CLAY
				MH	Elastic SILT
				OH	Organic SILT or CLAY
Highly Organic Soils				PT	Peat

* Additional Modifiers			
	Coarse Grained Soils	with silt or clay	5 to 12 % Silt or Clay by weight
		Silty or Clayey	more than 12 % Silt or Clay by weight
	Fine Grained Soils	with sand or gravel	15 to 29 % Sand or Gravel by weight
		Sandy or Gravelly	30 % or more Sand or Gravel by weight



Sample Type Indicator

= Split Spoon

= Shelby Tube

= Rock Core

= Bag Sample

KEY TO SYMBOLS AND CLASSIFICATIONS

▏	Undisturbed sample recovered
●	Standard Penetration Resistance (ASTM D 1587)
100/2”	Number of blows (100) to drive the spoon a number of inches (2)
AX,BX,NX	Core barrel sizes thet obtain cores 1-1/8, 1-5/8, and 2-1/8 inches in diameter respectively
65%	Percentage of rock core recovered
RQD	Rock quality designation
U	Unit weight test performed
A	Atterberg limits test performed
C	Consolidation test performed
GS	Grain size test performed
T	Triaxial shear test performed
P	Permeability test performed
V	Field shear test performed
	Caved Level
	Water table at least 24-hours after drilling
	Water table one hour or less after drilling

CORRELATION OF PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY

	No. of Blows, N	**Approximate Relative Density**
SANDS	0-4	Very Loose
	5-10	Loose
	11 – 30	Medium Dense
	31 – 50	Dense
	50+	Very Dense
SILTS AND CLAYS	0 – 2	Very Soft
	2 – 4	Soft
	5 – 8	Firm
	9 – 15	Stiff
	16 – 30	Very Stiff
	30+	Hard

Soil sampling and standard penetration testing performed in accordance with ASTM D 1586. The standard penetration resistance is the number of blows of a 140 pound hammer falling 30 inches to drive 2-inch o.d., 1.4-inch i.d., split barrel sampler one foot. Core drilling in accordance with ASTM D 2113. The undisturbed sampling procedure is described by ASTM D 1587. Soil and rock samples will be discarded 30 days after the date of the final report unless otherwise directed.

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply this report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.

GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

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SECTION 004000 BID SUBMITTAL CHECKLIST

Name of Bidder: _____

This checklist is provided to assist the Bidder in insuring that its Bid is complete and responsive. It shall, however, remain the sole and exclusive responsibility of each Bidder to insure that its Bid complies with all requirements. This checklist shall be submitted with the required bid forms / certificates to the Owner as part of the Bid Documents. Check off and initial EACH BOX when complete. Shaded cells indicate items not required from subcontractors.

SPEC SECTION	#	BID FORM NAME				
			Contractor	Subcon.	Subcon.	Subcon.
004000	1	BID SUBMITTAL CHECKLIST - INITIALED				
004110-004150	2	FORM OF BID WITH ADDENDA ACKNOWLEDGEMENT				
004205	3	LIST OF SUBCONTRACTORS				
004210	4	COMPANY RESOLUTION				
004220	5	OWNERSHIP DISCLOSURE FORM				
004230	6	CERT. OF AUTHORITY, VERACITY, RELIANCE, NON-COLLUSION & NON DEBARMENT				
004310	7	BID BOND - **NOTARY SEAL REQUIRED**				
004320	8	CONSENT OF SURETY				
		POWER OF ATTORNEY - **NOTARY SEAL REQU.**				
004321	9	SURETY COMPANY & AGENCY INFORMATION				
004410	10	PUBLIC WORKS CERT.				
	10a	DPMC CLASSIFICATION				
	10b	BUSINESS REGISTRATION CERTIFICATE				
	10c	PUBLIC WORKS REGISTRATION ACT				
	10d	CERT. OF AUTHORITY TO PERFORM WORK IN NJ				
	10e	TRADE LICENSE (AS APPLICABLE TO TRADE)				
004420	11	DPMC TOTAL AMOUNT OF UNCOMPLETED CONTRACTS. **CORPORATE SEAL REQU.**				
	11a	LISTING OF UNCOMPLETED CONTRACTS				
004430	12	NO MATERIAL ADVERSE CHANGE IN CIRCUMSTANCE - **NOTARY SEAL REQUIRED**				
004440	13	COMPLIANCE WITH NJ PREVAILING WAGE ACT				
004450	14	AFFIRMATIVE ACTION PLAN CERTIFICATE				
004460	15	NOTICE OF POLITICAL CONTRIBUTIONS - **NOTARY SEAL REQUIRED.**				
004470	16	COMBINED CERTIFICATION: RUSSIA/BELARUS/IRAN DISCLOSURE				
004480	17	ADA ACKNOWLEDGEMENT FORM				
004490	18	SITE INSPECTION AFFIDAVIT				
004500	19	FEDERAL DEBARMENT FORM				

004510	20	EQUIPMENT CERTIFICATION				

Note: Failure to complete and submit all of the above documents on the forms provided within or required may result in rejection of your bid.

By placing a checkmark in the boxes and initialing on the lines provided I acknowledge having read and fully understand all of the requirements of each of the documents referenced herein.

IN WITNESS WHEREOF, the undersigned has caused this Bid Checklist to be signed by its proper officers this _____ day of _____, 20_____.

NAME OF BIDDER

_____

(Company Name, if Bidder is a company)

BIDDER'S SIGNATURE

_____

(Company Officer, if Bidder is a Corporation or LLC)

_____

Printed or Typed Name *Title of Officer (if the Bidder is a Company)*

Note: You are required to submit one (1) complete original plus one (1) complete copy of your Bid, including all attachments.

This Certification must be submitted with the bid.

SECTION 004100 BID FORM – OVERALL LUMP SUM CONTRACT

BID TO:

Owner: Lenape Regional High School District Board of Education
93 Willow Grove Road
Shamong, New Jersey

Package Name: Overall Lump Sum Contract
Contract No.: Bid No. REF21-42-8302
Project Name: LRHSD Administration Building Various Upgrades

Date:

BIDDER: *(Name and address as it appears on Contractor's State of New Jersey Business Registration Certificate.)*

Legal Name: _____

Address: _____

_____

Federal EIN: _____

Telephone: _____

Facsimile: _____

Email Address: _____

Website: _____

By the act of submitting a bid for the proposed contract, the Bidder declares and represents that:

1. The Bidder, and all subcontractors that the Bidder will use, has received and carefully and thoroughly reviewed and examined the Project Manual/specifications, the drawings, the addenda, and all other Bidding Documents and has a clear, full understanding of the Bidding Documents and have found them free from ambiguities and sufficient for the purpose intended; further that,

2. The Bidder and all workmen, employees and subcontractors that the Bidder will use are trained, skilled and experienced in the type of construction represented by the Bidding Documents bid upon; further that,

3. Neither the Bidder nor any of the Bidder's employees, agents, intended suppliers or subcontractors have relied upon or based his bid upon any verbal instructions or representations, allegedly authorized or unauthorized from the Owner, or the Owner's employees or agents including the Architect, engineers or consultants; further that,

4. The Base Bid price figure, Alternate bid price figure(s), and the Unit price figure(s) are based solely upon the Bidding Documents and properly issued written Addenda and not upon any other written representation, and further that,

5. The Contractor and his subcontractors have personally visited and inspected the site and are familiar with the Project site and all conditions thereof and hereby proposes to provide all labor, materials, supplies, tools, machinery, apparatus, all means of construction, appliances, supervision, quality assurance, quality control, transportation, handling, services, taxes, specified insurance, equipment and facilities as required to perform, in a workmanlike manner, all work and services including applicable taxes for the construction and completion of afore referenced Project, all in accordance with the Bidding Documents as prepared by the Architect.

6. This bid is to complete the Work, including the construction and services required or reasonably inferable by the Contractor as necessary to produce the results intended 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.

Bidder acknowledges receipt of the following Addenda:

No. _____ Dated: _____ No. _____ Dated: _____

No. _____ Dated: _____ No. _____ Dated: _____

BASE BID: For all work required by the Bidding Documents, except work as specifically identified as part of an Alternate, the stipulated lump sum of:

_____Dollars

$_____;

hereinafter called the Base Bid. Amounts shall be shown in both words and figures. In the event of discrepancy, the amount shown in words shall govern.

The pricing is for informational purposes only, the sum of these figures need total the amount of the Bidders' Base Bid:

GENERAL CONDITIONS	$_____
DEMOLITION	$_____
GENERAL CONSTRUCTION	$_____
MECHANICAL CONSTRUCTION	$_____
ELECTRICAL CONSTRUCTION	$_____
ALLOWANCE	$ 100,000.00
TOTAL	**$_____**

ALTERNATES: Indicate in the spaces provided below the amount to be added to or deducted from the BASE BID if the following alternates, as described in SPECIFICATION SECTION 012300 of the Project Manual are accepted by the Owner.

Include in the amount of the ALTERNATES all labor, materials, overhead and profit, modification of Work specified in the Contract Documents, and additional work required by all trades that may be required by acceptance of the ALTERNATE. Refer to the INSTRUCTIONS TO BIDDERS and SPECIFICATION SECTION 012300 for additional information regarding Alternates.

Amounts shall be shown in both words and figures. In the event of discrepancy, the amount shown in words shall govern. Refer to Specification Section 012300 Alternates. Each Alternate MUST be bid or the Bidder may be disqualified and his entire bid may be rejected.

Alternate No. 1: Lightning Protection Systems:

ADD/DEDUCT_____Dollars

$_____

UNIT PRICES The following are Unit Prices for specific portions of the work as listed and shall represent the exact net amount per unit. This price shall be used to decrease or increase the quantities of the listed materials and labor to install as included in the Base Bid amount at any time during the duration of the contract. Include in the unit price overhead, profit, insurance or other direct or indirect expenses of the Contractor or Subcontractor. Refer to Specification Section 012200.

Unit Price UP-1: Removal and replacement of rotted or deteriorated wood blocking or nailers. Price per L.F.

_____Dollars

$_____Per L.F.;

Unit Price UP-2: ROOF SHEATHING: Removal and replacement of existing roof sheathing, price per 4' x 8' sheet of 5/8" Exposure 1 CDX Plywood. Specification section 011000, Summary" includes requirements for the removal and replacement of plywood sheathing under the scope of the Base Bid. The Contractor shall be compensated for plywood replacement in excess of this amount, and the Owner due a credit in the event that the total quantity of plywood replaced is less than the quantity noted in accordance with this unit price.

_____Dollars

$_____Per Sheet;

Unit Price UP-3: Unit Price No. UP-3: WALL SHEATHING: Removal and replacement of existing wall sheathing, price per 4' x 8' sheet of 5/8" Exposure 1 CDX Plywood. Specification section 011000, Summary" includes requirements for the removal and replacement of plywood sheathing under the scope of the Base Bid. The Contractor shall be compensated for plywood replacement in excess of this amount, and the Owner due a credit in the event that the total quantity of plywood replaced is less than the quantity noted in accordance with this unit price.

_____Dollars

$_____Per Sheet;

ALLOWANCES: As applicable, the Allowances listed below shall be included in the BASE BID quoted herein by the undersigned BIDDER; Refer to Specification Section 012100. The following is the list of Allowances.

Contract Allowance No. A-GC-1: Include in the Base-Bid, an allowance of **$100,000.00** for miscellaneous construction work as requested by the Architect, for work not included in the base scope of work.

COMPANY RESOLUTION: The Bidder shall attach a copy of the company resolution indicating authority of the signing representative to bind and commit the company to honor the bid.

AWARD AND EXECUTION OF CONTRACT: The Owner shall incur no obligation to any Bidder until the Agreement between Owner and Contractor is duly executed. If the Bidder is notified of the acceptance of the Bid within sixty (60) calendar days of the opening of bids, he agrees to execute and deliver the Standard Form of Agreement Between Owner and Contractor, AIA A101-2017, as completed and modified by the Owner to suit this Project, in accordance with his bid and in compliance with Section 002100 / Instructions to Bidders within ten (10) business days after receipt by the Bidder of the Notice of Award.

If the Bidder fails to complete all requirements for executing the AIA A101-2017 and other required documents within ten (10) business days after receipt of the Notice of Award, the Owner may reject the Bid and award the contract to another Bidder that Owner determines to be in his best interest.

WITHDRAWAL OF BIDS: The Bidder understands and agrees that this Bid shall be maintained and held good and may not be withdrawn or modified for a period of sixty (60) calendar days after the scheduled closing time for receiving bids. This Bid may be withdrawn at any time prior to the scheduled time for the opening of bids or any authorized postponement thereof.

REJECTION OF BIDS: The Bidder understands and agrees that the Owner reserves the right to reject any and all nonconforming, nonresponsible, nonresponsive or conditional bids without obligation or compensation to the Bidders. The Owner also reserves the right to reject any and all bids without obligation or compensation to the Bidders for just cause and to waive technicalities or informalities.

TIME OF COMPLETION: Refer to Specification Sections 003110 (Project Schedule) and 003120 (Milestone Dates and Liquidated Damages for Project Commencement and Completion information.

Bidder agrees that the Work will be substantially completed as described in the above referenced milestone section of the Project Manual (Section 003120).

BID CERTIFICATION: The Bidder certifies and warrants to the Owner by submission of this Bid that the Bidder will comply with all conditions and requirements of the complete Bidding Documents.

IN WITNESS WHEREOF, the bidder has caused this instrument to be signed and attested to.

NAME OF BIDDER

_____

(Company Name, if Bidder is a company)

BIDDER'S SIGNATURE

(Company Officer, if Bidder is a Company)

Printed or Typed Name *Title of Officer (if the Bidder is a Company)*

WITNESS:

(Signature)

(Printed or Typed Name)

(Date)

NOTE: If Bidder is a partnership or Joint Venture give full names of all Partners.

Note: This form shall be used to submit a bid. Submit one (1) complete original plus one (1) complete copy of your Bid including all attachments.

END OF BID FORM

SECTION 004205 - LIST OF SUBCONTRACTORS

Not withstanding any language to the contrary contained within this bid package and all attached thereto, the contracting unit hereby requires full compliance with the provisions of NJSA 18a:18a-18 – Special Requirements for Specifications for School Buildings

N.J.S.A. 18a:18a-18.

Separate plans for various types of work; bids; contracts

In the preparation of plans and specifications for the erection, alteration or repair of any public building by a contracting unit, when the entire cost of the work will exceed the amount set forth in, or the amount determined by the Governor, the architect, engineer or other person preparing the plans and specifications, may prepare separate plans and specifications for:

(1) The plumbing and gas fittings and all kindred work;
(2) Heating and Ventilating Equipment;
(3) Electrical work;
(4) Structural steel and ornamental iron work; and
(5) All other work required for the completion of the project.

The contracting unit or its contracting agent shall advertise for an receive, in the manner provided by law, either (a) separate bids for each said branches of work, or (b) bids for all work and materials required to complete the building to be included in a single overall contract, or (c) both. There will be set forth in the bid the name or names of, and evidence of performance security from, all subcontractors to whom the bidder will subcontract the furnishing of plumbing and gas fitting, and all kindred work, and of the steam and hot water heating and ventilating apparatus, steam power plants and kindred work, and electrical work, structural steel and ornamental iron work, each of which subcontractors shall be qualified in accordance with this act.

Contracts shall be awarded to the lowest responsible bidder. In the event that a contract is advertised in accordance with (c) above said contract shall be awarded in the following manner: If the sum total of the amounts bid by the lowest responsible bidder for each branch is less than the amount bid by the lowest responsible bidder for all work and materials, the contracting unit shall award separate contracts for each of such branches to the lowest responsible bidder therefor, but if the sum total of the amount bid by the lowest responsible for each branch is not less than the amount bid by the lowest responsible bidder for all work and materials, the contracting unit shall award a single overall contract to the lowest responsible bidder for all such work and materials. In every case in which a contract is awarded under (b) above, all payments required to be made under such contract for work and materials supplied by a subcontractor shall, upon certification of the contractor of the amount due to the subcontractor, be paid directly to the subcontractor.

SUBCONTRACTOR	ADDRESS	TRADE	PHONE	DPMC CLSSIFICATION
		PC		
		HVAC		
		EC		

NOTE: Add additional pages as may be required to list all subcontractors.

..END OF SECTION 004205

SECTION 004210 COMPANY RESOLUTION

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

LRHSD Administration Building Various Upgrades

and to include in such bid or proposal the certificate as to non-collusion as to the act and deed of such corporation, and for any intentional inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

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

_____ at a meeting of its officers and/or members of the

company held on the _____ day of _____ 20__.

NAME OF BIDDER

_____

(Corporate Name)

BIDDER'S SIGNATURE

_____

(Corporate Secretary

_____

(Printed or Typed Name)

<u>This Certification must be submitted with the bid.</u>
<u>If a sole proprietor, mark Not Applicable.</u>

SECTION 004220 STATEMENT OF OWNERSHIP DISCLOSURE

N.J.S.A. 52:25-24.2 (P.L. 1977, c.33, as amended by P.L. 2016, c.43)

This statement shall be completed, certified to, and included with all bid and proposal submissions. Failure to submit the required information is cause for automatic rejection of the bid or proposal.

Name of Organization:_____

Organization Address:_____

Part I Check the box that represents the type of business organization:

☐ Sole Proprietorship (skip Parts II and III, execute certification in Part IV)

☐ Non-Profit Corporation (skip Parts II and III, execute certification in Part IV)

☐ For-Profit Corporation (any type) ☐ Limited Liability Company (LLC)

☐ Partnership ☐ Limited Partnership ☐ Limited Liability Partnership (LLP)

☐ Other (be specific): _____

Part II

☐ The list below contains the names and addresses of all stockholders in the corporation who own 10 percent or more of its stock, of any class, or of all individual partners in the partnership who own a 10 percent or greater interest therein, or of all members in the limited liability company who own a 10 percent or greater interest therein, as the case may be. (COMPLETE THE LIST BELOW IN THIS SECTION)

OR

☐ No one stockholder in the corporation owns 10 percent or more of its stock, of any class, or no individual partner in the partnership owns a 10 percent or greater interest therein, or no member in the limited liability company owns a 10 percent or greater interest therein, as the case may be. (SKIP TO PART IV)

(Please attach additional sheets if more space is needed):

Name of Individual or Business Entity	Home Address (for Individuals) or Business Address

Part III DISCLOSURE OF 10% OR GREATER OWNERSHIP IN THE STOCKHOLDERS, PARTNERS OR LLC MEMBERS LISTED IN PART II

If a bidder has a direct or indirect parent entity which is publicly traded, and any person holds a 10 percent or greater beneficial interest in the publicly traded parent entity as of the last annual federal Security and Exchange Commission (SEC) or foreign equivalent filing, ownership disclosure can be met by providing links to the website(s) containing the last annual filing(s) with the federal Securities and Exchange Commission (or foreign equivalent) that contain the name and address of each person holding a 10% or greater beneficial interest in the publicly traded parent entity, along with the relevant page numbers of the filing(s) that contain the information on each such person. Attach additional sheets if more space is needed.

Website (URL) containing the last annual SEC (or foreign equivalent) filing	Page #'s

Please list the names and addresses of each stockholder, partner or member owning a 10 percent or greater interest in any corresponding corporation, partnership and/or limited liability company (LLC) listed in Part II other than for any publicly traded parent entities referenced above. The disclosure shall be continued until names and addresses of every noncorporate stockholder, and individual partner, and member exceeding the 10 percent ownership criteria established pursuant to N.J.S.A. 52:25-24.2 has been listed. Attach additional sheets if more space is needed.

Stockholder/Partner/Member and Corresponding Entity Listed in Part II	Home Address (for Individuals) or Business Address

Part IV Certification

I, being duly sworn upon my oath, hereby represent that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I acknowledge: that I am authorized to execute this certification on behalf of the bidder/proposer; that the Mansfield School District is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the completion of any contracts with the Board to notify the Board in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the Board, permitting it to declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print):		Title:	
Signature:		Date:	

This Disclosure Statement must be submitted with the bid.

END OF SECTION

SECTION 004230 CERTIFICATION OF AUTHORITY, VERACITY, RELIANCE, NON-COLLUSION AND NON-DEBARMENT

Having complete knowledge as to the statements made herein, the below signed hereby certifies as follows:

1. I am the undersigned, who, on behalf of the BIDDER and with full authority to do so, has executed this Certification in connection with the Bid;

2. The BIDDER has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the within Bid;

3. I further warrant that, pursuant to *N.J.S.A. 52:34-15*, no person or selling agency has been employed, or retained, to solicit, or secure, such contract upon an agreement or understanding for a commission, percentage, brokerage or contingent fee, except bona fide employee or bona fide established commercial or selling agencies identified as follows:

_____

4. The BIDDER in not, as of this date, and has not been at any time within three (3) years immediately preceding the date on which Bids were received, included on the New Jersey Treasurer's List of Debarred, Suspended or Disqualified Bidders; the BIDDER hereby acknowledges that it may be debarred, suspended or disqualified from contracting with the OWNER if it commits any of the acts listed in *N.J.A.C. 7:1-5.2* and further acknowledges its obligation to notify the OWNER immediately if it appears that said BIDDER may be added to any such list.

5. All statement and representations contained in the BIDDER's Bid are true, complete and correct, and made with full knowledge that the OWNER shall rely upon same in awarding a public contract for the Work as defined in the Construction Contract Documents.

IN WITNESS WHEREOF, the undersigned bidder has executed this document by its duly authorized officer as of the _____ day of _____, 20____.

NAME OF BIDDER

_____

(Company Name, if Bidder is a company)

BIDDER'S SIGNATURE

_____

(Company Officer, if Bidder is a Company)

_____

Printed or Typed Name *Title of Officer (if the Bidder is a Company)*

<u>This Disclosure Statement must be submitted with the bid.</u>

SECTION 004310 BID BOND

THE UNDERSIGNED BIDDER as Principal and the undersigned Surety as Surety, a corporation duly authorized to transact business in the State of New Jersey, are held and firmly bound unto the

Lenape Regional High School District Board of Education ("Owner")

for the full and just sum of

10% OF THE BID PRICE, NOT TO EXCEED $20,000:

The payment of which sum the Bidder and Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by the covenants herein.

The condition of the above obligation is such that whereas the Principal has submitted a bid to the Owner to perform certain work described in the Bidding Documents entitled:

LRHSD Administration Building Various Upgrades

NOW, THEREFORE, if said bid shall be rejected, or in the alternative if said bid shall be accepted and the Principal shall deliver a properly and timely completed contract and performance and payment security, all in the form and manner required by the bidding documents and Specifications and governing law,

THEN this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety shall be in no way impaired or affected by an extension of the time within which the Owner may accept or award a bid; and said Surety hereby waives notice of any such extension.

On this ____ day of _____ 20____, the **Principal** and **Surety** hereby bind themselves herein:

For the **Principal**:	For the **Surety**:
_____	_____
(Name of Bidder)	*(Name of Surety)*
_____	_____
(Printed/Typed Name of Bidder's Authorized Representative)	*(Printed/Typed Name of Surety's Attorney-in-Fact)*
_____	_____
(Signature of Bidder's Authorized Representative)	*(Signature of Surety's Attorney-in-Fact)*
	_____
	(Surety Contact &Phone No.)

Attach and Submit with the Bid a Power of Attorney for the Attorney-in-Fact which is currently dated and valid for the entire amount of the bond.

Note: Bidders must use this form or its legal equivalent, conforming to *N.J.S.A. 18A:18A-24*. Submission of the AIA Document 310, or any other form limiting or potentially limiting the penal sum of the bond to any amount less than 10% of the bid price not to exceed $20,000 (such as forms of bond that limit the penal sum to the difference between the bid price and the Owner's cost of the Work), will be cause for rejection of the bid.

SECTION 004320 CONSENT OF SURETY

For and in consideration of the sum of $1.00, lawful money of the United States, the receipt whereof is hereby acknowledged, paid to the undersigned surety, and for other valuable consideration, the undersigned surety, authorized to transact business in the State of New Jersey, certifies and agrees that if the contract entitled:

LRHSD Administration Building Various Upgrades

is awarded to: _____

(Bidder's Name)

The undersigned hereby warrants that it is in all respects qualified to provide the required Bonds as set in the Contract Documents, and that it will provide and execute all Performance, Payment and Maintenance Security in the form and as otherwise required by the Contract Documents.

_____

(Print Name of Surety)

_____

(Surety Contact & Phone No.)

_____ _____

(Printed Name of Attorney-in-Fact) *(Signature of Attorney-in-Fact)*

Attach and Submit with the Bid
a Power of Attorney for the Attorney-In-Fact which is currently dated and valid for the total amount of all bonds.

Failure to sign the Certificate (Consent) of Surety by either the Surety or Principal, and failure to submit the properly executed Certificate (Consent) of Surety with the bid package, shall be deemed cause for disqualification and rejection of the bid.

<u>This Certification must be submitted with the bid.</u>

SECTION 004321 – SURETY COMPANY & AGENCY INFORMATION

PRIME BIDDER:

_____(NAME)

_____(ADDRESS)

_____(CITY, STATE, ZIP)

_____(TELEPHONE NUMBER)

_____(FACSIMILE NUMBER)

_____(E-MAIL ADDRESS)

In accordance with the bidding requirements, the bidder hereby acknowledges the following responsible surety data for this project:

SURETY COMPANY

_____(NAME)

_____(ADDRESS)

_____(CITY, STATE, ZIP)

_____(TELEPHONE NUMBER)

_____(FACSIMILE NUMBER)

_____(E-MAIL ADDRESS)

SURETY AGENCY

_____(NAME)

_____(ADDRESS)

_____(CITY, STATE, ZIP)

_____(TELEPHONE NUMBER)

_____(FACSIMILE NUMBER)

_____(E-MAIL ADDRESS)

END OF SECTION 004321

SECTION 004410 TREASURY AND PUBLIC WORKS CERTIFICATION

The undersigned hereby certifies as follows:

1. That the BIDDER has a current, valid "Notice of Classification" issued by the Department of the Treasury, a copy of which is attached to this certification form.

2. That the BIDDER is registered with the State of New Jersey, Department of the Treasury, Division of Revenue pursuant to the Business Registration Act, *N.J.S.A. 52:32-44*, of which a copy of the Business Registration Certificate is attached to this certification form.

3. That the BIDDER is registered with the New Jersey Department of Labor as a public works contractor pursuant to the Public Works Contractor Registration Act, *N.J.S.A 34:11-56.48 et. seq*., a copy of which is attached to this certification form. If the apparent low bidder fails to provide a copy of the certificate prior to the award of contract, the bid may be rejected as being non-responsive

4. That, if required to maintain same in order to do business in the State of New Jersey, the BIDDER possesses a current valid Certificate of Authority to perform work in New Jersey issued by the New Jersey Department of the Treasury, a copy of which is attached to this certification form, if issued.

5. That during the term of the construction of the school facilities project, the BIDDER will have in place a suitable quality control and quality insurance program and an appropriate safety and health plan.

6. That at the time the firm is bidding this Project, the amount of its bid proposal and the value of all its outstanding incomplete contracts does not exceed the firm's existing aggregate rating limit. In addition, I am attaching to this certification a current DPMC 701 listing the total amount of current uncompleted contracts and a current detailed listing of outstanding incomplete contracts as of the date that this bid is submitted

7. I certify that the foregoing statements are true and I am aware that if any of such statements are willfully false, I may be subject to punishment.

DATE: _____

NAME OF BIDDER

_____

(Company Name, if Bidder is a company)

BIDDER'S SIGNATURE

_____

(Company Officer, if Bidder is a Company)

_____

Printed or Typed Name *Title of Officer (if the Bidder is a Company)*

This Certification must be submitted with the bid.

SECTION 004420 DPMC 701 / TOTAL AMOUNT OF UNCOMPLETED CONTRACTS

Provide the DPMC 701 / Total Amount of Uncompleted Contracts here.

Attach a detailed listing of each uncompleted contract, the total amount of the contract, and the balance remaining on the contract. This is for all uncompleted contracts by the company and as is not limited to public works projects and/or public school construction projects.

END OF SECTION

SECTION 004430 AFFIDAVIT OF NO MATERIAL ADVERSE CHANGE IN STATUS

STATE OF _____ }
} ss.
COUNTY OF }
_____

The undersigned, having knowledge of and authority to bind the BIDDER to the information herein, hereby swears, upon his oath, according to law:

1. That there has been no material adverse change in the qualification information last submitted to the New Jersey Department of Treasury pursuant to *N.J.S.A. 18A:18A-28*, except as set forth herein. Indicate and/all changes below":

DATE: _____

NAME OF BIDDER

_____
(Company Name, if Bidder is a company)

BIDDER'S SIGNATURE

_____
(Company Officer, if Bidder is a Company)

_____
Printed or Typed Name *Title of Officer (if the Bidder is a Company)*

Subscribed and sworn before me this _____ day of _____, 20____.

My commission expires _____ 20___.

Seal of Notary Public

This Affidavit must be submitted with the bid.

SECTION 004440 COMPLIANCE WITH NEW JERSEY PREVAILING WAGE ACT

The undersigned hereby certifies to the Bidder's Past Record under the New Jersey Prevailing Wage Act (*N.J.S.A. 34:11-56.25*, inclusive) and all acts amendatory thereof and supplemental hereto.

The Bidder shall answer each question with a "yes" or "no" entered in the space provided and furnish additional information when required.

1. Has the bidder been notified by the Commissioner of Labor by notice issued pursuant to *N.J.S.A.34:11-56.37* that he has been blacklisted for failure to pay prevailing wages as required by the New Jersey Prevailing Wages Act?

   _____ Yes _____ No

2. Has any person having an "interest" in the bidder within the meaning of *N.J.S.A. 34:11-56.38* been blacklisted as aforesaid?

   _____ Yes _____ No

3. Has any person having an "interest" in the bidder within the meaning of *N.J.S.A. 34:11-56.38* had any "interest" as aforesaid in any firm, corporation, or partnership which has been blacklisted as aforesaid?

   _____ Yes _____ No

4. If the answer to any of the aforesaid questions is "Yes" attach a statement showing the date of action taken by the Commissioner of Labor, the subsequent action, if any, taken with respect to such action of the Commissioner, the name of the person, firm corporation or partnership blacklisted by the Commissioner, and the nature, character and extent of the interest existing between the bidder and the name which was blacklisted as aforesaid.

DATE: _____

NAME OF BIDDER

_____

(Company Name, if Bidder is a company)

BIDDER'S SIGNATURE

_____

(Company Officer, if Bidder is a Company)

_____

Printed or Typed Name *Title of Officer (if the Bidder is a Company)*

This Certification must be submitted with the bid.

SECTION 004450 AFFIRMATIVE ACTION QUESTIONNAIRE

1. Our company has a current New Jersey Affirmative Action Certificate.

_____ Yes _____ No

If yes, please attach a copy of the New Jersey Certificate of Employee Information.

2. Our company has a valid federal Affirmative Action Plan Approval Letter.

_____ Yes _____ No

If yes, please attach a copy of said approval.

3. If you do not have either of the above, indicate if needed:

_____ Please send us an Affirmative Action form for our completion. (AA302 - Employee Information Report).

I certify that the above information is correct to the best of my knowledge.

DATE: _____

NAME OF BIDDER

_____

(Company Name, if Bidder is a company)

BIDDER'S SIGNATURE

_____

(Company Officer, if Bidder is a Company)

_____

Printed or Typed Name *Title of Officer (if the Bidder is a Company)*

This Certification must be submitted with the bid.

C. 271 POLITICAL CONTRIBUTION DISCLOSURE FORM

Contractor Instructions

Business entities (contractors) receiving contracts from a public agency that are NOT awarded pursuant to a "fair and open" process (defined at N.J.S.A. 19:44A-20.7) are subject to the provisions of P.L. 2005, c. 271, s.2 (N.J.S.A. 19:44A-20.26). This law provides that 10 days prior to the award of such a contract, the contractor shall disclose contributions to:

- any State, county, or municipal committee of a political party
- any legislative leadership committee*
- any continuing political committee (a.k.a., political action committee)
- any candidate committee of a candidate for, or holder of, an elective office:
  - of the public entity awarding the contract
  - of that county in which that public entity is located
  - of another public entity within that county
  - or of a legislative district in which that public entity is located or, when the public entity is a county, of any legislative district which includes all or part of the county

The disclosure must list reportable contributions to any of the committees that exceed $300 per election cycle that were made during the 12 months prior to award of the contract. See N.J.S.A. 19:44A-8 and 19:44A-16 for more details on reportable contributions.

N.J.S.A. 19:44A-20.26 itemizes the parties from whom contributions must be disclosed when a business entity is not a natural person. This includes the following:

- individuals with an "interest" ownership or control of more than 10% of the profits or assets of a business entity or 10% of the stock in the case of a business entity that is a corporation for profit
- all principals, partners, officers, or directors of the business entity or their spouses
- any subsidiaries directly or indirectly controlled by the business entity
- IRS Code Section 527 New Jersey based organizations, directly or indirectly controlled by the business entity and filing as continuing political committees, (PACs).

When the business entity is a natural person, "a contribution by that person's spouse or child, residing therewith, shall be deemed to be a contribution by the business entity." [N.J.S.A. 19:44A-20.26(b)] The contributor must be listed on the disclosure.

Any business entity that fails to comply with the disclosure provisions shall be subject to a fine imposed by ELEC in an amount to be determined by the Commission which may be based upon the amount that the business entity failed to report.

The enclosed list of agencies is provided to assist the contractor in identifying those public agencies whose elected official and/or candidate campaign committees are affected by the disclosure requirement. It is the contractor's responsibility to identify the specific committees to which contributions may have been made and need to be disclosed. The disclosed information may exceed the minimum requirement.

The enclosed form, a content-consistent facsimile, or an electronic data file containing the required details (along with a signed cover sheet) may be used as the contractor's submission and is disclosable to the public under the Open Public Records Act.

The contractor must also complete the attached Stockholder Disclosure Certification. This will assist the agency in meeting its obligations under the law. **NOTE: This section does not apply to Board of Education contracts.**

* N.J.S.A. 19:44A-3(s): "The term "legislative leadership committee" means a committee established, authorized to be established, or designated by the President of the Senate, the Minority Leader of the Senate, the Speaker of the General Assembly or the Minority Leader of the General Assembly pursuant to section 16 of P.L.1993, c.65 (C.19:44A-10.1) for the purpose of receiving contributions and making expenditures."

C. 271 POLITICAL CONTRIBUTION DISCLOSURE FORM

Required Pursuant To N.J.S.A. 19:44A-20.26

This form or its permitted facsimile must be submitted to the local unit no later than 10 days prior to the award of the contract.

Part I – Vendor Information

Vendor Name:			
Address:			
City:		State:	Zip:

The undersigned being authorized to certify, hereby certifies that the submission provided herein represents compliance with the provisions of N.J.S.A. 19:44A-20.26 and as represented by the Instructions accompanying this form.

Signature	Printed Name	Title

Part II – Contribution Disclosure

Disclosure requirement: Pursuant to N.J.S.A. 19:44A-20.26 this disclosure must include all reportable political contributions (more than $300 per election cycle) over the 12 months prior to submission to the committees of the government entities listed on the form provided by the local unit.

☐ Check here if disclosure is provided in electronic form.

Contributor Name	Recipient Name	Date	Dollar Amount
			$

☐ Check here if the information is continued on subsequent page(s)

Continuation Page

C. 271 POLITICAL CONTRIBUTION DISCLOSURE FORM

Required Pursuant To N.J.S.A. 19:44A-20.26

Page ___ of ______

Vendor Name:

Contributor Name	Recipient Name	Date	Dollar Amount
			$

☐ Check here if the information is continued on subsequent page(s)

List of Agencies with Elected Officials Required for Political Contribution Disclosure
N.J.S.A. 19:44A-20.26

County Name:
State: Governor, and Legislative Leadership Committees
Legislative District #s:
State Senator and two members of the General Assembly per district.

County:

Freeholders	County Clerk	Sheriff
{County Executive}	Surrogate	

Municipalities (Mayor and members of governing body, regardless of title):

SECTION 004470 COMBINED CERTIFICATION: PROHIBITED ACTIVITIES IN RUSSIA AND BELARUS & INVESTMENT ACTIVITIES IN IRAN

STANDARD BID DOCUMENT REFERENCE						
Name of Form	**COMBINED CERTIFICATION: PROHIBITED ACTIVITIES IN RUSSIA AND BELARUS & INVESTMENT ACTIVITIES IN IRAN**					
Statutory Reference	P.L. 2022, c. 3 N.J.S.A. 52:32-55 et seq. N.J.S.A. 40A:11-2.1 N.J.S.A. 18A:18A-49.4					
Applicability		**Y/N**		**Mandatory**	**Optional**	**N/A**
	LPCL	**Y**	Goods and Services	**X**		
	PSCL	**Y**	Construction			**X**
Instructions Reference						
Description	P.L. 2022, c. 3 prohibits the award, renewal, amendment, or extension of State and local public contracts for goods or services with persons or entities engaging in prohibited activities in Russia or Belarus. P.L. 2012, c.25 prohibits the award or renewal of State and local public contracts for goods and services with persons or entities engaged in certain investment activities in the energy or finance sectors of Iran. Before a goods and services contract can be entered into, vendors and contractors must certify that neither they nor any parent entity, subsidiary, or affiliate is listed on the New Jersey Department of the Treasury's list of entities determined to be engaged in prohibited activities in Russia or Belarus pursuant to P.L. 2022, c. 3 ("Russia-Belarus list") or in Iran pursuant to P.L. 2012, c. 25 ("Chapter 25 list").					

The Certification form requires the insertion of contracting unit identification information which should be filled in (in italics on the form) prior to its use.

Prohibited Russia-Belarus Activities & Iran Investment Activities

Person or Entity	

Part 1: Certification

COMPLETE PART 1 BY CHECKING **ONE OF THE THREE BOXES BELOW**

Pursuant to law, any person or entity that is a successful bidder or proposer, or otherwise proposes to enter into or renew a contract, for goods or services must complete the certification below prior to contract award to attest, under penalty of perjury, that neither the person or entity, nor any parent entity, subsidiary, or affiliate, is identified on the Department of Treasury's Russia-Belarus list or Chapter 25 list as a person or entity engaging in prohibited activities in Russia, Belarus or Iran. Before a contract for goods or services can be amended or extended, a person or entity must certify that neither the person or entity, nor any parent entity, subsidiary, or affiliate, is identified on the Department of Treasury's Russia-Belarus list. Both lists are found on Treasury's website at the following web addresses:

https://www.nj.gov/treasury/administration/pdf/RussiaBelarusEntityList.pdf
www.state.nj.us/treasury/purchase/pdf/Chapter25List.pdf.

As applicable to the type of contract, the above-referenced lists must be reviewed prior to completing the below certification.

A person or entity unable to make the certification must provide a detailed, accurate, and precise description of the activities of the person or entity, or of a parent entity, subsidiary, or affiliate, engaging in prohibited activities in Russia or Belarus and/or investment activities in Iran. The person or entity must cease engaging in any prohibited activities and provide an updated certification before the contract can be entered into.

If a vendor or contractor is found to be in violation of law, action may be taken as appropriate and as may be provided by law, rule, or contract, including but not limited to imposing sanctions, seeking compliance, recovering damages, declaring the party in default, and seeking debarment or suspension of the party.

CONTRACT AWARDS AND RENEWALS

☐	*I certify, pursuant to law, that neither the person or entity listed above, nor any parent entity, subsidiary, or affiliate appears on the N.J. Department of Treasury's lists of entities engaged in prohibited activities in Russia or Belarus pursuant to P.L. 2022, c. 3 or in investment activities in Iran pursuant to P.L. 2012, c. 25 ("Chapter 25 List"). I further certify that I am the person listed above, or I am an officer or representative of the entity listed above and am authorized to make this certification on its behalf.* (Skip Part 2 and sign and complete the Certification below.)

CONTRACT AMENDMENTS AND EXTENSIONS	
☐	*I certify, pursuant to law, that neither the person or entity listed above, nor any parent entity, subsidiary, or affiliate is listed on the N.J. Department of the Treasury's lists of entities determined to be engaged in prohibited activities in Russia or Belarus pursuant to P.L. 2022, c. 3. I further certify that I am the person listed above, or I am an officer or representative of the entity listed above and am authorized to make this certification on its behalf.* (Skip Part 2 and sign and complete the Certification below.)
IF UNABLE TO CERTIFY	
☐	*I am unable to certify as above because the person or entity and/or a parent entity, subsidiary, or affiliate is listed on the Department's Russia-Belarus list and/or Chapter 25 Iran list. I will provide a detailed, accurate, and precise description of the activities as directed in Part 2 below, and sign and complete the Certification below. Failure to provide such will prevent the award of the contract to the person or entity, and appropriate penalties, fines, and/or sanctions will be assessed as provided by law.*

Part 2: Additional Information

PLEASE PROVIDE FURTHER INFORMATION RELATED TO PROHIBITED ACTIVITIES IN RUSSIA OR BELARUS AND/OR INVESTMENT ACTIVITIES IN IRAN.

You must provide a detailed, accurate, and precise description of the activities of the person or entity, or of a parent entity, subsidiary, or affiliate, engaging in prohibited activities in Russia or Belarus and/or investment activities in Iran in the space below and, if needed, on additional sheets provided by you.

Part 3: Certification of True and Complete Information

I, being duly sworn upon my oath, hereby represent and state that the foregoing information and any attachments there, to the best of my knowledge, are true and complete. I attest that I am authorized to execute this certification on behalf of the above-referenced person or entity.

*I acknowledge that the <**Name of Contracting Unit**> is relying on the information contained herein and hereby acknowledge that I am under a continuing obligation from the date of this certification through the completion of any contracts with the <**Name of Contracting Unit**> to notify the <**Name of Contracting Unit**> in writing of any changes to the answers of information contained herein.*

*I acknowledge that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification. If I do so, I recognize that I am subject to criminal prosecution under the law and that it will also constitute a material breach of my agreement(s) with the <**Name of Contracting Unit**> and that the <**Name of Contracting Unit**> at its option may declare any contract(s) resulting from this certification void and unenforceable.*

Full Name (Print)		**Title**	
Signature		**Date**	

SECTION 004480 AMERICANS WITH DISABILITIES ACT OF 1990

APPENDIX A
AMERICANS WITH DISABILITIES ACT OF 1990
Equal Opportunity for Individuals with Disability

The contractor and the _____ of _____, (hereafter "owner") do hereby agree that the provisions of Title 11 of the Americans With Disabilities Act of 1990 (the "Act") *(42 U.S.C. S121 01* et seq.), which prohibits discrimination on the basis of disability by public entities in all services, programs, and activities provided or made available by public entities, and the rules and regulations promulgated pursuant there unto, are made a part of this contract. In providing any aid, benefit, or service on behalf of the owner pursuant to this contract, the contractor agrees that the performance shall be in strict compliance with the Act. In the event that the contractor, its agents, servants, employees, or subcontractors violate or are alleged to have violated the Act during the performance of this contract, the contractor shall defend the owner in any action or administrative proceeding commenced pursuant to this Act. The contractor shall indemnify, protect, and save harmless the owner, its agents, servants, and employees from and against any and all suits, claims, losses, demands, or damages, of whatever kind or nature arising out of or claimed to arise out of the alleged violation. The contractor shall, at its own expense, appear, defend, and pay any and all charges for legal services and any and all costs and other expenses arising from such action or administrative proceeding or incurred in connection therewith. In any and all complaints brought pursuant to the owner's grievance procedure, the contractor agrees to abide by any decision of the owner which is rendered pursuant to said grievance procedure. If any action or administrative proceeding results in an award of damages against the owner, or if the owner incurs any expense to cure a violation of the ADA which has been brought pursuant to its grievance procedure, the contractor shall satisfy and discharge the same at its own expense.

The owner shall, as soon as practicable after a claim has been made against it, give written notice thereof to the contractor along with full and complete particulars of the claim, If any action or administrative proceeding is brought against the owner or any of its agents, servants, and employees, the *owner shall* expeditiously forward or have forwarded to the contractor every demand, complaint, notice, summons, pleading, or other process received by the owner or its representatives.

It is expressly agreed and understood that any approval by the owner of the services provided by the contractor pursuant to this contract will not relieve the contractor of the obligation to comply with the Act and to defend, indemnify, protect, and save harmless the owner pursuant to this paragraph.

It is further agreed and understood that the owner assumes no obligation to indemnify or save harmless the contractor, its agents, servants, employees and subcontractors for any claim which may arise out of their performance of this Agreement. Furthermore, the contractor expressly understands and agrees that the provisions of this indemnification clause shall in no way limit the contractor's obligations assumed in this Agreement, nor shall they be construed to relieve the contractor from any liability, nor preclude the owner from taking any other actions available to it under any other provisions of the Agreement or otherwise at law.

NAME OF BIDDER: _____DATE: _____

SIGNATURE OF BIDDER: _____

This Acknowledgement must be submitted with the bid.

SECTION 004490 – SITE INSPECTION AFFIDAVIT

STATE OF _____

COUNTY OF _____

I, _____ (name), the _____ (title) of _____ _____ (company), do hereby declare that I or my duly authorized representative(s) _____(name) did visit the proposed site project to determine the degree of complexity of the work involved in the Contract titled LRHSD Administration Building Various Upgrades; did adequately inspect the construction access for all work under this Contract on the _____ day of _____, 20__, and that I am aware the Owner has made access available to the project site during the advertisement period for the project should I choose to take advantage of said availability of access, and I hereby acknowledge that I have satisfied myself with regard to the characteristics of the site involved, and the nature and extent of the work to be performed and materials furnished under this Contract.

Sworn to and subscribed before
me this _____ day of
_____, 20___

_____
Notary Public
My commission expires on
_____, 20____

_____
Company

_____
Signature

This Certification must be submitted with the bid.

END OF SECTION 004490

SECTION 004500 FEDERAL DEBARMENT FORM

CERTIFICATION OF NON-DEBARMENT
FOR FEDERAL GOVERNMENT CONTRACTS
N.J.S.A. 52:32-44.1 (P.L. 2019, c.406)

This certification shall be completed, certified to, and submitted to the contracting unit PRIOR TO CONTRACT AWARD, except for emergency contracts where submission is required prior to payment.

PART I: VENDOR INFORMATION	
Individual or Organization Name	
Address of Individual or Organization	
DUNS Code (if applicable)	
CAGE Code (if applicable)	
Check the box that represents the type of business organization:	

☐ Sole Proprietorship (skip Parts III and IV) ☐ Non-Profit Corporation (skip Parts III and IV)

☐ For-Profit Corporation (any type) ☐ Limited Liability Company (LLC) ☐ Partnership

☐ Limited Partnership ☐ Limited Liability Partnership (LLP)

☐ Other (be specific): _____

PART II – CERTIFICATION OF NON-DEBARMENT: Individual or Organization			
I hereby certify that the **individual or organization listed above in Part I** is not debarred by the federal government from contracting with a federal agency. I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; that the ***<name of contracting unit>*** is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the date of contract award by ***<type of contracting unit>*** to notify the ***<type of contracting unit>*** in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the ***<type of contracting unit>***, permitting the ***<type of contracting unit>*** to declare any contract(s) resulting from this certification void and unenforceable.			
Full Name (Print):		Title:	
Signature:		Date:	

PART III – CERTIFICATION OF NON-DEBARMENT: Individual or Entity Owning Greater than 50 Percent of Organization	
Section A (Check the Box that applies)	
☐	Below is the name and address of the stockholder in the corporation who owns more than 50 percent of its voting stock, or of the partner in the partnership who owns more than 50 percent interest therein, or of the member of the limited liability company owning more than 50 percent interest therein, as the case may be.
Name of Individual or Organization	
Home Address (for Individual) or Business Address	
OR	
☐	No one stockholder in the corporation owns more than 50 percent of its voting stock, or no partner in the partnership owns more than 50 percent interest therein, or no member in the limited liability company owns more than 50 percent interest therein, as the case may be.
Section B (Skip if no Business entity is listed in Section A above)	
☐	Below is the name and address of the stockholder in the corporation who owns more than 50 percent of the voting stock of the organization's parent entity, or of the partner in the partnership who owns more than 50 percent interest in the organization's parent entity, or of the member of the limited liability company owning more than 50 percent interest in organization's parent entity, as the case may be.
Stockholder/Partner/Member Owning Greater Than 50 Percent of Parent Entity	
Home Address (for Individual) or Business Address	
OR	
☐	No one stockholder in the parent entity corporation owns more than 50 percent of its voting stock, no partner in the parent entity partnership owns more than 50 percent interest therein, or no member in the parent entity limited liability company owns more than 50 percent interest therein, as the case may be.
Section C – Part III Certification	
I hereby certify that no individual or organization that is debarred by the federal government from contracting with a federal agency owns greater than 50 percent of the **Organization listed above in Part I** or, if applicable, owns greater than 50 percent of a parent entity of **<name of organization>**. I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; that the ***<name of contracting unit>*** is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the date of contract award ***<type of***	

contracting unit> to notify the ***<type of contracting unit>*** in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the ***<type of contracting unit>***, permitting the ***<type of contracting unit>*** to declare any contract(s) resulting from this certification void and unenforceable.			
Full Name (Print):		Title:	
Signature:		Date:	

Part IV – CERTIFICATION OF NON-DEBARMENT: Contractor – Controlled Entities	
Section A	
☐	Below is the name and address of the corporation(s) in which the **Organization listed in Part I** owns more than 50 percent of voting stock, or of the partnership(s) in which the **Organization listed in Part I** owns more than 50 percent interest therein, or of the limited liability company or companies in which the **Organization listed above in Part I** owns more than 50 percent interest therein, as the case may be.
Name of Business Entity	**Business Address**
Add additional sheets if necessary	
OR	
☐	The **Organization listed above in Part I** does not own greater than 50 percent of the voting stock in any corporation and does not own greater than 50 percent interest in any partnership or any limited liability company.

Section B (skip if no business entities are listed in Section A of Part IV)	
☐	Below are the names and addresses of any entities in which an entity listed in Part III A owns greater than 50 percent of the voting stock (corporation) or owns greater than 50 percent interest (partnership or limited liability company).
Name of Business Entity Controlled by Entity Listed in Section A of Part IV	**Business Address**
Add additional Sheets if necessary	
OR	
☐	No entity listed in Part III A owns greater than 50 percent of the voting stock in any corporation or owns greater than 50 percent interest in any partnership or limited liability company.

Section C – Part IV Certification	
I hereby certify that the **Organization listed above in Part I** does not own greater than 50 percent of any entity that that is debarred by the federal government from contracting with a federal agency and, if applicable, does not own greater than 50 percent of any entity that in turns owns greater than 50 percent of any entity debarred by the federal government from contracting with a federal agency. I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; that the ***<name of contracting unit>*** is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the date of contract award by ***<type of contracting unit>*** to notify the ***<type of contracting unit>*** in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the ***<type of contracting unit>***, permitting the ***<type of contracting unit>*** to declare any contract(s) resulting from this certification void and unenforceable.	

Full Name (Print):		Title:	
Signature:		Date:	

<u>This Certification shall be submitted with the bid</u>

SECTION 004510 EQUIPMENT CERTIFICATION

In accordance with, N.J.S.A. 18A:18A-23, Certificate of bidder showing ability to perform contract, there may be required from any bidder submitting a bid on public work to any board of education, duly advertised for in accordance with law, a certificate showing that he owns, leases, or controls all the necessary equipment required by the plans, specifications and advertisements under which bids are asked for and if the bidder is not the actual owner or lessee of any such equipment, his certificate shall state the source from which the equipment will be obtained, and shall be accompanied by a certificate from the owner or person in control of the equipment definitely granting to the bidder the control of the equipment required during such time as may be necessary for the completion of that portion of the contract for which it is necessary.

The undersigned Bidder hereby certifies as follows:

The bidder owns or controls all the necessary equipment required to accomplish the work described in the specifications.

Name of Bidder: _____

By: _____
(Signature)

Name of above: _____
(Print)

Title: _____

Date:_____

<u>This Certification must be submitted with the bid</u>

SECTION 005200 SAMPLE CONTRACT FOR CONSTRUCTION

The following document titled AIA Document A101-2017; Standard Form of Agreement Between the Owner and Contractor, as amended shall be used as the form of contract for construction.

END OF SECTION

AIA® Document A101® – 2017

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

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

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

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

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

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

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.

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

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TABLE OF ARTICLES

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8 MISCELLANEOUS PROVISIONS

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EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

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

ARTICLE 2 THE WORK OF THIS CONTRACT

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

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

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

[ ] The date of this Agreement.

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

[ ] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

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

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

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:
(Paragraphs deleted)
SEE MILESTONES BELOW.

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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 are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates: See Division 00 Specification Section "Milestone Dates & Liquidated Damages".

(Table deleted)

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

ARTICLE 4 CONTRACT SUM

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

Base Bid of $ .00 has been accepted

See Specification Section 004100-1 through 004100-6 FORM OF BID OVERALL LUMPSUM CONTRACT, datedXXXXXXX, as submitted byXXXXX, attached to and made part of this Contract as EXHIBIT "A", Six (6) pages all inclusive

§ 4.2 Alternates

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

Item	Price
Alternate No.	Alternate No. has been accepted in the amount of $ .00...

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

Item	Price	Conditions for Acceptance

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

Item	Price
Allowance No.	Contract Allowance No. : Included in the Base Bid is an allowance of $ .00 for...

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

Item	Units and Limitations	Price per Unit ($0.00)
Unit Price No.	Descriptions	Amount

§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any.)

The Owner will suffer financial loss if the Project is not Substantially Completed on the dates set forth in the Contract Documents. The Contractor and his Surety are liable for and shall pay to the Owner the sums hereinafter stipulated as fixed, agreed, liquidated damages for each consecutive calendar day of delay until work is completed. Liquidated Damages $500.00 and/or $1,000.00 calendar day of delay. See section 003120, paragraph 3.1.

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

N/A

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

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

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

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the fifth day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the fifth day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than Sixty (60) days after the Architect certified the Application for Payment. Payments shall be made in accordance with **N.J.S.A. 2A:30A-1, P.L. 2006, c.96** "Prompt Payment of Construction Contracts".
(Federal, state or local laws may require payment within a certain period of time.)

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

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

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

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

.1 That portion of the Contract Sum properly allocable to completed Work;

.2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and

.3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

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

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and

.5 Retainage withheld pursuant to Section 5.1.7.

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§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

Retainage for this Contract will be five (5%) except as indicated below

If the Contract is over $500,000.00 the following shall apply:

Retainage shall be determined as follows: Pursuant to N.J.S.A. 18A:18A-40.3, the Owner will withhold two percent (2%) of the amount due on each partial payment when the outstanding balance of the Contract exceeds Five Hundred Thousand Dollars ($500,000.00). The Owner will withhold five percent (5%) of the amount due on each partial payment when the outstanding balance of the Contract is Five Hundred Thousand Dollars ($500,000.00) or less. Retainage shall be withheld until the Owner approves the Architect's determination that the work has been satisfactorily completed and no unsettled claims exist. The final acceptance shall not be binding or conclusive upon the Owner should it subsequently discover that the contractor has supplied inferior material or workmanship or has departed from the terms of his contract. Should such a condition appear the Owner shall have the right, notwithstanding final acceptance and payment, to cause the work to be properly done in accordance with the drawings and specifications at the cost and expense of the contractor.

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

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

(Paragraph deleted)

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

§ 5.2 Final Payment

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

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

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

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§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or ten (10) days following the Owner's approval of the payment at a public meeting, whichever is later, or as follows:

In accordance with Specification Section 12900 Payment Procedures and **N.J.S.A. 2A:30A-1, P.L. 2006, c.96** "Prompt Payment of Construction Contracts".

§ 5.3 Interest

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

Both parties are in agreement that the Board of Education is a Public Entity and that the payment and interest provisions shall be in accordance with the terms and conditions of N.J.S.A. 2A:30A-1, Effective 9-1-06

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 Binding Dispute Resolution

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

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

[X] Litigation in a court of competent jurisdiction

[ ] Other *(Specify)*

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

ARTICLE 7 TERMINATION OR SUSPENSION

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

§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:
(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.) In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; up to the date of termination. No other payment of any kind shall be due from the Owner.

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

7.3 The Contracted party, its Subconsultants or Subcontractor may be debarred, suspended or disqualified from contracting and/or working on the School Facility Project if found to have committed any of the acts listed in ***N.J.A.C. 17:19-3.1 et seq and 6:20-6.7 et seq.***

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ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

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

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

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

ADD REQUIREMENTS FROM SPEC (as Exhibit A)

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

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:
(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

Payments for materials stored off the site, provisions regarding transportation to the site and insurance protecting the Owner's interests, shall be enumerated in a separate agreement prepared and approved by the Owner prior to any payments being made to the Contractor in this regard. Nothing herein shall require Owner to make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

The Contractor agrees to abide by any precautionary measures dictated by law, Executive Order, the Owner's direction, or any other applicable authority related to controlling the spread or resurgence of COVID-19, including but not limited to advising Owner of any employee or representative of Contractor that has tested positive for coronavirus, or is otherwise required to quarantine due to possible coronavirus exposure, and removing the employee from the job site until there is no longer any risk of exposure. Contractor shall require its subcontractors to comply with this paragraph.

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ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor

.2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction

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

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

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

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

[ ] The Sustainability Plan:

Title	Date	Pages

[ ] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

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

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Form of Bid
Table of Contents
Addenda
Owner's resolution dated _____ authorizing the award of the contract to Contractor.

This Agreement 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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SECTION 005300 GENERAL CONDITIONS FOR CONSTRUCTION

The following document titled AIA Document A201-2017; General Conditions of the Contract for Construction, as amended shall be the General Conditions for construction.

END OF SECTION

AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)
Lenape Regional High School District Administration Building Various Upgrades
93 Willow Grove Road
Shamong, NJ 08088

THE OWNER:
(Name, legal status and address)
Lenape Regional High School District Board of Education
93 Willow Grove Road
Shamong, NJ 08088

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

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

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

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

§ 1.1.6 The Specifications

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

§ 1.1.7 Instruments of Service

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

§ 1.1.8 Initial Decision Maker

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

§1.1.9 DIRECTED, REQUIRED, APPROVED:

Where "directed", "required", "approved" and words of similar import are used, reference is made to the "direction", "requirement", "approval" of the Architect unless otherwise stated.

§1.1.10 FURNISH, PROVIDE:

As used in the Contract Documents, the word "provide" means to furnish and install complete and in place; the word

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"furnish" means to fabricate and deliver to the site of the Work unless otherwise stated.

§1.1.11 PRODUCT:
The word "product" includes materials, systems and equipment.

§ 1.2 Correlation and Intent of the Contract Documents

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

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

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

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

§ 1.3 Capitalization

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

§ 1.4 Interpretation

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

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

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

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

§ 1.6 Notice

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

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

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§ 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.

§1.7.1 WARNING AND DISCLAIMER REGARDING ELECTRONICALLY PREPARED /TRANSMITTED DRAWINGS

The Design Collaborative (TDC) is herewith providing recipient with drawings, specifications and/or other documentation (hereinafter "electronic files") that have been either electronically produced or transmitted. The electronic files are provided merely as a convenience to recipient, and do not replace or supplement the paper copies of any drawings, specifications and/or other documents for use on the Project. Any utilization for bidding purposes shall be at the sole risk of the recipient, and subject to any applicable language in the Invitation to Bidders.

§1.7.2 It is recognized by the recipient that electronic files which are provided in the such form may be altered such that the changes made are not easily recognized, and that data stored on electronic media and/or transferred via email can deteriorate, be corrupted, or be modified inadvertently, and that errors and anomalies can be introduced into the data from the use of software application packages, operating systems, or computer hardware differing from those used by TDC. Further TDC makes no representation, warranty of guaranty that the electronic files have any durability or will not damage or impair the recipient's computer or software. By accepting and using these electronic files you acknowledge the above, agree that TDC is not responsible for any alteration or corruption of the data in the electronic documents, release TDC from any and all associated liability, and assume all such risks.

§1.7.3 The electronic files provided are Instruments of Service prepared by the architect and the architect's consultants, and the architect and the architect's consultants shall be deemed the authors and owners of their respective Instruments of Service and shall retain all common law, statutory and other reserved rights, including copyrights. The recipient shall not provide the Instruments of Service or reproductions thereof to any person, entity, design professional, contractor, developer, municipality, zoning or planning board, or other governmental entity without the architect's express written consent. The Instruments of Service shall not be utilized by the recipient for purposes of application to any governmental entity, design services by other design professionals such as architects, engineers, planners, etc., constructing, renovating or demolishing the project, and/or as a representation, warranty, guarantee, or other inducement in any financial transaction or development deal regarding the project. The recipient shall not use the Instruments of Service for future additions or alterations to the project or for other projects, unless the recipient obtains the prior written agreement of the architect and the architect's consultants. Any unauthorized use of the Instruments of Service shall be at the recipient's sole risk and without liability to the architect and the architect's consultants. The recipient of these electronic files is advised that any unauthorized alteration to these Instruments constitutes a violation of the United States Copyright Laws and can subject you to both criminal and civil penalties. The foregoing applies whether or not the title block appears or not on the Instruments in the electronic files

§1.7.4 Additionally, in consideration for TDC's release of these electronic files, the recipient hereby agrees to defend, indemnify and hold harmless TDC from and against any liability, damages, claims, of any sort or kind which may arise from either the alteration or recipient's use of the electronic files. Pursuant to the foregoing defense and indemnification provision, in the event that recipient alters, changes or modifies in any way the enclosed electronic files without the written consent of TDC. Recipient agrees that it will pay all damages and expenses including attorney's fees which may be incurred by TDC arising out of a claim related to the enclosed electronic files unless and until it is established by a court of competent law or panel of arbitrators that the claim and the damages sustained by TDC were not the result of changes made to these electronic files by the recipient.

§1.7.5 Recipient's acceptance, downloading and/or utilization of these electronic files is deemed to be an acknowledgment and agreement to the conditions and defense and indemnification provisions set forth above. Should recipient not agree to the conditions and provisions set forth above, this transmission/transmittal shall be returned with the notation: "Not agreed and electronic files not utilized in any fashion".

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§ 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

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

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative. However Architect and/or Contractor understand and acknowledges that the authority for all decisions required to be made resides with Owner. Contractor shall not rely upon or request from Owner's employees, agents and/or representatives any decision which requires Owner's determination.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.1.3 The Project Administrator for the Owner is Anthony Voiro, Director of Buildings and Grounds; or his/her successor as nominated by the Owner.

§ 2.1.4 Nothing in this Contract permits the Project Administrator to bind the Owner with respect to any and all matters requiring the Owner's approval or authorization.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract.

(Paragraphs deleted)

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

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

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

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

§ 2.3.4 If necessary, and where not otherwise required of Contractor, the Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

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§ 2.3.5 Unless otherwise provided under this Agreement or not reasonably available to Owner, the Owner shall provide information or services required of the Owner by the Contract Documents in a timely manner. The Owner shall also furnish and other reasonable information in its possession or services under the Owner's control and relevant to the Contractor's performance of the Work in a timely manner after receiving the Contractor's written request for such information or services.

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

§ 2.3.6.1 After award of Contract and for construction purposes, in addition to copies required for Record Drawings and for filing with public bodies, 1 set of Contract Documents will be furnished free of charge to the Contractor. Additional copies of Drawings and Specifications will be furnished when the Architect determines that their need is justified at $ 4.00 per sheet for drawing prints and $50.00 per copy of the Specifications. Subcontractors and vendors shall obtain copies of the Drawings and Specifications through the Contractor from his allotment

§ 2.4 Owner's Right to Stop the Work

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

§ 2.5 Owner's Right to Carry Out the Work

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

ARTICLE 3 CONTRACTOR

§ 3.1 General

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

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

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

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

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§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

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

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

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

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

§ 3.4 Labor and Materials

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

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

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

§ 3.5 Warranty

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

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

§ 3.6 Taxes

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

§3.6.1 The Owner is exempt from New Jersey Sales and Use Taxes imposed by the Sales and Use Tax Act (P.L. 1966, c. 30 and c. 53.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded. The CONTRACTOR shall pay for and provide the Architect with copies or receipts of all required permits and fees, licenses and inspections.

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

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

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the

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operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

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

§ 3.8.2 Unless otherwise provided in the Contract Documents,

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

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

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

§ 3.9 Superintendent

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

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

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

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

§ 3.10.1.1 Refer to Division 01 Sections for requirements for the Contractor's construction schedule.

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

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

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§ 3.11 Documents and Samples at the Site

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

§ 3.12 Shop Drawings, Product Data and Samples

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

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

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

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

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

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

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect 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 Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

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

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

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

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

§ 3.13 Use of Site

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

§3.13.1 The Contractor shall not place or maintain, or allow to be place or maintained, any advertising matter, sign, bill, poster, etc., on or about the Site, except those required by law or by the Contract Documents, unless approved by the Architect.

§ 3.14 Cutting and Patching

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

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

§ 3.15 Cleaning Up

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

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

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

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§ 3.17 Royalties, Patents and Copyrights

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

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

§3.18.3 If the Contractor makes, or causes to be made, due to approval of substitute equipment or otherwise, any substantial change in the form, type, system and details of construction from those shown on the Drawings, he shall pay all costs arising from such changes. The Contractor shall pay, to the Owner, all professional fees incurred by the Owner for reviewing and checking the adequacy of such changes. Any changes or departures from the construction and details shown shall be made only after written approval from the Architect

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement and referred to throughout the Contract Documents as "the Architect" as though singular in number and masculine in gender. The term "the Architect" means The Design Collaborative or his authorized representative.

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

§ 4.2 Administration of the Contract

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

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

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

§ 4.2.4 Communications

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

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

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

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

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

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

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

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

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

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

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

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

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

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

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

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner 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 Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

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

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into

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similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

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

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

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

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

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

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

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

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

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

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

§ 6.2 Mutual Responsibility

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

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the

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Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

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

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

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

§ 6.3 Owner's Right to Clean Up

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

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

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

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

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

§ 7.2 Change Orders

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

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

§7.2.2. Notwithstanding the forgoing, Architect understands and acknowledges that no change order shall be executed or implemented without prior approval of the Owner.

§ 7.3 Construction Change Directives

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

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

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

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

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, with the provisions of subparagraph 7.3.11 Overhead costs shall be defined to include but not limited to preparation of shop drawings and product data including printing and distributing costs of same; engineering costs; preparation of as-builts, including printing and distribution costs; added costs for bond premiums and insurance; costs of home office personnel directly or indirectly attributable to the charge. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

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

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

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

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

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

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

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

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§ 7.3.11 In sub paragraph 7.3.4, the allowance for the combined overhead and profit in the total cost to the Owner shall be based on the following schedule:

.1 For the Contractor, the work performed by the Contractor's own forces, 15% of the cost.
.2 For the Contractor, for work performed by the Contractor's Sub Contractor, 5% of the amount due the Sub Contractor.
.3 For each Sub Contractor or Sub-Sub Contractor involved, for work performed by the Sub Contractor or Sub-Sub Contractor's own forces, 15% of the cost.
.4 For each Sub Contractor, for work performed by the Sub Contractor's Sub-Sub Contractors, 5% of the amount due the Sub-Sub Contractor.
.5 Costs to which these overhead and profit allowances are to be applied shall be determined in accordance with Sub paragraph 7.3.6 and 7.3.7. Cost estimating, schedule analysis and proposal preparation costs shall be excluded from these costs and considered non-compensable whether or not the Contractor's proposal is accepted.

§ 7.4 Minor Changes in the Work

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

§ 7.5 Overtime Authorized By Owner

§7.5.1 When work beyond the normal working hours for the trade is authorized by the Owner, for his own reasons, in writing, the Contract Sum shall be adjusted by Change Order on the basis of premium payment for labor only plus the actual extra cost for insurance and taxes based on this premium payment. Overhead and profit will not be paid by the Owner for overtime so authorized

ARTICLE 8 TIME

§ 8.1 Definitions

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

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

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

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

§ 8.2 Progress and Completion

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

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

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the

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Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

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

§ 8.3.3 The Contractor shall be precluded from the recovery of damages for delay or for any impacts resulting from delay. This preclusion shall apply for any delays described in paragraph 8.3.1, including (but not limited to) delays caused by an act or neglect on the part of the Owner or Architect or of an employee of either. The Contractor's sole remedy for any delay (or resulting impacts) shall be an appropriate extension of time for the completion of the Contract. In the event that a Contractor asserts in an arbitration, lawsuit or proceeding of any type, an entitlement to money damages or other damages other than an extension of time in violation of this provision, the Owner and the Architect shall be entitled to reasonable attorney's fees and costs incurred in the defense of that matter. Anything contained in the General Conditions of the Contract for Construction, AIA Document A201-2007 or as amended, the Supplementary Conditions, the Specifications, the Contract, the Drawings or any other document to the contrary notwithstanding, the Contractor shall not be entitled to damages or to extra compensation by reason of delays occasioned by the proceedings to review the awarding of the Contract to the Contractor or to review the awarding of any other Contract to any other Contractor.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

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

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

§ 9.2 Schedule of Values

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

§ 9.3 Applications for Payment

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

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

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

§ 9.3.1.3 Until final payment, the Owner will pay 98% of the amount due less the aggregate of previous payments, when the contract Balance exceeds $500,000.00, and 95% of the amount due less the aggregate of previous payments, when the contract Balance is $500,000.00 or less, as progress payments on or about the day of the month stated in the

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Owner-Contractor Agreement. Progress payments shall be based on:
Labor and materials incorporated in the Work up to the first day of the month.

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

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

§ 9.4 Certificates for Payment

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

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

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

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;

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.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or

.7 repeated failure to carry out the Work in accordance with the Contract Documents.

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

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

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

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

§9.6.1.1 All payments all conform with requirements of P.L. 2006, c.96, codified as N.J.S.A. 2A:30A-1 et seq., known as the Prompt Payment Law. This law establishes timing standard for the payment of bills by private and public sector organizations for construction related contractors.

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

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

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

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

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

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

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If

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approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

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

§ 9.8 Substantial Completion

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

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

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

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

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

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

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

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

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

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

(Paragraphs deleted)

§ 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.

§ 9.11 Liquidated Damages

§9.11.1 The Owner will suffer financial loss if the Project is not Substantially Completed on the date set forth in the Contract Documents. The Contractor and his Surety are liable for and shall pay to the Owner the sums hereafter stipulated as fixed, agreed, liquidated damages for each consecutive calendar day of delay until the work is Completed. Refer to Specification section "Milestone Dates and Liquidated Damages" for project milestones

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.

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§ 10.2 Safety of Persons and Property

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

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

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

§ 10.2.2.1 The Contractor shall strictly adhere to all precautions necessary to the safety and health of the workmen in accordance with provisions of OSHA Standard 29 CFR Part 1926, Construction Standards and Section 1910.1001, Asbestos of 29 CFR 1910.

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

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

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

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

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

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.2.9 Contractor shall protect adjoining private or municipal property and shall provide barricades, temporary fences and covered walkways required by prudent construction practices, local building codes, ordinances or other laws, or the Contract Documents.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not

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addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

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

(Paragraph deleted)

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

§ 10.3.5 The Contractor shall indemnify the Owner, Architect and their consultants for the cost and expense the Owner, Architect and their consultants incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's, Architect's and/or their consultants fault or negligence.

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

§ 10.4 Emergencies

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

§ 10.5 Documentation

§ 10.5.1 The Contractor shall furnish documentation that the firm and its employees are familiar with the following regulations of the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), and the U.S. Environmental Protection Agency (EPA) relating to the application, removal, disposal and treatment of asbestos:

.1 OSHA regulations, 29 CFR, 1910.1001 (Asbestos Standards for General Industry), 1926.58 (Asbestos Standards for Construction), 1926.59 (Hazard Communication) and 1910.134 (Respirator Standard).

.2 EPA regulations, namely: Subpart M or 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants, and as amended.

§ 10.5.2 Contractor shall maintain and make available at least one copy of each of the regulations cited above at both the Contractor's business office and in view at the Project site.

§ 10.5.3 The Contractor shall furnish written proof that its employees have had instruction on the dangers of asbestos, respirator use, proper fit and testing of approved respirators, decontamination, The Contractor shall further

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document that all workers on the job (supervisors and asbestos workers) have completed a training program for asbestos removal in one of the following states: New York, New Jersey, Pennsylvania and/or Delaware which has been endorsed and conducted under the guidelines and regulations of the state agencies having jurisdiction in asbestos matters. Documentation shall consist of a Certificate of Identification Card issued by the Agency providing instructions

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

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

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

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

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.1.5 The Insurance required by subparagraph 11.1.1 shall be written by companies properly licensed and satisfactory to the Owner. This insurance shall include contractual liability as applicable to the Contractor's obligations under Paragraph 3.18 and shall be written with minimum coverages and limits as required by law and the following:

.1 Worker's Compensation including Occupational Disease and Employer's Liability Insurance.
   a. Statutory. Amounts and coverages as required by State or States of Operation including provision for voluntary benefits as required in labor agreements, if any, and including "All States" endorsement, if applicable.
   b. Employer's Liability $500,000 each accident.

.2 Public Liability, including Contractor's Liability, Contingent Liability, Contractual Liability, Completed Operations and Products Liability, all on the occurrence Basis with Personal Injury Coverage and Broad Form Property Damage and "XCU" exclusions relating to explosion, collapses and underground property damage removed where applicable. Completed Operations Liability Insurance shall be kept in effect and have no sunset clauses. Coverage shall be written for $1,000,000 Combined Single Limit of Liability per occurrence for Bodily Injury and/or Property Damage. The Contractor must carry a minimum annual aggregate of $2,000,000.

.3 Comprehensive Automobile Liability, including non-ownership and hired car coverage as well as owned vehicles. Coverage shall be written for $1,000,000 Combined Single limit of Liability per accident for bodily injury and/or Property Damage. Liability insurance shall be arranged by Comprehensive General Liability and Comprehensive Automobile Liability policies for the full limits required or by a combination of underlying comprehensive liability policies for lesser limits with the remaining limits provided by an Excess or Umbrella Liability Policy; minimum limit shall be $5,000,000 per occurrence or accident.

.4 Builders Risk, completed value form will be carried by the Contractor naming the Owner as an additional insured A.T.I.M.A. until the Project is fully completed and accepted by the Owner and the

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Architect. **The Contractor for General Construction will be responsible for purchase of the Builder's Risk Insurance.**

§ 11.1.6 Before the Work is commenced, the Contractor shall forward to the Owner two copies of the Certificate of Insurance executed by an authorized representative of the insurance company and one copy of such to the Architect. Such Certificates shall contain a provision that coverages afforded under the policies will not be canceled until at least 30 day prior written notice has been given to the Architect. Further, the Contractor shall certify to the Owner that he has obtained similar certificates of insurance from each of his/her subcontractors before the Work commences, and that each subcontractor is covered by insurance of the identical character and in the identical amounts as the Contractor.

§ 11.1.7 In addition, the Contractor shall obtain and maintain a separate "Owner/Architect's Protective Policy" in the same amounts as specified above for the Contractor's insurance to protect the Owner and Architect as named insured, in the same amount as specified above for the Contractor's insurance, to protect the Owner and Architect, from contingent liability or liability for damages, expenses, attorney's fees, etc., which may arise from the Contractors or subcontractors' operations under the Owner/Architect Agreement. The above required insurance is not to be confused with professional liability insurance commonly referred to as errors and omissions insurance.

§ 11.1.8 The Contractor shall give prompt written notice to the Owner of all occurrences under the coverage of Article 11

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents, if required. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

(Paragraphs deleted)

§ 11.2.4 Boiler And Machinery Insurance

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.2.5 Loss Of Use Insurance

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused.

§ 11.2.6. If the Owner requests in writing that insurance for risks other than those described herein or for other special hazards be included in the property insurance policy, the Contractor shall, if possible, include such insurance, and the cost thereof shall be charged to the Owner by the appropriate Change Order.

§ 11.2.7 Before an exposure to loss may occur, the Contractor shall file with the Owner a copy of each policy that includes insurance coverages required by the Paragraph 11.1. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor

§ 11.6 Performance Bond and Payment Bond

§ 11.6.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

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

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

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

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

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

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

§ 12.2.1.1 The Contractor, within one working day after receiving written notice from the Architect of Work rejected, shall proceed to remove from the Site all materials condemned by the Architect, whether worked or unworked and to take down all portions of the Work which the Architect shall have by like written notice, rejected, and shall make good all work damaged or destroyed thereby, failure of the Contractor(s) to correct such work within seven (7) days receipt of such notice shall allow the Owner to correct such deficiencies through other Contractor(s) at a reasonable cost and deduct such expense(s) from the base contract sum of the Prime Contractor".

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

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

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

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

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

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

§ 12.3 Acceptance of Nonconforming Work

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

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

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

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

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

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

§ 13.4 Tests and Inspections

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

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

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

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

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

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

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, in accordance with State regulations, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.6 Written Notice

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.7 Time Limits on Claims

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work.

§ 13.8 ANTI-BULLYING

All contracted parties shall adhere to NJSA 18A:37-16, Anti-Bullying Notice.

§ 13.9 CRIMINAL HISTORY BACKGROUND CHECK

All Contracted parties shall adhere to NJSA 18A:6-7.1, Criminal History Background Check, applicable as stated in the statute.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

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

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

(Paragraphs deleted)

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

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed.

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(Paragraph deleted)

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

.1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;

.3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

.5 Bankruptcy Act and specifically 11 U.S.C., Paragraph 365;

.6 if Contractor makes a general assignment for the benefit of creditors;

.7 if a trustee or receiver is appointed for Contractor or for any of Contractor's property;

.8 if Contractor files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws;

.9 if the Contractor disregards the authority of the Architect;

.10 if the Contractor interferes with the Work of, or otherwise fails to cooperate with any other Contractor on the Project or the Owner's own forces;

.11 if the Contractor fails to comply with the directives of the Owner or otherwise fails to perform its obligation in accordance with the Owner's concept of the Project; or

.12 if the Contractor fails to adhere to the Contract Schedule or otherwise disregards any provision of the Contract Documents which makes time of the essence.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

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

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

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

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

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§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

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

- **.1** cease operations as directed by the Owner in the notice;
- **.2** take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- **.3** except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

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

§ 15.1.4 Continuing Contract Performance

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

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

§ 15.1.5 Claims for Additional Cost

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

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§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

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

(Paragraphs deleted)

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

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

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

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

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

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

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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 Sections9.10.5, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 LITIGATION

§ 15.4.1 Controversies, claims and any disputes involving the project or the Contract Documents shall be litigated in a court of competent jurisdiction in the State of New Jersey

(Paragraph deleted)

ARTICLE 16 - NEW JERSEY REQUIREMENTS FOR PUBLIC WORK

(Paragraph deleted)

§16.1 OVERTIME

§16.1.1 The Contractor or any subcontractor shall not employ any mechanic, worker or laborer engaged in the performance of the Work more than 8 hours in any one day in accordance with and subject to the exceptions named in Revised Statutes of New Jersey, Title 34, Chapter 10.

(Paragraph deleted)

§16.2 PREVAILING WAGES

(Paragraph deleted)

§16.2.1 Pursuant to Revised Statutes of New Jersey, Title 34, Chapter 11, Article 28 as amended, wages for all laborers, workers and mechanics employed by the Contractor or any Subcontractor for the Work shall not be less than the prevailing wages for work of a similar nature in the vicinity of the Project Site as fixed by the Commissioner of Labor and Industry and made a part of Division C - Conditions of the Contract.

(Paragraph deleted)

§16.2.2 In the event it is found that any worker employed by the Contractor or any Subcontractor covered by this Contract, has been paid a rate of wages less than the prevailing wage rate required to be paid by this Contract, the Owner may terminate the Contractor's or Subcontractor's right to proceed with the work or such part of the work as to which there has been a failure to pay required wages and to prosecute the work to completion or otherwise.

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(Paragraph deleted)

§16.2.3 The Contractor and Subcontractors shall comply with all legal requirements set forth in applicable prevailing wage laws.

§16.3 DOMESTIC MATERIALS

§16.3.1 The Contractor shall use only domestic construction materials in the performance of this Contract.

§16.3.2 Domestic construction material is defined as: Articles, Materials and Supplies mined or produced in the United States or Materials, Equipment and Supplies manufactured in the United States.

§16.4 RESIDENT CITIZENS PREFERENCE

§16.4.1 In this Contract, preference in employment shall be given to citizens of the State of New Jersey who have resided and maintained domiciles within the State for a period of not less than one year immediately prior to such employment in accordance with NJAC 34:9-2.

§16.4.2 If this section is not complied with, the Contract may be voidable by the Owner.

§16.4.3 Upon the demand of the Commissioner of Labor and Industry, the Contractor shall furnish a list of the names and addresses of all his Subcontractors.

§16.4.4 The Contractor shall keep a list of his employees, stating whether they are native born citizens or naturalized citizens, and in the case of naturalization, the date and the name of the court in which granted.

§16.5 EQUAL OPPORTUNITY - AFFIRMATIVE ACTION

§16.5.1 Pursuant to Chapter 127, Public Laws of New Jersey of 1975, as amended and supplemented from time to time the Contractor or Subcontractor agrees and guarantees to afford equal opportunity in performance of contract in accordance with an affirmative action program approved by the State Treasurer.

§16.5.2 DURING THE PERFORMANCE OF THIS CONTRACT, THE CONTRACTOR OR SUBCONTRACTOR AGREES AS FOLLOWS: SEE SPECIFICATION SECTION 004450 - AFFIRMATIVE ACTION QUESTIONNAIRE, FOR SPECIFIC LANGUAGE.

§16.6 NON-COLLUSION

§16.6.1 During the performance of this contract, the Contractor or Subcontractor agrees as follows: SEE SECTION 004230 - CERTIFICATION OF AUTHORITY, VERACITY, RELIANCE, NON-COLLUSION AND NON-DEBARMENT, FOR SPECIFIC LANGUAGE.

§16.8 DEFRAYMENT OF PREPARATION COST FOR CAD DISKS

§16.8.1 For each 1.44 megabyte 3.5" floppy computer disk requested by the Contractor, the Contractor shall pay to the Architect, $75.00 maximum to defray preparation cost incurred by the Architect.

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CAD FILE(S) RELEASE OF LIABILITY & INDEMNIFICATION AGREEMENT

This Release, dated _____, is given by the Releasor _____, referred to as "I" to The Design Collaborative, Architects and Planners, P.A., its agents, servants, employees and consultants referred to as "You". If one or more persons signs this Release, "I" shall mean each person who signs this Release.

1. Release. I release and give up any and all claims and rights which I may have against you or any other entity related to you providing me with the electronic CAD file(s) which contain information and/or drawings of a project known as _____.
I understand that these CAD file(s) are in no manner a contract document and has been provided to me by you as an accommodation to me for my convenience only. I understand that you are not responsible for any information which may be on or may be missing from the CAD file(s) provided to me.

I agree that I will indemnify you and hold you harmless from and against any and all claims, costs, judgements, penalties, or any other detriment whatsoever which may arise out of any changes which I make to any CAD file(s) which you provide to me regarding this project. I agree that this indemnification agreement shall be applicable and all costs, expenses, attorneys' fees, judgements, penalties or expenses of any kind which you incur as a result of a claim made against you arising out of the CAD file(s) or this project which you have provided to me will be paid unless and until it is determined by a court of competent jurisdiction or arbitration that the damages, fees, penalties, attorneys' fees, or any other expense of any kind were not caused by any change made to the CAD file(s) by me.

2. Who is Bound. I am bound by this Release and Indemnification Agreement. Anyone who succeeds to my rights and responsibilities, such as my heirs, family member or the executor of my estate is also bound. This Release and Indemnification Agreement is made for your benefit and all who succeed to your rights and responsibilities, such as your heirs or the executor of your estate.

3. Signatures. I understand and agree to the terms of this Release. If this Release is made by a corporation, its proper corporate officers shall sign and a corporate seal shall be affixed.

Witnessed or Attested By:	Releasor:
_____	_____
SIGNATURE:	SIGNATURE:
_____	_____
PRINTED NAME & TITLE:	PRINTED NAME & TITLE:
_____	_____
COMPANY NAME (IF APPLICABLE):	COMPANY NAME (IF APPLICABLE):
_____	_____
DATE:	DATE:

SECTION 007316 – INSURANCE REQUIREMENTS

PART 1-GENERAL

1.1 SUMMARY

A. Pursuant to Article 11 and Section 11.1 of the General Conditions, the Contractor shall provide the following minimum levels of insurance coverage:

General Liability:	Each Occurrence:	$ 1,000,000
	Damage to Rented Premises:	$ 100,000
	Medical Expenses:	$ 5,000
	Personal Injury:	$ 1,000,000
	General Aggregate – Per Project:	$ 2,000,000
	Products & Comp. Ops.:	$ 1,000,000
Automobile Liability:	Combined Single Limit:	$ 1,000,000
Excess/Umbrella Liability:	Each Occurrence:	$ 5,000,000
	Aggregate:	$ 5,000,000
Workers Compensation and Employers Liability:	Each Accident:	$ 500,000
	Disease-Ea Employee:	$ 500,000
	Disease-Policy Limit	$ 500,000
Builders Risk:	Duration of the project	Entire contract amount
Owner/Architect's Protective Policy	Amounts are same as above. See article 11.1.7 of the General Conditions for additional details.	

Note: Builder's Risk is provided for new construction and additions

B. Effective Date: Prior to or upon issuance of the Notice to Proceed.

C. Certificate Holder: Lenape Regional High School District Board of Education; 93 Willow Grove Road; Shamong, NJ 08088.

D. Additional Insureds: The Contractor shall name the following as additional insured parties on all insurance policies or endorsements, and each Certificate of Insurance: Lenape Regional High School District Board of Education; State of New Jersey; New Jersey Department of Education; and The Design Collaborative with respect to LRHSD Administration Building Various Upgrades.

E. The insurance certificates and policy endorsements shall state that the insurance policies are written to provide primary, non-contributory coverage.

F. The insurance shall be issued by insurance companies licensed to do business in the State of New Jersey and rated as A- or better as determined by A.M. Best Company or through a formal, fully funded self-insurance program authorized by law and acceptable to the Owner.

G. The insurance policies and certificates must remove all “X, C & U” exclusions from their policies.

H. The insurance policies and certificates shall remain current for the life of the School Facilities Project. Contractor further agrees to provide updated certificates prior to existing one expiring.

Coordinate and comply with requirements for Asbestos Abatement in the Project Manual.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 007316

SECTION 007319 – PROJECT SAFETY PLAN

This specification section is to be used in conjunction with the requirements within AIA Document A201. In the event of discrepancy, the stricter of the regulations shall prevail.

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PART 1-GENERAL

1.01 RESPONSIBILITIES

A. Each Trade Contractor shall appoint a representative who will be responsible to implement the requirements of this Safety Plan. An alternate representative, who shall have the same authority with respect to the provision of this Safety Plan, shall also be appointed. This representative, or the alternate, shall attend all job safety meetings. Both representatives shall be subject to approval of the Architect.

1.02 GENERAL REQUIREMENTS

A. STANDARDS-GENERAL

1. Each Trade Contractor is required to comply with the provisions of the 'Construction Safety Act' and the "Occupational Safety and Health Act of 1970', all addition and revisions thereto, as well as all other applicable Federal, State, and local requirements, to the extent that the provisions and standards thereto affect of work of the project.

2. It is emphasized that by law the Contractor shall be held responsible for providing and maintaining a safe and healthful place of employment for their employees. As such, the correction, or cost of correction, of unsafe actions or conditions shall remain the responsibility of the Contractor.

3. The possession, use, or distribution of alcohol, drugs, or firearms is prohibited on this project. Violators will be removed and banned from this site permanently.

4. All supervisors shall enforce these safety and health regulations.

5. Each Prime contractor will be responsible to develop and furnish to the Owner and Architect a site specific safety plan for this project. This site specific safety plan is a pre-requisite needed for approval of the first payment application.

1.03 FIRST AID AND ACCIDENT REPORTING

A. All injuries are to be reported to the Contractor and the Architect immediately. An accident report (First Report of Injury) shall be completed by the employee's supervisor and submitted to the Contractor and Architect within twenty-four (24) hours incident’s occurrence.

1. First Aid Treatment

a. Each trade contractor is required to have first aid equipment and supplies immediately available to their employees. Trade Contractor employees who are qualified in first aid should be identified and available during normal working hours.

2. Emergencies

a. In the event of an emergency, the Contractor and Architect is to be notified immediately as to the nature and location of the emergency. The Contractor will then coordinate the required emergency response.

3. Accident Investigation

    a. All accidents and injuries are to be investigated by the immediate supervisor as to cause and corrective actions required. All incidents involving hospitalization, regardless of the length of time of the hospitalization, may be subject to an investigation by a governmental agency or other. The area where the incident occurred will be cordoned off until further notice by the Architect

1.04 SAFETY TRAINING AND EMPLOYEE ORIENTATION

A. ORIENTATION - GENERAL

1. As soon as practical before work begins, all employees shall be briefed on the contents of this Safety Plan and the prime contractor's site specific safety plan by the Contactor's Safety Representative. This safety orientation will consist of:

    a. Information to acquaint the employee with special requirements at the work site, including security and traffic regulations;
    b. A description of the nature of the project;
    c. A description of any hazards that my be expected during the course of Work;
    d. Required work practices and job conduct;
    e. A warning that violations of safety rules may result in disciplinary action or dismissal.
    f. This orientation shall be documented in writing.

B. ORIENTATION - SPECIAL (HAZARD COMMUNICATION)

1. All Trade contractors are required to adhere to OSHA's Hazard Communication standard (29 CFR 1926.59):
2. All employees shall be trained by their employer as to the requirements of the standard and the Trade contractor's program.
3. All Material Safety Data Sheets (MSDSs) shall be collected and maintained by the Trade Contractor who purchases and/or uses any materials which are covered by the standard. In addition, these MSDSs shall be distributed to the Contractor, Architect and all other affected Trade Contractors at the site.
4. AU materials covered by the standard shall be properly labeled, handled, and stored.
5. Any employee who is assigned to a new or non-routine task or who may be exposed to specific hazards (i.e. confined space entry; work on, with or in proximity to toxic chemicals or substances; work in special areas; etc.) shall receive special orientation training by their employer as to those potential hazards unique to the task and the proper precautions to be observed.
6. The Contractor's Hazard Communication program is to be available for examination at the project safety office during normal hours.

C. TOOL BOX SAFETY TALKS

1. Each Trade Contractor shall conduct weekly safety training of their employees. These safety meetings shall be documented by subject, date and time, and attendance, with copies sent to

the Contractor and the Architect. Various training materials are available through trade associations and insurance carriers.

1.05 SUPPLEMENTARY REQUIREMENTS

A. PERSONAL PROTECTIVE EQUIPMENT

Protective devices and personal protective equipment shall be furnished by the Contractor for their employees as follows:

1. Head Protection: The wearing of nonconductive safety hats meeting the requirements of ANSI Z89.1 is mandatory in all construction areas.

2. Eye and Face Protection: Industrial safety glasses with side shields shall be worn as required by the work or where specified by the Contractor. Additional specialized eye and face protection may be required for such task as flame cutting, welding, or where an increased risk to eye or facial injury is present, or as specified by the Contractor.

3. Fall Protection (other than structural steel erection), Life lines and safety belts shall be used in all applications where required by Federal, State or local safety standards, or where there is a fall exposure of six (6) feet or more. Appropriate work platforms with proper guardrails or the use of safety nets which remove such fall exposures shall be considered adequate substitutes.

4. During structural steel erection, the requirements of 29 CFR 1926.750-761 (1926 Subpart R inclusive shall govern).

5. Hearing Protection: Ear protection devices shall be provided and their use required wherever it is not feasible to reduce the noise levels or duration of exposure to those specified on OSHA 1926.52, Table D-2, Permissible Noise Exposures.

6. Respiratory Protection: In emergencies, when controls required by OSHA 1925.55 fail or are inadequate to prevent harmful exposure to employees, appropriate respiratory protective devices shall be provided by the employer. Employees shall be instructed in the proper use and maintenance of these devices, and that their use is required.

7. Fit testing of cartridge respirators is required. Facial hair which affects the seal of the respirator will not be permitted.

8. Wearing Apparel: Appropriate work clothing shall be worn at all times to minimize the hazards from work:

    a. Shirts which cover the shoulders and torso (tee shirts are acceptable). Shirts or alternate protection which covers the entire arm may be required in certain circumstances.
    b. Shorts are prohibited.
    c. Occupational foot protection in accordance with 29 CFR 1926.96 is required.
    d. Loose clothing or jewelry which may catch or become entangled with equipment is prohibited.

1.06 FIRE PROTECTION

A. Transportation and/or Handling of Flammable or Combustible Liquids and Other Chemicals: Only containers approved by Underwriters' Laborites or DOT, and clearly labeled to identify contents shall be used for transporting flammable or combustible liquids. Safety cans with self-closing spouts and flash arresters are required for the handling and transporting of gasoline.

B. Prohibition of Open Fires: Open fires are prohibited.

C. Storage of Flammable or Combustible Liquids or Gases.

1. Flammable and combustible liquids or gases shall not be stored inside buildings. (Storage is defined as maintaining quantities in excess of what can be used in the course of normal work during the intended shift).

2. Vessels or tanks containing flammable or combustible liquids or gases shall be placed in a fuel storage area designated by the Architect. These will be located in a minimum of 75 feet from buildings, construction equipment, parking lots, etc. to minimize their exposure to a fire involving the tank.

3. Each Trade Contractor shall be responsible for compliance with the following:

a. Their containers shall be placed in diked or recessed areas to contain spills equivalent to the capacity of the containers. These areas shall be stoned or otherwise treated to prevent the growth of easily ignitable undergrowth.
b. Storage tanks shall be equipped with self-closing dispensing nozzles and shall be provided with atmospheric and emergency relief vents equipped with flame arresters.
c. Tanks or drums from which flammable liquids are dispensed shall be electrically grounded and shall be equipped with bonding wires to complete the grounding with the vessel into which the liquid is dispensed.

D. There shall be no smoking or open flame in flammable or combustible liquid or gas storage areas. Conspicuous and legible signs prohibiting smoking shall be posted by the Contractor.

E. The Contractor will provide portable, dry chemical fire extinguishers for the fuel storage area.

F. Portable Fire Extinguishers: Portable fire extinguishers suitable for the potential hazard shall be provided by each Trade Contractor for their equipment, office, building and work activities.

G. Flame Cutting and Welding (Hot Work): Any work involving open flame, or are heat producing equipment requires the prior authorization of the Architect. "Hot Work Permits" may be required as the Work progresses (i.e. buildings are occupied and services are activated). The Trade Contractor shall be responsible for ensuring the removal of all combustible or flammable materials in the area, and shall provide appropriate fire extinguishers and fire watch as required by the work. Welding flash screens shall be provided, placed and moved as necessary to prevent radiation injury to personnel by the Trade Contractor performing are welding.

H. Additional Precautions

1. Hoses/leads shall not be routed through doorways unless doorways unless the door is propped open and the hoses/leads protected from damage.

2. Hoses/leads must be bridged-over or supported a minimum of seven (7) feet above passageways, and shall not be supported from active conduit, process or sprinkler lines.

3. Hoses/leads are note permitted to cross stair treads.

4. Hoses/leads shall be appropriately routed or protected to prevent their damage from slag or sparks.

5. Hoses, leads, torches, gauges, cylinder valves and welding machines shall be inspected by daily user.

6. Compressed gas cylinders shall be shut-off at the valve and capped when not in actual use, and secured in an upright position during storage, transit and use.

7. Fuel gases shall be segregated from oxygen except during use.

8. Oil and grease must be kept away from oxygen regulators, hoses and fittings. Do not store wrenches, dies, cutters or other grease-covered tools, clothing, gloves or rags in the same compartment with oxygen equipment.

9. Torches and/or hoses must never be left in a vessel, tank or other enclosed container because of the potential hazard of explosion from their leakage.

10. Compressed gas cylinders shall not be hoisted using slings or by the valve protection cap. Use only carts or racks approved for hoisting.

11. Oxygen shall not be used as a substitute for compressed air or other gases (i.e. to operate pneumatic tools, blow-out lines, pressurizing vessels, etc.)

12. All oxyacetylene assemblies must have flash arresters installed at the regulators prior to use.

13. Adequate ventilation or appropriate respirators must be provided while working on galvanized material.

14. All work during electric welding must be grounded.

15. Stingers must be laid on conductive materials.

16. Spent rods shall be discarded in non-combustible containers.

17. Electric welders shall be shut-off at the end of the shift, or when not in use for extended periods.

1.07 HOUSEKEEPING

A. Materials shall be piled and stacked so that safe clearances are maintained and toppling is prevented. Loose overhead materials must be removed or made secure.

B. Spills shall be cleaned up or contained immediately. Spillage of fuel, oil or hazardous materials shall be reported to the Contractor and Architect immediately. On-site disposal of oil or hazardous material is prohibited.

C. Trash and garbage shall be placed by the Trade contractor into appropriate containers and disposed of as required.

D. Nails protruding from lumber shall be removed or bent over immediately.

E. Accumulations of refuse are not permitted.

F. Trash dumpsters will be located at the site by the General Contractor. The disposal of their contents will be the General Contractor's responsibility. Each Trade Contractor shall be responsible for disposing of their debris into these dumpsters (other than daily cleanup, which the General Contractor is responsible)

G. Unobstructed passageways for the movement of fire trucks, ambulances or similar emergency vehicles shall be maintained.

H. All loose and combustible materials shall be removed from roof areas at the end of each work day, or as wind and weather conditions dictate.

I. Drums, containers or vessels which have contained any hazardous or flammable substances shall be disposed of daily but the responsible Trade Contractor in accordance with Federal, State and local environmental requirements.

1.08 LADDERS

A. Ladders shall be inspected daily by the user and be free of defects in construction:

1. No broken or missing steps or rungs;
2. No splits or stress fractures in side rails;
3. Spreaders and other hardware shall be properly attached and in working order.
4. Defective ladders shall be removed from service or destroyed.

B. Ladders shall be of the proper size and of a load rating in accordance with 29 CFR 1926 subpart X (entirety)

C. Ladders shall not be painted.

D. Ladders shall be secured against accidental displacement (i.e. equipped with safety feet, lashed or guyed to a fixed anchorage, cleated, etc.)

E. Ladders shall not be set up in doorways or high traffic areas unless protected by warning signs and/or barricades.

F. Ladders shall not be set up on stairways.

G. While ascending or descending ladders, nothing should be carried that will prevent the user from holding on with both hands. A handline shall be used if it is necessary to raise or lower materials.

H. Ladders used for access to work areas must extend three (3) feet above the platform.

1.09 SCAFFOLDING

A. The footings and anchorage for scaffold shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement.

B. A safe means of access to and egress from the work level must be provided. Ladders used for access/egress must be secured at top and bottom. Ladder frame scaffolds must not be offset or used with other scaffold frames.

C. No scaffold shall be erected, moved, dismantled, or altered except under the supervision of competent persons. All scaffolds shall be erected plumb.

D. Scaffolds and their components shall be capable of supporting without failure at least four times their maximum intended load. This load shall not be exceeded.

E. Guardrails and toeboards shall be securely installed on all open sides and ends of platforms more than ten (10) feet above the ground or floor. Needle beam scaffolds, floats, or pickboards require the use of safety belts.

F. Scaffolds four (4) to ten (10) feet in height, having a minimum horizontal dimension in either direction of less than 45 inches, shall have standard guardrails installed on all open sides and ends.

G. Where persons are required to work or pass under the scaffold, scaffolds shall be provided with a screen (or the equivalent) between the toeboard and the guardrail, extending along the entire opening.

H. Scaffolds shall be tied into the structure, guyed or outrigged whenever their height exceeds four (4) times the minimum base dimension, and/or their length exceeds twenty (20) feet.

I. Personnel are not permitted to ride rolling scaffolds. Equipment or materials on the scaffold deck must either be removed or secure. Wheels shall be in the locked position when working on the scaffold deck.

J. Rolling scaffolds must only be used on smooth, level surfaces; otherwise the wheels shall be contained in wooden or iron channel which are level and stabilized.

K. No rigging from scaffold members unless catheads or well-wheels designed for such use are utilized. Whenever such systems are used, the personnel performing the work shall ensure that no personnel are exposed to falling material or equipment.

1.10 ELECTRICAL SAFETY REQUIREMENTS

A. RESPONSIBILITIES

1. The responsibility for the installation, testing and maintenance all permanent and fixed temporary electrical services and components shall be considered within the scope of the Electrical Contractor. The responsibility for the safe use of all portable electric power tools and equipment, extension cords, and secondary leads on welding equipment shall be considered within the scope of each Trade Contractor using such equipment. This responsibility shall be construed to include the inspection, maintenance and repair of cords

and tools outlined under the assured equipment grounding conductor program contained in this Safety Plan.

B. GROUNDING

1. Effective Grounding Defined. The path from circuits, equipment, structures, conduits or enclosures to ground shall be permanent and continuous, have ample capacity to safely conduct the current likely to be imposed, and have an impedance sufficiently low to limit the potential above ground and to result in the operation of the over current devices in the circuit.

    a. Ground Resistance. Driven rod electrodes shall, where practicable, have a resistance to ground not to exceed 25 ohms. Where the resistance is not as low as 25 ohms, two or more electrodes connected in parallel shall be used.
    b. Testing of Grounds. Grounding circuits shall be checked to ensure that the circuit between the ground and the grounded power conductor has a resistance which is low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current.

2. Temporary Wiring. All temporary power wiring (exclusive of two-wire festoon lighting systems) shall be effectively grounded in accordance with the National Electrical Code, Article 305 and 310.

    a. Precautions shall be taken to make any exposed live conductors (such as within power panels) inaccessible to unauthorized personnel.

3. Fixed Equipment. Exposed metal parts of fixed electrical equipment; not intended for the transmission of electrical current, shall be grounded.

    a. The exposed metal parts of portable and/or plug connected equipment shall be grounded.

    b. Portable tools and appliances protected by an approved system of double insulation, or its equivalent, need not be grounded. Where such an approved system is employed, they shall be distinctively marked and properly maintained.

    c. Extension cords sued with portable electric tools and appliances shall be of the three wire type.

    d. All 120 Volt, 15 and 20 amp female outlets on the site which are part of the temporary pour distribution system shall be protected by a ground fault circuit interrupter (provided by the Electrical Contractor); construction use of permanent 120 Volt, 15 and 20 amp outlets shall be protected by either temporary GFCI’s or an assured equipment grounding conductor program as identified below:

        (1) Assured Equipment Grounding Conductor Program. Each Trade contractor shall comply with the following minimum requirements for every 120 Volts, 12 and 20 amp tool, appliance or extension cords which is not connected to a ground fault circuit interrupter:

            (a) Each cord set, attachment cap, plug and receptacle of cord sets, and any equipment connected by cord and plug, except cord sets and receptacles which are fixed and not exposed to damage, shall be visually inspected before each

day's use for external defects, such as deformed or missing pins or insulation damage. Equipment found damaged or defective shall not be used until repaired.

(2) The following test shall be performed on all cord sets, receptacles which are not part of the permanent wiring of the building or structure, and cord and plug connected equipment required to be grounded:

(a) All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.
(b) Each receptacle and attachment cap or plug shall be tested for correct attachment of the equipment grounding conductor. The equipment grounding conductor shall be connected to its terminal.

(3) All required tests shall be performed:

(a) Before first use;
(b) Before equipment is returned to service following any repairs;
(c) Before equipment is used after any incident which can reasonably be suspected to have caused damage and
(d) At intervals not to exceed three (3) months, except that cord sets and receptacles which are fixed and not exposed to damage shall be tested at intervals not exceeding six (6) months.

(4) The Trade Contractor shall not make available nor permit the use by employees of any equipment which has not met the requirements of this section.

(5) Test performed as required in this paragraph shall be recorded. This test record shall be recorded. This test record shall identify each receptacle, cord set, and cord and plug connected equipment that passed the test, and shall indicate the last date it was tested or the interval for which it was tested. This record shall be kept by means of logs, color coding, or other effective means, and shall be maintained until replaced by a more current record. The record shall be made available on the jobsite for inspection by any affected employee, the Architect or other authorized agent.

1.10 TAG OUT/LOCK OUT PROCEDURES

A. GENERAL REQUIREMENTS

1. Competent personnel shall determine potential sources of energy for equipment of building services prior to starting work.
2. The equipment or building service shall be de-energized from all energy sources as determined above.
3. The device (s) used to de-energize the equipment or service shall by physically secured in the "safe" position and a Danger tag and lock affixed.
4. The equipment or service shall then be checked to verify a "zero energy state".
5. Equipment or services shall not be re-energized until all affected personnel are notified and cleared, and the system has been checked out by competent personnel.

a. *Energy Source" is defined to include electricity, compressed air (pneumatic systems), hydraulic systems, and corrosive, flammable or toxic substances.

B. SPECIFIC REQUIREMENTS

1. Notification. Prior to commencing work, Contractor, Architect and all affected Trade Contractors shall be notified of any shutdown of equipment or building services.

2. Determination of Energy Sources. With due consideration to the scope of work, all potential energy sources to the area of work shall be determined in advance by competent supervisory personnel. Special caution must be given to:

    a. Multiple Energy Sources;
    b. Residual energy;
    c. Remote ohms of equipment;
    d. De-energization and lock out.

3. Electrical. Service disconnects and switches furnishing power to the equipment or line upon which work is to be performed shall be opened (switch off) then locked in this position to prevent accidental engagement. A “Danger” tag and lock shall be affixed to the switch. This tag is to be dated and signed by the supervisor requesting the lock out. Where more than one crew or craft performs work on the system, each crew foreman shall affix a tag and lock on the disconnect. Multiple lock out devices shall be used. Lock keys or combinations shall be in the safe possession of the individual using the lock.

    a. CAUTION! Before any work is performed, a competent personal shall verify that the system is de-energized.

4. Mechanical. All electrically powered pumps, valves and control devices in the system upon which work is to be performed shall be placed in the “safe” condition, then locked out and tagged in accordance with the electrical tag out/lock out procedures above.

5. Mechanical isolating devices should also be used. Valves shall be placed in the “safe” positions, where possible. Slip blinds (“pancakes”) may be required on systems without mechanical valves. Where more than one crew or craft performs work on a system, each crew foreman shall affix a tag and lock to the physical isolating device.

6. Systems and equipment upon which work is to be performed shall be checked by a competent person to ensure a “zero energy state”.

7. Process equipment, vessels and piping shall be drained prior to penetration. Systems which have contained corrosive, toxic or flammable substances must be flushed or purged prior to starting work.

8. Release from Lock Out: No system shall be re-energized until all tags and locks are removed and system has been inspected to ensure safe operation. Locks and tags shall only be removed by authorized personnel.

9. The Electrical Contractor shall be responsible to provide tags and locks and shall be responsible to issue tags/locks to Trade Contractors and provide verification that the system is de-energized.

    a. ANYONE WHO VIOLATES THIS REQUIREMENT SHALL BE FIRED!

1.12 CONFINED SPACED ENTRY PROCEDURE

A. Whenever personnel must enter or perform work in or on a confined space, the precautions and procedures of this section must be adhered to. For the purpose of this section confined spaces are defined as enclosed areas which restrict: 1) the access or egress of personnel, and/or 2) ventilation. Such areas include but are not limited to: vessels and tanks, manholes, meter pits, electrical vaults, silos and hydraulic pits.

B. Consideration must be given to two major recognized hazards:

1. Fire or explosion, due to the accumulation or gases, mists, fumes or dusts;
2. Personal injury, impairment and death due to exposures to noxious or toxic gases as a result of inhalation or absorption through the skin, or suffocation due to lack of oxygen.

C. All activities involving work in confined spaces shall be reviewed with the Contractor Safety Representatives and a special permit issued prior to their commencement. The responsibility for the recognition and avoidance of all hazards, and provision of all necessary safety equipment is passed to the Trade Contractor performing the work.

D. All employees who must work on, in or enter a confined space must receive special hazard training by their employer as to:

1. Personal protective equipment requirements and their proper use.

2. Instruction as to the specific hazard (s) of the work to be performed.

3. Means and methods of egress.

4. Rescue and emergency procedures.

5. Forced mechanical ventilation of the confined space must be provided prior to and during operations to remove harmful vapors, mists and dusts, and/or to provide an adequate supply of breathable air. The method and equipment to provide this ventilation to the confined space shall be the responsibility of the Trade Contractor.

6. The atmosphere in the confined space shall be surveyed for oxygen and combustible gas prior to performance of any work. Where a potentially hazardous atmosphere is noted or suspected, continuous air sampling may be warranted. This shall be addressed prior to the commencement of work, based upon conditions at the beginning of work, but no less than daily. Where continuous air sampling is deemed necessary, a special procedure for this work shall be developed and agreed to in writing, and all personnel involved shall be instructed as to these requirements.

7. A “buddy system” shall be utilized whenever personnel enter a confined space. This requires that a properly trained employee of the Trade Contractor performing the work remains outside the confined space and be in constant visual or verbal contact with the employee(s) inside the confined space and attend the lifeline of any employee inside the space. This employee may pass tools but not have any other job which should require him to take his attention form the employee(s) working in the confined space. He must never leave his post unless properly relieved. In remote areas, or where assistance is not immediately available,

two-way radios for the propose of notifying rescue personnel are required and shall be provided by the Trade Contractor unless other provisions are made in writing.

8. If a change to conditions within or surrounding the confined space is noted (such as spills, leakage, or the introduction of solvents, toxic or flammable materials), work in the confined space shall cease at once. All equipment in use shall be shut off and all personnel shall exit the confined space. Re-entry is prohibited until a thorough survey of the area and confined space is conducted jointly by the Architect and the Trade Contractor.

1.13 WORK AREA PROTECTION

A. Contractors responsibilities for general protection of personnel in the work areas shall include, but are not limited to, the following:

1. Open Sided Floors and Roofs: Shall meet the requirements of 29 CFR subpart M – Fall Protection in its entirety
2. Floor Openings. Floor openings through which personnel or material can pass shall be protected by a cover or barricade, substantial enough to with stand any anticipated load. Covers shall be anchored and identified to prevent accidental removal or displacement. The General Contractor shall provide protection for all floor openings. Trade Contractor shall be responsible to re-install/modified protection at floor openings when their work requires removal of the General Contractors installed protection.

3. Warning Signs, Barricades, Flagging are to be used to warn personnel of potential or hidden hazards or advise of intermittent activities which might endanger outside personnel. They are not to be used in lieu of more effective protection.

B. Ventilation. Adequate ventilation or localized exhaust may be required to satisfy the work environment requirements of OSHA (1926.57). Such equipment as is necessary shall be furnished by the Trade Contractor unless other arrangements have been made in writing.

C. Illumination. If temporary illumination furnished by others is inadequate, the Trade Contractor is responsible to notify the Architect of these deficiencies.

D. Protection of Vertical Rebar. Employees shall not be permitted to work above vertically protruding reinforcing steel unless it has been covered or protected to eliminate the hazard to persons falling on it and being impaled.

1.14 EXCAVATION AND EQUIPMENT

A. Work Survey. The Trade Contractor responsible for the work shall determine the location and elevation of any and all underground utilities which may be affected by the work. This Trade Contractor shall make provisions to support all utility lines which may be disturbed during his activities.

B. Service De-energization. Whenever possible, underground services should be de-energized prior to excavating.

1. Excavation within four (4) feet of energized electrical services shall be performed manually until the service has been exposed to determine actual location and elevation. Mechanical

excavation may then proceed if the service is encased in concrete or rigid steel conduit. For plastic conduit or direct burial services, excavation shall continue to be performed manually.

2. Requirements for protective systems for employees in excavations shall meet the requirements of 29 CFR 1926 subpart P in its entirety

3. Excavation spoil, materials, and equipment shall be placed no closer than two (2) feet from the edge of any excavation.

4. Daily inspection of excavations shall be made by a competent Trade Contractor's supervisor. If evidence of possible cave-in or slide is apparent, all work in the excavation shall be stopped until al necessary precautions are taken to safeguard employees.

5. Excavations shall be inspected by a competent Trade Contractor's supervisor after every rainstorm or other occurrence which increases the potential for cave-in or slide.

6. Additional precautions by way of shoring and bracing shall be taken to prevent cave-ins or slides when excavations or trenches are made in locations adjacent to back filled excavations or where excavations are subjected to vibration, traffic or water flow.

7. Ladders or ramps shall be provided for the safe access and egress of personnel in trenches greater than four (4) feet in depth. For trenches greater than twenty-five (25) feet in length, a ladder or ramp shall be provided at twenty (20) foot intervals horizontally.

8. Employees exposed to vehicular traffic shall e provided with warning vests marked with or made of reflectorized or high visibility material.

9. All equipment left unattended at night, adjacent to a roadway in normal use, or adjacent to construction areas where work is in progress shall have appropriated lights, reflectors or barricades.

10. Trucks with dump bodies shall be equipped with positive means of support, permanently attached, and capable of being locked in position to prevent accidental lowering of bed during maintenance and repair work.

11. Trade Contractors whose activities involve cranes and other aerial equipment shall maintain a clearance of twenty (20) feet or more from overhead power lines or equipment.

12. All construction vehicles and mobile equipment shall either be: 1) equipped with an operable reverse signal ("back-up") alarm; or 2) accompanied by an employee of the appropriate Trade Contractor to safety guide the vehicle or equipment during its operation in reverse.

C. Cranes and Rigging

1. Trade Contractors whose activities require the use of cranes shall be responsible for their proper set up and operation.

2. Trade Contractors shall provide the Contractor and Architect evidence of annual inspection by an OSHA certified testing agency for each crane and associated rigging equipment brought onto the site. If one year has elapsed since the last inspection, or if the crane or its associated rigging has sustained any incident which may have resulted in damage, the crane

and the associated rigging shall be fully re-inspected with evidence provided. NO work shall proceed without evidence of a current inspection. No claims will be accepted for losses sustained by the Trade Contractor for delays caused by failure to comply with these requirements.

3. A daily inspection of the crane shall also be performed by the crane's operator or other competent person to ensure that the crane is safe for operation. This inspection shall be documented in writing by the person performing the inspection, and shall be available for examination at any time. In addition, a copy of this inspection report shall be provided monthly to the Contractor and Architect.

4. The contractor shall provide the Architect with a copy of the crane operator's license prior to the delivery of the crane to the project site.

5. Trade Contractors shall provide the Contractor and Architect evidence of the crane operator's license to operate the crane.

D. Additional Requirements:

1. Crane booms which extend more than 125 feet shall be affixed with an FAA approved flashing red obstruction light, unless they are retracted or lowered at the end of each day.

2. Use a shackle to hold two (2) or more choker eyes in a hook.

3. Visually inspect all hooks, slings, shackles, chain hoists, and beam clamps or trolleys before use. Defective and/or worn equipment shall be removed from service.

4. Rigging equipment, supports and attachments shall not be operated beyond designed load ratings.

5. Personnel are not permitted to ride the load, "headache" ball or any associated rigging.

6. Personnel are not permitted under suspended loads. Areas beneath hoisting activities shall be evacuated and warnings installed to prevent unauthorized entry.

7. Suspended loads shall not be left unattended. No swinging loads over occupied buildings

8. Fiber ropes or slings are not permitted around operations involving the use of corrosive substances.

9. Wire rope shall be removed from service after it has been exposed to fire or extreme heat, or burned form contract with electricity, or when visual inspection shows damaged strands, kinks, corrosion, or more than 10% of the wires broken in one lay.

1.15 PROTECTION OF THE PUBLIC

A. All necessary precautions shall be taken to prevent injury to the public or damage to property to others. Precautions to be taken shall include but are not limited to the following:

1. Work shall not be performed to any area occupied by the public unless specifically permitted by the contract or in writing by the Architect.

2. When it is necessary to maintain public use of work areas involving sidewalks, entrances to buildings, lobbies, corridors, aisles, stairways and vehicular roadways, Contractor shall protect the public with appropriate guardrails, barricades, temporary fences, overhead protection, temporary partitions, shields and adequate visibility.

3. Sidewalks, entrances to buildings, lobbies, corridors, aisles, doors or exits shall be kept clear of obstructions to permit safe entrance and exit of the public at all times.

B. Appropriate warnings and instructional safety signs shall be conspicuously posted where necessary. In addition, a signalman shall control the movement of motorized equipment in areas where the public might be endangered.

C. Sidewalks, sheds, canopies, catch platforms and appropriate fences shall be provided when it is necessary to maintain public pedestrian traffic adjacent to the erection, demolition or structural alteration of outside walls on any structural.

D. A temporary fence shall be provided around the perimeter of aboveground operations adjacent to public areas. Perimeter fences shall be at least six (6) feet high. They may be constructed of wood or metal frame and sheathing, wire mesh or a combination of both. When the fence is adjacent to a sidewalk near a street intersection, at least the upper section of fence shall be open wire mesh from a point not over four (4) feet above the sidewalk and extending at least twenty-five (25) feet in both directions from the corner of the fence or as otherwise required by local conditions.

1. Guardrails shall be provided on both sides of vehicular and pedestrian bridges, ramps, runways and platforms. Pedestrian walkways elevated above adjoining surfaces, or walkways within six (6) feet of the top of excavated slopes or vertical banks shall be protected with guardrails. Guardrails shall be made of rigid materials capable of withstanding a force of at least two hundred (200) pounds applied in any direction at any point in their structure. Their height shall be approximately forty-two (42) inches. Top rails and posts may be two (2) inches by four (4) inches dressed wood or the equivalent. Intermediate horizontal rails at mid-height and toeboards at platform level may be one (1) inch by six (6) inch wood or the equivalent. Posts shall not be over eight (8) feet apart.

E. Barricades meeting local requirements shall be provided where sidewalk shed or bridge, fences or guardrails above are not required between work areas and pedestrian walkways, roadways or occupied buildings. Barricades shall be secured against accidental displacement and shall be maintained in place except where temporary removal is necessary to perform the work. During the period a barricade is temporarily removed for the purpose of work, a watchman shall be placed at all openings.

F. Temporary sidewalks shall be provided when a permanent sidewalk is obstructed by the Trade Contractor’s operation. They shall be installed in accordance with the requirements listed above.

G. Warning lights shall be maintained from dusk to sunrise around excavations, barricades or obstructions in plant areas. Illumination shall be provided from dusk to sunrise for all temporary walkways in both plant and construction areas.

1.16 HIGHWAY WORK

A. All work on or adjacent to existing public roadways shall be performed in conformance to the requirements of ANSI D6.1-1971, Manual on Uniform Traffic Control Devices for Streets and Highways, NJDOT, Burlington County Traffic Engineer's Office and Medford Twp. Unless otherwise provided for in these contract documents, the Contractor shall be responsible for the furnishings, set-up, and maintenance of any and all traffic control signage, devices, barricades, arrow boards or flagmen.

1.17 DISASTER PLANNING

A. Specific requirements for the coordinating and handling of emergencies will be developed and updated as the work progresses, and distributed to each Trade Contractor. Unless provided for elsewhere in these documents, each Trade Contractor shall be responsible for reasonable and prudent precautions for the protection of their personnel, equipment, materials and installed work from weather and other Acts of God.

1.18 Additional Requirements

A. Failure to comply with any parts of this specification 007319- Project Safety Plan can result in the decision to withhold certification of payments.

B. The General Construction Contractor will serve as the overall Project Safety Coordinator and shall be responsible for all issues of safety and protection. Each Prime Contractor shall also designate a safety person at the job site from NTP to contract completion. The designated safety person shall be responsible for the safety of their work and for their workers and to make continuous inspections for all safety issues relating to his work. The Owner and their representatives, including, but not limited to the Architect are not responsible for safety on this project but will endeavor to promote safety. Each Contractor must comply with job Safety Requirements in addition to OSHA and local agency requirements. Failure to comply with safety issues will be grounds for withholding of payments.

C. Notify ARCHITECT immediately upon arrival of O.S.H.A. to the site.

D. The Contractor shall conform to all applicable New Jersey Department of Environmental Protection regulations

PART 2-MATERIALS

Not Used

PART 3-EXECUTION

Not Used

END OF SECTION 007319

SECTION 007336 – EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS

PART 1-GENERAL

1.1 SUMMARY

A. Equal Employment Opportunity Requirements as required by the State of New Jersey, Department of the Treasury.

B. Applicable statutes and regulations include, but are not limited to, *N.J.S.A. 10:2-1*, *N.J.S.A. 10:5-31*.

1.2 RELATED SECTIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.3 PERFORMANCE REQUIREMENTS

A. See enclosed Exhibit B

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 007336

EXHIBIT B

MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE
N.J.S.A. 10:5-31 et seq. (P.L.1975, c.127)
N.J.A.C. 17:27-1.1 et seq.

CONSTRUCTION CONTRACTS

During the performance of this contract, the contractor agrees as follows:

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will ensure that equal employment opportunity is afforded to such applicants in recruitment and employment, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Such equal employment opportunity shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

The contractor or subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex.

The contractor or subcontractor will send to each labor union, with which it has a collective bargaining agreement, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under this act and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The contractor or subcontractor, where applicable, agrees to comply with any regulations promulgated by the Treasurer, pursuant to N.J.S.A. 10:5-31 et seq., as amended and supplemented from time to time and the Americans with Disabilities Act.

When hiring or scheduling workers in each construction trade, the contractor or subcontractor agrees to make good faith efforts to employ minority and women workers in each construction trade consistent with the targeted employment goal prescribed by N.J.A.C. l7:27-7.2; provided, however, that the Dept. of LWD, Construction EEO Monitoring Program, may, in its discretion, exempt a contractor or subcontractor from compliance with the good faith procedures prescribed by the following provisions, A, B, and C, as long as the Dept. of LWD, Construction EEO Monitoring Program is satisfied that the contractor or subcontractor is employing workers

EXHIBIT B (*Cont*)

provided by a union which provides evidence, in accordance with standards prescribed by the Dept. of LWD, Construction EEO Monitoring Program, that its percentage of active "card carrying" members who are minority and women workers is equal to or greater than the targeted employment goal established in accordance with N.J.A.C. 17:27-7.2. The contractor or subcontractor agrees that a good faith effort shall include compliance with the following procedures:

(A) If the contractor or subcontractor has a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor shall, within three business days of the contract award, seek assurances from the union that it will cooperate with the contractor or subcontractor as it fulfills its affirmative action obligations under this contract and in accordance with the rules promulgated by the Treasurer pursuant to N.J.S.A. 10:5-31 et. seq., as supplemented and amended from time to time and the Americans with Disabilities Act. If the contractor or subcontractor is unable to obtain said assurances from the construction trade union at least five business days prior to the commencement of construction work, the contractor or subcontractor agrees to afford equal employment opportunities minority and women workers directly, consistent with this chapter. If the contractor's or subcontractor's prior experience with a construction trade union, regardless of whether the union has provided said assurances, indicates a significant possibility that the trade union will not refer sufficient minority and women workers consistent with affording equal employment opportunities as specified in this chapter, the contractor or subcontractor agrees to be prepared to provide such opportunities to minority and women workers directly, consistent with this chapter, by complying with the hiring or scheduling procedures prescribed under (B) below; and the contractor or subcontractor further agrees to take said action immediately if it determines that the union is not referring minority and women workers consistent with the equal employment opportunity goals set forth in this chapter.

(B) If good faith efforts to meet targeted employment goals have not or cannot be met for each construction trade by adhering to the procedures of (A) above, or if the contractor does not have a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor agrees to take the following actions:

(l) To notify the public agency compliance officer, the Dept. of LWD, Construction EEO Monitoring Program, and minority and women referral organizations listed by the Division pursuant to N.J.A.C. 17:27-5.3, of its workforce needs, and request referral of minority and women workers;

(2) To notify any minority and women workers who have been listed with it as awaiting available vacancies;

(3) Prior to commencement of work, to request that the local construction trade union refer minority and women workers to fill job openings, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade;

EXHIBIT B (*Cont*)

(4) To leave standing requests for additional referral to minority and women workers with the local construction trade union, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade, the State Training and Employment Service and other approved referral sources in the area;

(5) If it is necessary to lay off some of the workers in a given trade on the construction site, layoffs shall be conducted in compliance with the equal employment opportunity and non-discrimination standards set forth in this regulation, as well as with applicable Federal and State court decisions;

(6) To adhere to the following procedure when minority and women workers apply or are referred to the contractor or subcontractor:

(i) The contactor or subcontractor shall interview the referred minority or women worker.

(ii) If said individuals have never previously received any document or certification signifying a level of qualification lower than that required in order to perform the work of the construction trade, the contractor or subcontractor shall in good faith determine the qualifications of such individuals. The contractor or subcontractor shall hire or schedule those individuals who satisfy appropriate qualification standards in conformity with the equal employment opportunity and non-discrimination principles set forth in this chapter. However, a contractor or subcontractor shall determine that the individual at least possesses the requisite skills, and experience recognized by a union, apprentice program or a referral agency, provided the referral agency is acceptable to the Dept. of LWD, Construction EEO Monitoring Program. If necessary, the contractor or subcontractor shall hire or schedule minority and women workers who qualify as trainees pursuant to these rules. All of the requirements, however, are limited by the provisions of (C) below.

(iii) The name of any interested women or minority individual shall be maintained on a waiting list, and shall be considered for employment as described in (i) above, whenever vacancies occur. At the request of the Dept. of LWD, Construction EEO Monitoring Program, the contractor or subcontractor shall provide evidence of its good faith efforts to employ women and minorities from the list to fill vacancies.

(iv) If, for any reason, said contractor or subcontractor determines that a minority individual or a woman is not qualified or if the individual qualifies as an advanced trainee or apprentice, the contractor or subcontractor shall inform the individual in writing of the reasons for the determination, maintain a copy of the determination in its files, and send a copy to the public agency compliance officer and to the Dept. of LWD, Construction EEO Monitoring Program.

(7) To keep a complete and accurate record of all requests made for the referral of workers in any trade covered by the contract, on forms made available by the Dept. of LWD, Construction EEO Monitoring Program and submitted promptly to the Dept. of LWD, Construction EEO Monitoring Program upon request.

EXHIBIT B (*Cont*)

(C) The contractor or subcontractor agrees that nothing contained in (B) above shall preclude the contractor or subcontractor from complying with the union hiring hall or apprenticeship policies in any applicable collective bargaining agreement or union hiring hall arrangement, and, where required by custom or agreement, it shall send journeymen and trainees to the union for referral, or to the apprenticeship program for admission, pursuant to such agreement or arrangement. However, where the practices of a union or apprenticeship program will result in the exclusion of minorities and women or the failure to refer minorities and women consistent with the targeted county employment goal, the contractor or subcontractor shall consider for employment persons referred pursuant to (B) above without regard to such agreement or arrangement; provided further, however, that the contractor or subcontractor shall not be required to employ women and minority advanced trainees and trainees in numbers which result in the employment of advanced trainees and trainees as a percentage of the total workforce for the construction trade, which percentage significantly exceeds the apprentice to journey worker ratio specified in the applicable collective bargaining agreement, or in the absence of a collective bargaining agreement, exceeds the ratio established by practice in the area for said construction trade. Also, the contractor or subcontractor agrees that, in implementing the procedures of (B) above, it shall, where applicable, employ minority and women workers residing within the geographical jurisdiction of the union.

After notification of award, but prior to signing a construction contract, the contractor shall submit to the public agency compliance officer and the Dept. of LWD, Construction EEO Monitoring Program an initial project workforce report (Form AA-201) electronically provided to the public agency by the Dept. of LWD, Construction EEO Monitoring Program, through its website, for distribution to and completion by the contractor, in accordance with N.J.A.C. 17:27-7. The contractor also agrees to submit a copy of the Monthly Project Workforce Report once a month thereafter for the duration of this contract to the Dept. of LWD, Construction EEO Monitoring Program, and to the public agency compliance officer.

The contractor agrees to cooperate with the public agency in the payment of budgeted funds, as is necessary, for on-the-job and/or off-thejob programs for outreach and training of minorities and women.

(D) The contractor and its subcontractors shall furnish such reports or other documents to the Dept. of LWD, Construction EEO Monitoring Program as may be requested by the Dept. of LWD, Construction EEO Monitoring Program from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Dept. of LWD, Construction EEO Monitoring Program for conducting a compliance investigation pursuant to N.J.A.C. 17:27-1.1 et seq.

SECTION 007339 SEXUAL HARASSMENT STATEMENT

PART 1-GENERAL

1.1 SUMMARY

A. Sexual Harassment Statement.

1.2 RELATED SECTIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.3 PERFORMANCE REQUIREMENTS

During the performance of this Contract, the contractor agrees as follows:

A. The contractor or subcontractor, where applicable, will maintain an environment that is free from sexual harassment.

B. The contractor or subcontractor, where applicable, will make it clear to all staff and employees that sexual harassment is prohibited. No supervisory employee shall threaten or insinuate, either directly or indirectly, that an employee's refusal to submit to sexual advances will adversely affect the employee's continued employment, evaluation, compensation, assignment or advancement.

C. No supervisory employee shall promise or suggest, either directly or indirectly, that an employee's submission to sexual advances will result in any improvement in any term or condition of employment of an employee. Sexually harassing conduct committed by non-supervisory personnel is also prohibited.

D. Sexual harassment may include, but is not limited to verbal harassment or abuse, pressure for sexual activity, repeated remarks with sexual or demeaning implications, unwelcome touching, suggesting or demanding sexual involvement accompanied by implied or explicit threats.

C. The Owner expects all contractor representatives conducting business with the Owner to adhere to the Owner's established sexual harassment policy. Failure to comply with the Owner's policy in this area may result in the termination of the Contract.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 007339

SECTION 007343 WAGE RATE REQUIREMENTS

PART 1-GENERAL

1.1 SUMMARY

A. This Section includes:

1. Employment Requirements.
2. Prevailing Wage Rates

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.

1.3 EMPLOYMENT

A. Pursuant to *N.J.S.A. 34:9-2*, citizens of the State who have resided in the State not less than one (1) year shall be given preference in employment on public work.

B. Pursuant to *N.J.S.A. 34:10-1*, an 8 hour working day is established, as a condition of the Contract, for laborers, workmen and mechanics subject to exceptions named therein.

1.4 PREVAILING WAGE RATES

A. The Contractor and their subcontractors shall pay not less than the prevailing wage rate to workers employed in the performance of any contract for the project, in accordance with the rate determined by the Commissioner of the New Jersey Department of Labor pursuant to the provisions of *N.J.S.A. 34:11-56.25 et. seq.* shall be paid to workers employed in the performance of this contract in connection with this Project.

B. The Contractor shall comply with the following:

1. With each Application for Payment the Contractor shall submit to the Owner, a Certified Payroll Record, with an affidavit stating that all workmen have been paid the prevailing rate of wages through the most recent payroll period. Said payroll certification shall be submitted on New Jersey Department of Labor Form MW-30 or such other form as the Department of Labor may require.

2. The Contractor shall keep an accurate record showing the name, craft or trade, and actual hourly rate of wages paid to each workman employed by him in connection with this work. The Contractor shall preserve these records for 2 years from the date of the certification of the Final Application for Payment.

3. Upon request, the Contractor shall file written statements certifying to the amounts then due and owing to any and all workmen for wages due on account of the Work. The statement shall set forth the names of the person whose wages are unpaid and the amount due to each. The statements shall be verified by the oath of the Contractor.

4. The Contractor shall post the prevailing wage rates for each craft and job classification involved in the work, including the effective date of any changes thereof, in prominent and easily accessible places at the site of the work and at such place, or places as used to pay workmen their wages.

5. If the Contractor does not pay the itemized employee benefits to the workmen, as set forth in the Prevailing Wage Rate, it shall pay the value of said benefits directly to the employee on each pay day as part of wages.

C. The current Prevailing Wage Rates, as applicable for this Project are available for review at the offices of the Owner or from the Architect.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 007343

SECTION 007356 WORKER AND COMMUNITY RIGHT TO KNOW ACT REQUIREMENTS

PART 1-GENERAL

1.1 SUMMARY

A. It is required that the Contractor and/or their Subcontractors ensure that containers of substances belonging to the Contractor and/or their Subcontractors that are stored at the Owner's facility are properly Right To Know (RTK) labeled. Refer to *N.J.A.C. 8:59-5-10*.

B. Surveys of hazardous substances stored at the Owner's facility by the Contractor and/or their Subcontractors are to be provided to the Owner. Refer to *N.J.A.C. 8:59-2.2(h)*.

C. Material Safety Data Sheets (MSDS) from manufacturers, suppliers, Contractors, and Subcontractors must be provided to the Owner for all products present at, purchased for, and brought on-site at the Owner's facility, prior to the delivery of the subject material to the site. Refer to *N.J.A.C. 8:59-2.2(1)*.

D. All Contractors are to keep on file all MSDS information in their field office at the location where material is used.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 007356

SECTION 007371 TAX EXEMPTION

PART 1-GENERAL

1.1 SUMMARY

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

1.2 RELATED SECTIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.3 BUSINESS REGISTRATION ACT

A. Pursuant to the Business Registration Act *P.L. 2004, c.57*, the contractor and their subcontractors shall collect and remit to the Director of the Division of Taxation in the Department of the Treasury the use tax due pursuant to the "Sales and Use Tax Act, " *P.L. 1966, c.30* (*C.54:32B-1 et seq.*) on all their sales of tangible personal property delivered into the State of New Jersey.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 007371

SECTION 007372 BUSINESS REGISTRATION ACT REQUIREMENTS

PART 1-GENERAL

1.1 STATUTE

A. *N.J.S.A. 52:32-4, amended by P.L. 2004, c. 57* imposes the following requirements on the Contractor and all subcontractors that **knowingly** provide goods or perform services for the Contractor in fulfilling this contract.

B. Pursuant to N.J.S.A. 52:32-44, all Contractors who bid on the School Facilities Project may provide a copy of the business registration certification, issued by the Department of the Treasury, at the time of submission of their bid proposals to the District. If a Business Registration Certificate (BRC) is required in a bid, but not submitted with the bid, it would be an immaterial defect: curable by being filed prior to award of the contract. The Contractor must (a) obtain proof of valid business registration from a Subcontractor before entering a Contract with the Subcontractor and shall forward said business registrations to the District; (b) provide written notice to all Subcontractors that they are required to submit a copy of their business registration certificate to the Contractor; and (c) maintain and submit to the District a list of the names of any Subcontractors and their current addresses, updated as necessary during the course of the Contract performance, and to be complete and accurate before a request for final payment is made.

C. Pursuant to N.J.S.A. 52:32-44g, the Contractor and any Subcontractor providing goods or performing services under the Contract for work on a School Facilities Project, and each of their affiliates, shall, during the term of the Contract, collect and remit to the Director of the Division of Taxation in the Department of the Treasury the use tax on all their sales of tangible personal property delivered into the State.

1.2 BUSINESS REGISTRATION

A. No Contract shall be entered into by the Owner unless the contractor provides a copy of its business registration at the time a bid is submitted.

B. The Contractor shall provide written notice to its subcontractors and suppliers to submit proof of business registration to the Contractor.

C. Subcontractors through all tiers of the project must provide written notice to their subcontractors and suppliers to submit proof of business registration and subcontractors shall collect such proofs of business registration and maintain them on file.

D. Prior to receipt of final payment from the Owner, the contractor submit to the Owner an accurate list of all subcontractors and suppliers or attest that none was used.

E. A Contractor, subcontractor or supplier who fails to provide proof of business registration or provides false business registration information shall be liable to a penalty of $25 for each day of violation, not to exceed $50,000 for each business registration copy not properly provided or maintained under a contract with a contracting agency. Information on the laws and its requirements are available by calling (609) 292-9292.

1.3 SALES TAX

A. During the term of this contract, the contractor and its affiliates shall collect and remit, and shall notify all subcontractors and their affiliates that they must collect and remit, to the Director, New Jersey Division of Taxation, the use tax due pursuant to the Sales and Use Tax Act, *(N.J.S.A. 54:32B-1 et seq.)* on all their sales of tangible personal property delivered into the State of New Jersey.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 007372

SECTION 007374 NEW JERSEY SCHOOLS REQUIREMENTS

PART 1-GENERAL

1.1 SCHOOL FACILTIES PROJECTS

A. The Contractor acknowledges that these Projects are school facilities projects defined in *P.L. 2000, c.72*. Neither the State of New Jersey, nor any of its departments, agencies, board members or its employees is or will be a party to this Contract or any lower tier contract or subcontract. This Project is subject to the provisions of *N.J.S.A 18A:7G-15 et seq.* and the Contractor shall comply with all requirements set forth therein.

B. To obtain the funding, the Owner is required to comply with specific statures, regulations and contract provisions of the NJ Department of Education and other public agencies. The Contractor shall comply with any such requirements imposed upon the Owner in connection with the Project and to cooperate with the Owner so as to obtain and maintain the funding.

1.2 AUDIT & EXAMINATION

A. The Contractor shall permit the Development Authority, the Authority and the Unit of Fiscal Integrity and their agents to investigate, audit, examine and inspect in such manner and at such times as the Development Authority, the NJSDA, and the Unit of Fiscal Integrity deem necessary.

1.3 ANTI-DISCRIMINATION AND AFFIRMATIVE ACTION

A. The Contractor and its subcontractors shall comply with the anti-discrimination provisions of *N.J.S.A. 10:2-1 et seq.*, the New Jersey Law Against Discrimination, *N.J.S.A. 10:5-1 et seq.*, *N.J.A.C. 17:27-1.1 et seq.* and *N.J.A.C. 6A:7-1.8*. The Contractor shall, in addition, agree by contract and guarantee to afford equal opportunity in performance of this Agreement in accordance with an affirmative action program approved by the State Treasurer.

B. During the Term, the Owner and it's Contracted Parties shall abide by the following provisions and shall provide in any Contracts provisions as follows:

1. The Owner and it's Contracted Parties shall not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, martial status, affectional or sexual orientation or sex. The Owner and it's Contracted Parties shall take affirmative action to ensure that such applicants are recruited and employed, that employees are treated during employment without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation or sex. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Owner and it's Contracted Parties agree to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

2. The Owner and it's Contracted Parties shall, in all solicitations or advertisements for employees placed by or on behalf of the Owner and it's Contracted Parties, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation or sex.

1.4 APPLICABLE LAW

A. Applicable Law refers to federal and state laws and regulations including, but not limited to, *N.J.S.A. 52:38-1 et seq.*, the Educational Facilities Construction and Financing Act, *N.J.S.A. 18A:7G-1 et. seq.*, the Public Schools Contract Law, *N.J.S.A. 18A:18A-1 et. seq.*, and such rules promulgated thereunder, with which the Contractor and its other consultants and subcontractors, or the Owner, as the case may be, must comply.

B. Compliance with all applicable law. The Contractor shall cause the services to be provided in a manner consistent with Applicable Law as well as the level of care, skill and industry and professional standards required of those engaged in like endeavors under similar circumstances. The enumeration of applicable laws in this Contract shall not limit or restrict the Contractor's obligation to observe and comply with all Applicable Law that affects those engaged or employed on the Project by the Contractor or its consultants or subcontractors, the materials or equipment used by the Contractor or its consultants or subcontractors, or any other aspect of the performance of the Services whether or not enumerated herein. The Contractor shall monitor the performance of this obligation both as to itself and as to all of its consultants and subcontractors.

1.5 AUDIT AND INVESTIGATION

A. The Contractor shall permit the Unit of Fiscal Integrity, the New Jersey Department of Education, the New Jersey Department of Labor, the New Jersey Department of Community Affairs, and their duly authorized agents to investigate, audit, examine and inspect in such manner and at such times as these parties deem necessary. These parties shall have the right, at all reasonable times and without prior notice, to enter upon and examine, inspect and audit the Project and to make any copies or abstracts of any document or account of the Contractor, contractors and subcontractors. The Contractor shall keep those records and accounts for the Project as necessary in order to evidence compliance with Applicable Law, this Contract, regulations and all other requirements. The Contractor shall submit to the Department of Community Affairs, the Unit of Fiscal Integrity or their agents, at their request, such certifications, documents, reports and information related to the Project, as may be required. The Contractor shall permit Department of Community Affairs and the Unit of Fiscal Integrity and their agents to investigate, audit, examine and inspect in such manner and at such times as the NJSDA and the Unit of Fiscal Integrity deem necessary, including work product produced in connection with audits made by the Contractor or its accountants.

B. Fiscal records, supporting documents, and all other records of the Contractor which relate in any way to the Project shall be retained during the Term of this Contract and for ten (10) years thereafter, provided, however, if any litigation, claim or audit relating to the Project is commenced prior to such expiration, such records and documents shall be retained until all litigation, claims or audit findings involving the records have been resolved.

1.6 PROMPT PAYMENT OF SUBCONTRACTORS.

A. The Contractor shall comply with the provisions of *N.J.S.A. 52:32-40* and *52:32-41*, concerning the prompt payment of subcontractors or Subcontractors.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 007374

SECTION 011000 – SUMMARY (OF THE WORK)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Work covered by the Contract Documents.
2. Type of the Contract.
3. Work phases.
4. Work under other contracts.
5. Products ordered in advance.
6. Owner-furnished products.
7. Use of premises.
8. Owner's occupancy requirements.
9. Work restrictions.
10. Specification formats and conventions.

B. Related Sections include the following:

1. Division 00 Section "List of Drawings"
2. Division 00 Section "Project Schedule"
3. Division 01 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: TDC Project No. 8302

B. Project Location: District Offices for the Lenape Regional High School District
93 Willow Grove Road
Shamong, NJ 08088

C. Owner: Lenape Regional High School District
93 Willow Grove Road
Shamong, NJ 08088

D. Owner's Representative: Michael Jacobs, Director of Buildings and Grounds

E. Architect: The Design Collaborative
1940 Route 9 North
Cape May Court House, New Jersey 08210-1110

F. Project Coordinator: Michael Jacobs has been appointed by Owner to serve as Project Coordinator.

G. The Work consists of the following: The Work as defined by the General and Supplementary Conditions, the extent of which is covered in the Contract Documents and is described herewith (briefly) and without force of effect upon the Contract Documents.

1.4 WORK OF THE CONTRACT

A. The Work as defined by the General and Supplementary Conditions, the extent of which is covered in the Contract Documents and is described herewith (briefly) and without force of effect upon the Contract Documents.

1. CONTRACT FOR CONSTRUCTION – PROJECT DELINEATION. The scope of the work of this project is inclusive of the following. Refer to Architectural Drawings for a delineation of the complete scope of the Work:

TDC Project No. 8302 –Lenape Regional High School District - District Office Building Exterior Restoration and Improvements.

2. General Coordination responsibilities including the following:
   a. Coordination of the work with SubContractors active on the project site. All Contractors shall act in accordance with the schedule dictated by the Owner, and shall coordinate all construction activities through the General Contractor and Owner, as agreed and accepted by the Owner and Architect.

      i. General Construction, including, but not limited to
         1. Selective demolition responsibilities included within the scope of the project shall include the following Demolition of construction designated and required to accommodate the new work, including concrete ramps, landings and associated railing systems, existing asphalt shingle and metal roofing systems, building mounted drainage systems, exterior doors, door frames, framed steel and aluminum entrance vestibules and associated glazing systems, interior and exterior HVAC systems, accessories and related equipment designated.
            a. Demolition of construction designated and required to accommodate the new work, including ceiling alterations, non-asbestos containing floor finishes, doors, door frames as noted.
            b. Existing concrete construction as indicated and as required to accommodate the scope of the work proposed.
            c. Removal of wall mounted equipment and furnishings as designated and required to complete the scope of the proposed work
            d. Preparation of existing masonry wall and substrates as required to accommodate the proposed construction.

e. Patching of building finishes damaged or altered as a result of the work of this contract
f. Cutting, patching and restoration of existing interior and exterior finishes to the extent required to accommodate the work of this contract.

2. Installation of cementitious siding systems, trim, furring, insulation where indicated.
3. Site construction to the extent required to accommodate the proposed construction indicated including but not limited to alteration of existing storm systems to accommodate the work proposed.
4. Concrete construction where shown and as required to accommodate the new construction proposed.
5. Supply and installation of a new aluminum framed entrance systems for the Board Meeting Room Entrance, including glazing, doors, door frames and hardware as shown and indicated within the Contract Documents.
6. Supply and installation of new entrance carpet floor finishes within the new vestibule, including vinyl wall base and vinyl transition strips and reducers where flooring abuts adjacent floor finishes, including carpet finishes.
7. Construction of the extension of the existing roof framing systems over the proposed Board Meeting Room. Work shall include the new foundations, framing and finishes shown and required, new ceiling systems, and preparation for the installation lighting fixtures and other ceiling mounted devices.
8. Supply and installation of new asphalt shingle roofing and underlayment.
9. Structural repairs and modifications, including but not limited to roof and wall sheathing replacement as required to accommodate the scope of this project, as follows.

   NOTE 1: The scope of the Base Bid shall include the removal of up to 800 square feet of existing T&G roof sheathing and replacement with (25) 4’x8’ sheets of new 5/8” Exposure 1 CDX structural grade T&G plywood. The Contractor shall be compensated for plywood replacement in excess of this amount in accordance with the requirements of specification section 012200 - UNIT PRICES. The Owner shall be due a credit in accordance with specification section 012200 in the event that the total quantity of plywood replaced is less than the quantity noted.

   NOTE 2: The scope of the Base Bid shall include the removal of up to 320 square feet of existing wall sheathing and replacement with (10) 4’x8’ sheets of new 5/8” Exposure 1 CDX structural grade T&G plywood. The Contractor shall be compensated for plywood replacement in excess of this amount in accordance with the requirements of specification section 012200 - UNIT PRICES. The Owner shall be due a credit in accordance with specification section 012200 in the event that the total quantity of plywood replaced is less than the quantity noted.

10. Supply and installation of new structural grade wood sheathing to replace existing deteriorated material. Cost of the work shall in accordance with the Unit Price Schedule.
11. Replacement of existing metal roofing penetrations, flashings and accessories as delineated.
12. Replacement of existing doors as scheduled. Application of new joint sealant systems specified and delineated within the Contract Documents.
13. Supply and installation of new interior signage indicated.

ii. Structural Steel Construction, including, but not limited
   1. Miscellaneous steel framing and lintels as required to support and accommodate new and enlarged or altered door openings, new or relocated mechanical systems and roof openings.
   2. Supply and installation of railing systems designated.

iii. Mechanical Work, including, but not limited removal of existing mechanical systems as indicated and required, supply and installation of new mechanical systems scheduled and indicated. Equipment will be integrated into the BMS by the Owner's integration Contractor (AME Inc.).

iv. Electrical Work, including, but not limited removal of existing electrical systems as indicated and required, supply and installation of new electrical systems, devices, lighting fixtures and accessories, relocation of existing electrical work in designated to remain but in conflict with new construction proposed as a part of this contract, and supply and installation of new electrical services shown and required for a complete operating system. Operating systems shall include all mechanical systems, electrical operators and controls, and equipment scheduled to be provided as a part of this contract as well as under the scope of a separate contract(s).

3. RESPONSIBILITIES OF THE OWNER:
   a. Removal of all furnishings or loose equipment as required to accommodate the scope of this contract prior to the start of work and subsequent reinstallation of furnishings after final completion.
   b. Access to standard single phase electrical service for light power equipment and tools required to perform the work. The contractor shall be responsible for the supply of temporary generators for three phase electrical service when and if required.
   c. Provisions for access to the work area.

1.5 TYPE OF CONTRACT

A. Project will be constructed under one (1) lump sum bid for all the Work required to complete the project in its entirety.

1.6 WORK UNDER OTHER CONTRACTS

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

1.7 USE OF PREMISES

A. General: Contractor shall have limited use of premises for construction operations as indicated on Drawings by the Contract limits.

B. Use of Site: The contractors shall limit their use of the premises to construction activities in areas indicated; allow for Owner occupancy and use by the public. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits: Confine constructions operations to the contract limit line as defined within the contract civil engineering drawings.
2. Owner Occupancy: Allow for Owner occupancy of Project site and use by the public.
3. Driveways and Entrances: Keep driveways, parking areas, loading areas and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

    a. Schedule deliveries to minimize use of driveways and entrances.
    b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. The Contractor shall assume full responsibility for protection and safekeeping of products and materials supplied under their contract and stored at the Project Site.

1. The Owner may require any Contractor or Subcontractor to move stored products or materials under his control which may interfere with the operations of the Owner or and other Contractor.

2. The Contractor shall not unreasonably encumber the Project Site with materials or equipment. Confine stockpiling of materials and location of storage sheds and trailers to the areas approved by the Architect. If additional storage or work area shall be required, obtain and pay for the use of the additional storage or work areas needed for the operations of the Contract.

3. The Contractor shall lock automotive type vehicles and motorized construction equipment when parked and unattended to prevent unauthorized use.

4. The Contractor is responsible to keep the entire worksite clean. This includes parking areas, maneuvering areas, trailer areas, and storage areas. All areas shall be free from construction debris, mud, etc. as directed by the Architect At a minimum this will be done once a week but the frequency will change as directed by the Architect. Interior spaces shall be kept clean on a daily basis, exterior areas at a minimum will be done once a week but the frequency will change as directed by the Architect.

1.8 OWNER'S OCCUPANCY REQUIREMENTS

A. Partial Owner Occupancy: Owner will occupy the adjacent premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits, unless otherwise indicated.

1. Maintain access to existing walkways and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

B. Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
3. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of building.
4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

1.9 WORK RESTRICTIONS

A. On-Site Work Hours: Work shall be generally during normal business working hours of 7:00 am to 4:00 p.m. Monday through Friday, except otherwise indicated or required to comply with the project milestones.

1. Hours for noise generating activities. Activities which, in the opinion of the Architect, generate excess noise will not be permitted at any time during school hours

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Architect not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.

1.10 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 50-division format and CSI/CSC's "MasterFormat" numbering system.

1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
2. Division 01: Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

    a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.11 MISCELLANEOUS PROVISIONS

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. A.Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 00 and 01 Specification Sections, apply to this Section.

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. Related Sections include the following:

1. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders for allowances.
2. Division 01 Section "Unit Prices" for procedures for using unit prices.
3. Division 01 Section "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.
4. Divisions 02 through 49 Sections for items of Work covered by allowances.

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 ALLOWANCES

A. Allowance shall include all costs to the Contractor associated with products or materials ordered by Owner under the allowance including but not limited to freight, delivery, receiving and handling at site, labor installation, overhead and profit.

B. Use the allowance only as directed by the Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance. Work under the base scope of work is not to be paid for under the allowances.

C. Contractor's related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, insurance, equipment rental, and similar costs.

D. Change Orders authorizing use of funds from the allowance will include Contractor's related costs and reasonable overhead and profit margins.

E. At Project closeout, credit unused amounts remaining in the 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.

PART 2 - PRODUCTS (Not Used)

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. Contract Allowance No. A-GC-1: Include in the Base-Bid, an allowance of $100,000.00 for miscellaneous construction work as requested by the Architect, for work not included in the base scope of work.

END OF SECTION 012100

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 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.
   2. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
   3. Division 01 Section "Quality Requirements" for general testing and inspecting requirements.

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 material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

A. Unit Price No. UP-1: Removal and replacement of rotted or deteriorated wood blocking or nailers. Price per L.F.

B. Unit Price No. UP-2: ROOF SHEATHING: Removal and replacement of existing roof sheathing, price per 4’ x 8’ sheet of 5/8” Exposure 1 CDX Plywood. Specification section 011000, Summary” includes requirements for the removal and replacement of plywood sheathing under the scope of the Base Bid. The Contractor shall be compensated for plywood replacement in excess of this amount, and the Owner due a credit in the event that the total quantity of plywood replaced is less than the quantity noted in accordance with this unit price.

C. Unit Price No. UP-3: WALL SHEATHING: Removal and replacement of existing wall sheathing, price per 4’ x 8’ sheet of 5/8” Exposure 1 CDX Plywood. Specification section 011000, Summary” includes requirements for the removal and replacement of plywood sheathing under the scope of the Base Bid. The Contractor shall be compensated for plywood replacement in excess of this amount, and the Owner due a credit in the event that the total quantity of plywood replaced is less than the quantity noted in accordance with this unit price

END OF SECTION 012200

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Divisions 00 and 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. 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: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Lightning Protection Systems: ADD the costs associated with the work delineated within Specification Section 264113 – LIGHTNING PROTECTION SYSTEM ALTERATION AND RECERTIFICATION, including inspection, evaluation, testing, repair, modification, alteration and recertification of the existing lightning protection system serving the existing building, including the wood-framed roof, roof-mounted equipment, conductors, bonding connections, grounding electrodes, and associated components.

Refer to the Contract Drawings and Specification Section 264113 for additional information.

Award of this Alternate is priority number 1.

Under the base bid, no provisions shall be made for the construction of the storage mezzanine.

END OF SECTION 012300

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections include the following:

1. Division 01 Section "Allowances" for procedural requirements for handling and processing allowances.
2. Division 01 Section "Unit Prices" for administrative requirements for using unit prices.
3. Division 01 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.4 PROPOSAL REQUESTS

A. When any change in the Work, regardless of the reason therefore, requires or is alleged to require an adjustment in Contract Time, such request for time adjustment shall be submitted by the Contractor as part of the change proposal.

1. Any Change Order approved by the Owner and for which payment is accepted by the Contractor, in which no adjustment in Contract Time is stipulated, shall be understood to mean that no such adjustment is required by reason of the change, and any and all rights of the Contractor or any subsequent request for adjustment of Contract Time by reason of the change is waived.

B. Request by the Contractor for adjustment of the Contract Amount regardless of the reason therefore, shall be submitted to the Architect with itemized labor and material quantities and unit prices to permit proper evaluation of the request.

1. A submission by the Contractor containing unsubstantiated lump sum requests for adjustment of the Contract Amount will not be considered by the Architect. The Architect will not be liable for any delay incurred by reason of the Contractor's failure to submit satisfactory justification and back-up with any request for adjustment to the Contract Amount.

C. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request or 20 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

D. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Division 01 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

E. Proposal Request Form: Use AIA Document G709 for Proposal Requests forms.

1.5 ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, base each Change Order proposal on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
3. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

1.6 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, the Architect will issue a Change Order for signatures of Owner, Architect and Contractor on AIA Document G701 form.

1.7 CONSTRUCTION CHANGE DIRECTIVE

A. Change Directive: Architect may issue a Change Directive on AIA Document G714 form included. Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections include the following:

1. Division 01 Section "Allowances" for procedural requirements governing handling and processing of allowances.
2. Division 01 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
3. Division 01 Section "Unit Prices" for administrative requirements governing use of unit prices.
4. Division 01 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.

1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

a. Application for Payment forms with Continuation Sheets.
b. Submittals Schedule.
c. Contractor's Construction Schedule.

2. Submit the Schedule of Values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment. No Application for Payment shall be processed without an approved schedule of values.
3. Subschedules: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the Schedule of Values:

    a. Project name and location.
    b. Name of Architect.
    c. Architect's project number.
    d. Contractor's name and address.
    e. Date of submittal.

2. Submit draft of AIA Document G703 Continuation Sheet/Schedule of Values.

3. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:

    a. Related Specification Section or Division.
    b. Description of the Work.
    c. Name of subcontractor.
    d. Name of manufacturer or fabricator.
    e. Name of supplier.
    f. Change Orders (numbers) that affect value.
    g. Dollar value.

        1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items to account for different phases and for principal subcontract amounts, where appropriate. Include separate line items under required principal subcontracts for operation and maintenance manuals, punch list activities, Project Record Documents, and demonstration and training in the amount of 5 percent of the Contract Sum. Include separate line items under required principal subcontracts for:

    - Operation and maintenance manuals - $2,500.
    - Project Record Documents - $2,500.
    - Demonstration and training - $5,000.

5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

    a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.

7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
9. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

    a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.

10. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

    1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

    2. No Applications for Payment will be processed without Certified Payrolls.

B. Payment Application Times: The date for each progress payment is a calendar month. The period of construction Work covered by each Application for Payment is a calendar month.

C. Payment Application Times: The pencil copy of the progress payments shall be submitted to the Architect by the 20th of each month for review and comment. The final copy of the Application for Payment shall be submitted to Architect by the 5th of each month.

D. Payment will be made in accordance with N.J.S.A. 2A:30A-2.

E. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.

F. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

G. Transmittal: Submit 4 signed and notarized original copies of each Application for Payment to Engineer by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments as required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic's lien including but not limited to subcontractors, sub-subcontractors, and suppliers arising out of the Contract and related to the Work covered by the payment.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.

I. Initial Application for Payment: Administrative actions and submittals that must precede the submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of Values.
3. Contractor's Construction Schedule (preliminary if not final).
4. Products list.
5. Schedule of unit prices.
6. Submittals Schedule (preliminary if not final).
7. List of Contractor's staff assignments.
8. List of Contractor's principal consultants.
9. Copies of building permits.
10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
11. Initial progress report.
12. Report of preconstruction conference.
13. Certificates of insurance and insurance policies.
14. Performance and payment bonds.
15. Data needed to acquire Owner's insurance.
16. Initial settlement survey and damage report if required.
17. Project Safety Plan.

J. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion for a portion of the work, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the portion of the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

K. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. Coordination Drawings.
2. Administrative and supervisory personnel.
3. Project meetings.
4. Requests for Interpretation (RFIs).

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.

C. Related Sections include the following:

1. Division 01 Section "Construction Progress Documentation" for preparing and submitting Contractor's Construction Schedule.
2. Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

1.4 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work.

Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

C. 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.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.5 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings space for efficient installation of different components & for installation of products and materials fabricated by separate entities.

1.6 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1. Include special personnel required for coordination of operations with other contractors.

1.7 PROJECT MEETINGS

A. Construction Meetings: Schedule and conduct meetings and conferences at the project site on an "as needed" basis until the coordination drawings, as described in part 1.5 B of this section, are developed and accepted by signature by all prime contractors IAW with the milestone dates stipulated in the project documentation.

B. Preconstruction Conference: The Architect shall Schedule a preconstruction conference before starting construction, at a time convenient to Owner, Contractor(s) and Architect, but no later than 14 days after issuance of the Notice to Award. The conference at the Project site or another convenient location. The meeting is to review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Owner, Architect, and their consultants; each Prime Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discussion of items of significance that could affect progress, including the following:

a. Tentative construction schedule.
b. Phasing.
c. Critical work sequencing and long-lead items.
d. Designation of key personnel and their duties.
e. Procedures for processing field decisions and Change Orders.
f. Procedures for RFIs.
g. Procedures for testing and inspecting.
h. Procedures for processing Applications for Payment.
i. Distribution of the Contract Documents.
j. Submittal procedures.
k. Preparation of Record Documents.
l. Use of the premises.
m. Work restrictions.
n. Owner's occupancy requirements.
o. Responsibility for temporary facilities and controls.
p. Construction waste management and recycling.
q. Parking availability.
r. Office, work, and storage areas.
s. Equipment deliveries and priorities.
t. First aid.
u. Security.
v. Progress cleaning.

w. Working hours.

3. Minutes: Architect will record and distribute meeting minutes.

C. Project Meetings: Conduct a project meeting at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

a. The Contract Documents.
b. Options.
c. Related RFIs.
d. Related Change Orders.
e. Purchases.
f. Deliveries.
g. Submittals.
h. Review of mockups.
i. Possible conflicts.
j. Compatibility problems.
k. Time schedules.
l. Weather limitations.
m. Manufacturer's written recommendations.
n. Warranty requirements.
o. Compatibility of materials.
p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.
u. Installation procedures.
v. Coordination with other work.
w. Required performance results.
x. Protection of adjacent work.
y. Protection of construction and personnel.
z. Coordination Drawings

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Appropriate Prime Contractor shall prepare and Distribute minutes of the meeting to each party present and to parties who should have been present.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Project Meetings: Conduct Project meeting every other week. Add the following- At the last two months prior to the projected date of completion, these meetings will be moved to a weekly basis.

1. Attendees: In addition to representatives of Owner and Architect, each Prime Contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

        1) Review schedule for next period.

    b. Review present and future needs of each entity present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Status of submittals.
        4) Deliveries.
        5) Off-site fabrication.
        6) Access.
        7) Site utilization.
        8) Temporary facilities and controls.
        9) Work hours.
        10) Hazards and risks.
        11) Progress cleaning.
        12) Quality and work standards.
        13) Status of correction of deficient items.
        14) Field observations.
        15) RFIs.
        16) Status of proposal requests.
        17) Pending changes.
        18) Status of Change Orders.
        19) Pending claims and disputes.
        20) Documentation of information for payment requests.

3. Minutes: Architect will record and distribute to Contractor the meeting minutes.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

5. Foreman's Meeting: Weekly Foreman's meetings shall be conducted throughout the course of construction. This meeting will include the supervising foreman of each of the Prime Contractors for the projects, any and all principal sub-contracts active at the project site and the Architect to discuss upcoming work, immediate coordination with other trades and immediate project schedule activities. The Contractor for General Construction shall conduct the Foreman's Meeting, and shall distribute minutes of the meeting.

1.8 REQUESTS FOR INTERPRETATION (RFIs)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.

1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:

1. Project name.
2. Date.
3. Name of Contractor.
4. Name of Architect.
5. RFI number, numbered sequentially.
6. Specification Section number and title and related paragraphs, as appropriate.
7. Drawing number and detail references, as appropriate.
8. Field dimensions and conditions, as appropriate.
9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
10. Contractor's signature.
11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.

C. Hard-Copy RFIs: .

1. Identify each page of attachments with the RFI number and sequential page number.

D. Software-Generated RFIs: Software-generated form with substantially the same content as indicated above.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.

E. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow seven working days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

a. Requests for approval of submittals.
b. Requests for approval of substitutions.
c. Requests for coordination information already indicated in the Contract Documents.
d. Requests for adjustments in the Contract Time or the Contract Sum.
e. Requests for interpretation of Architect's actions on submittals.
f. Incomplete RFIs or RFIs with numerous errors.

2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

F. On receipt of Architect's action, the Contractor shall update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

G. RFI Log: The Contractor shall prepare, maintain, and submit a tabular log of RFIs organized by the RFI number.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Contractor's Construction Schedule.
   2. Submittals Schedule.
   3. Daily construction reports.
   4. Material location reports.
   5. Field condition reports.
   6. Special reports.

B. Related Sections include the following:
   1. Division 01 Section "Payment Procedures" for submitting the Schedule of Values.
   2. Division 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
   3. Division 01 Section "Submittal Procedures" for submitting schedules and reports.
   4. Division 01 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 SUBMITTALS

A. Submittals Schedule: Submit six copies of schedule. Arrange the following information in a tabular format:
   1. Scheduled date for first submittal.
   2. Specification Section number and title.
   3. Submittal category (action or informational).
   4. Name of subcontractor.
   5. Description of the Work covered.
   6. Scheduled date for Architect's final release or approval.

B. Daily Construction Reports: Submit six copies at weekly intervals.

C. Material Location Reports: Submit six copies at weekly intervals.

D. Field Condition Reports: Submit six copies at time of discovery of differing conditions.

E. Special Reports: Submit six copies at time of unusual event.

1.4 QUALITY ASSURANCE

A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the Contractor's Construction Schedule, including, but not limited to, the following:
   1. Review software limitations and content and format for reports.
   2. Verify availability of qualified personnel needed to develop and update schedule.
   3. Discuss constraints, including phasing, work stages, area separations, interim milestones, and partial Owner occupancy.
   4. Review delivery dates for Owner-furnished products.
   5. Review schedule for work of Owner's separate contracts.
   6. Review time required for review of submittals and resubmittals.
   7. Review requirements for tests and inspections by independent testing and inspecting agencies.
   8. Review time required for completion and startup procedures.
   9. Review and finalize list of construction activities to be included in schedule.
   10. Review submittal requirements and procedures.
   11. Review procedures for updating schedule.

1.5 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from parties involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
   1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
   2. Initial Submittal: Submit prior to initial application for payment. Submit concurrently with preliminary bar-chart schedule or network diagram. Include all submittals in the schedule. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.
4. Shop drawing log and schedule is to be updated and submitted at each job meeting along with job meeting report form.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.
   1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
   1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
   2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
   3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
   4. Startup and Testing Time: Include not less than 30 days for startup and testing.
   5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.

C. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

2.3 SCHEDULE UPDATE

A. Each Prime/Subcontractor is required to attend and participate in a CPM update review meeting with the GC and Architect on a monthly basis. Attendance is mandatory and every effort will be made to have the scheduling meetings immediately following a job meeting. Each Prime/Subcontractor will supply update information including a complete and accurate report of procurement items, and work activities. If the information is not submitted, General Contractor will provide information available at the time of the meeting. The schedule update information will include, but not be limited to:
   1. Actual start dates
   2. Actual completion dates
   3. Activity percent completion with actual start date
   4. Remaining duration of activities in progress

B. All schedule update information outlined above will be reviewed by Architect at the update meeting. GC shall provide Architect with all reports as specified in previous paragraphs

within 5 calendar days of the meeting. No logic, original duration, or other changes shall be made to the initial schedule without approval from Architect.

C. The GC shall then prepare an eight (8) week look-ahead bar chart that will be issued to all at the next job meeting. A copy of the other scheduling documents will be available to each Prime Contractor for review at the jobsite trailer.

2.4 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions.
7. Accidents.
8. Meetings and significant decisions.
9. Unusual events (refer to special reports).
10. Stoppages, delays, shortages, and losses.
11. Meter readings and similar recordings.
12. Emergency procedures.
13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial Completions and occupancies.
19. Substantial Completions authorized.

B. Material Location Reports: At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.

C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.5 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special

report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Retain Scheduling Consultant: The contractor may engage, at his option, a consultant to provide planning, evaluation and reporting of the construction schedule if Contractor does not employ skilled personnel with experience in CPM scheduling and reporting techniques. Qualifications of in-house or scheduling consultant evaluation must be submitted for approval.

B. Meetings: Scheduler shall attend all meetings related to Project progress, alleged delays, and time impact.

C. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress activities. Issue schedule one week before each regularly scheduled progress meeting.
   1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
   2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
   3. As the Work progresses, indicate Actual Completion percentage for each activity.

D. Distribution: Distribute copies of approved schedule to Architect and Owner, separate contractors, testing and inspecting agencies and other parties identified by Contractor with a need-to-know schedule responsibility.
   1. Post copies in Project meeting rooms and temporary field offices.
   2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in performance of construction activities.

END OF SECTION 013200

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 Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Sections include the following:

1. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
2. Division 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
3. Division 01 Section "Quality Requirements" for submitting test and inspection reports and for mockup requirements.
4. Division 01 Section "Closeout Procedures" for submitting warranties.
5. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
6. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
7. Division 01 Section "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of Owner's personnel.
8. Divisions 02 through 33 Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of the Contract Drawings will be available for purchase by the Contractor from the Architect for Contractor's use in preparing submittals. Refer to specification section 006519 Release of Liability Regarding Cad Disc.

B. Submittals shall be submitted in accordance with the flow charts at the end of this specification section.

C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

D. Submittals Schedule: Comply with requirements in Division 01 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

E. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 14 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 14 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 14 days for review of each submittal.

F. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
3. Include the following information on label for processing and recording action taken:

    a. Project name.
    b. Date.
    c. Name and address of Architect.
    d. Name and address of Contractor.
    e. Name and address of subcontractor.
    f. Name and address of supplier.
    g. Name of manufacturer.
    h. Submittal number or other unique identifier, including revision identifier.

        1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

i. Number and title of appropriate Specification Section.
j. Drawing number and detail references, as appropriate.
k. Location(s) where product is to be installed, as appropriate.
l. Other necessary identification.

G. Deviations: Highlight, encircle**,** or otherwise specifically identify deviations from the Contract Documents on submittals.

H. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect**.**
2. Additional copies submitted for maintenance manuals wil**l** be marked with action taken and will be returned.

I. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review received from sources other than Contractor.
1. Transmittal Form: Provide locations on form for the following information:

a. Project name.
b. Date.
c. Destination (To:).
d. Source (From:).
e. Names of subcontractor, manufacturer, and supplier.
f. Category and type of submittal.
g. Submittal purpose and description.
h. Specification Section number and title.
i. Drawing number and detail references, as appropriate.
j. Transmittal number, numbered consecutively.
k. Submittal and transmittal distribution record.
l. Remarks.
m. Signature of transmitter.

2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same label information as related submittal.

J. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked.

K. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms. The Architect will not be responsible for distribution of contractors submittals to that contractors subcontractor, or to another prime contractor.

L. Use for Construction: Use only final submittals with mark indicating action taken by Architect.

1.5 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

A. General: At Contractor's written request, copies of Architect's CAD files will be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:

1. Refer to specification section 006519 Release of Liability Regarding Cad Disc

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

1. Submit electronic submittals directly to extranet specifically established for Project.

2. All shop drawings and samples are to be submitted by the Contractor to the Architect for review. Each sheet of the shop drawings shall identify the project, contractor, subcontractor and fabricator or manufacturer and the date of the drawings. All shop drawings shall be numbered in consecutive sequence and each sheet shall indicate the total number of sheets in the set.

3. Substitutions: All substitutions or deviations from plans and specs must be clearly noted as such on all shop drawings. Contractor shall identify, coordinate and pay for any additional requirements as a result of substitutions, deviations, etc., including necessary change orders and additional work of other trades. In addition, Substitution submittals shall be submitted no later than 30 days after notice to proceed to provide time for comparison review.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

a. Manufacturer's written recommendations.
b. Manufacturer's product specifications.
c. Manufacturer's installation instructions.
d. Standard color charts.
e. Manufacturer's catalog cuts.
f. Wiring diagrams showing factory-installed wiring.
g. Printed performance curves.
h. Operational range diagrams.
i. Mill reports.
j. Standard product operation and maintenance manuals.
k. Compliance with specified referenced standards.
l. Testing by recognized testing agency.
m. Application of testing agency labels and seals.

n. Notation of coordination requirements.

4. Submit Product Data before or concurrent with Samples.
5. Number of Copies:
   a. Standard drawings, brochures and printed data sheets shall be submitted one (1) electronic copy in "Adobe" PDF format for review and processing by the Architect and distribution to the other Contractors, if applicable. The contractor shall be responsible for distribution of approved submittals to all subcontractors and other prime contractors. The contractor shall be required to submit four signed and sealed copies of the shop drawings wherever signed and sealed copies are required by the contract documents.

C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number and title of appropriate Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

   a. Number of Samples: Submit **two** full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect**,** will return submittal with options selected.

5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

   a. Number of Samples: Submit four sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample**.**

1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

D. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product.
2. Number and name of room or space.
3. Location within room or space.
4. Number of Copies: Submit six copies of product schedule or list, unless otherwise indicated. Architect will return two copies.

a. Mark up and retain one returned copy as a Project Record Document.

E. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation" for Architect's action.

F. Submittals Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."

G. Application for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."

H. Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."

I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.
4. Number of Copies: Submit six copies of subcontractor list, unless otherwise indicated. Architect will return two copies.

a. Mark up and retain one returned copy as a Project Record Document.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Architect will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

3. Test and Inspection Reports: Comply with requirements specified in Division 01 Section "Quality Requirements."

B. Coordination Drawings: Comply with requirements specified in Division 01 Section "Project Management and Coordination."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

L. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "Quality Requirements."

M. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

N. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

O. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."

Q. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

R. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

S. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

T. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

U. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Architect.

1. Architect will not review submittals that include MSDSs and will return the entire submittal for resubmittal.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. Final Unrestricted Release: Where submittals are marked "No exception taken," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.

2. Final-But-Restricted Release: When submittals are marked "Make corrections noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.

3. Returned for Resubmittal: When submittal is marked "Resubmit" do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.

4. Do not permit submittals: Marked “Rejected or Revise and Resubmit to be used at the project site, or elsewhere work is in progress.

5. Returned for new submittal: When submittal is marked “Rejected” do not proceed with that part of the work covered by the submittal, including purchasing, fabrication, delivery or other activity. Prepare a new submittal in accordance with the notions; Provide new submittal without delay. Repeat if necessary to obtain a different action mark.

6. Additional information requested: When submittal (or portion of that submittal) is marked "SUBMIT SPECIFIED ITEM", submit information requested. Prepare item for submittal and submit without delay.

7. Completed submittal: When submittal is marked "NO FURTHER SUBMISSION REQUIRED", information received is adequate and no further data is required to be provided. Work covered by the submittal may proceed provided it complies with requirements of the contract complies with requirements of the contract documents, final acceptance will depend upon that compliance.

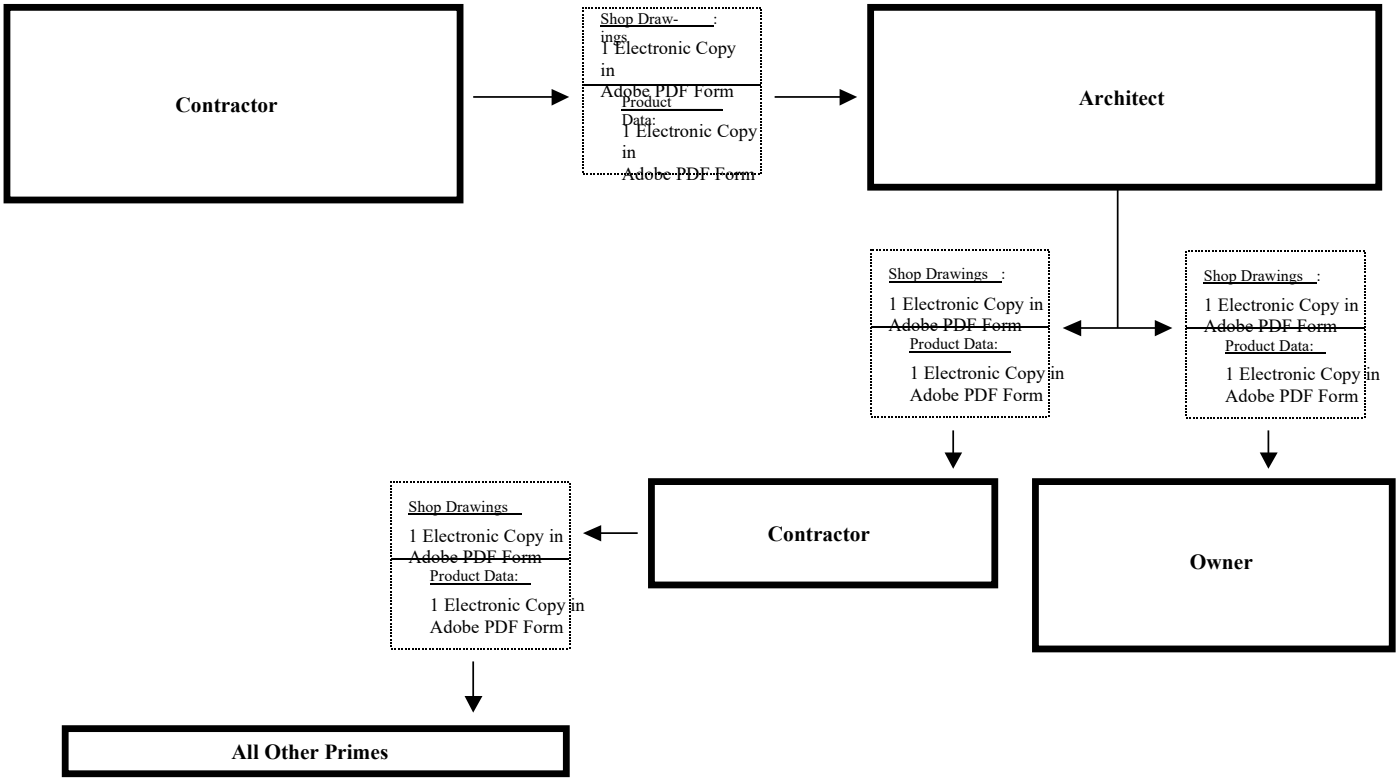
C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

Submittal Flow Chart without Consultant Review

Initial and Final Submittals



SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections include the following:

1. Division 01 Section "Allowances" for testing and inspecting allowances.
2. Division 01 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
3. Division 01 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.
4. Divisions 02 through 49 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and

completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.

D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.

E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Description of test and inspection.
3. Identification of applicable standards.
4. Identification of test and inspection methods.
5. Number of tests and inspections required.
6. Time schedule or time span for tests and inspections.
7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

C. Reports: Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:

a. Provide test specimens representative of proposed products and construction.

b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect**,** with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.

a. Allow seven days for initial review and each re-review of each mockup.

5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed, unless otherwise indicated.

K. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in Divisions 02 through 49.

1.7 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders.
3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor**,** and the Contract Sum will be adjusted by Change Order.

B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

    a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."

D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.

F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.

3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for the Notice to Proceed.

1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.8 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect**,** with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
2. Comply with the Contract Document requirements for Division 01 Section "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if

bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

D. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ADAAG	Americans with Disabilities Act (ADA) Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities Available from Access Board www.access-board.gov	(800) 872-2253 (202) 272-0080
CFR	Code of Federal Regulations Available from Government Printing Office www.gpoaccess.gov/cfr/index.html	(888) 293-6498 (202) 512-1530
CRD	Handbook for Concrete and Cement Available from Army Corps of Engineers Waterways Experiment Station www.wes.army.mil	(601) 634-2355
DOD	Department of Defense Military Specifications and Standards Available from Department of Defense Single Stock Point www.dodssp.daps.mil	(215) 697-6257
DSCC	Defense Supply Center Columbus (See FS)	
FED-STD	Federal Standard (See FS)	
FS	Federal Specification Available from Department of Defense Single Stock Point www.dodssp.daps.mil	(215) 697-6257
	Available from General Services Administration www.fss.gsa.gov	(202) 501-1021

	Available from National Institute of Building Sciences www.nibs.org	(202) 289-7800
FTMS	Federal Test Method Standard (See FS)	
ICC-ES	ICC Evaluation Service, Inc. www.icc-es.org	(800) 423-6587 (562) 699-0543
MIL	(See MILSPEC)	
MIL-STD	(See MILSPEC)	
MILSPEC	Military Specification and Standards Available from Department of Defense Single Stock Point www.dodssp.daps.mil	(215) 697-6257
NES	(Formerly: National Evaluation Service) (See ICC-ES)	
UFAS	Uniform Federal Accessibility Standards Available from Access Board www.access-board.gov	(800) 872-2253 (202) 272-0080

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

AA	Aluminum Association, Inc. (The) www.aluminum.org	(202) 862-5100
AAADM	American Association of Automatic Door Manufacturers www.aaadm.com	(216) 241-7333
AABC	Associated Air Balance Council www.aabchq.com	(202) 737-0202
AAMA	American Architectural Manufacturers Association www.aamanet.org	(847) 303-5664
AASHTO	American Association of State Highway and Transportation Officials	(202) 624-5800

	www.transportation.org	
AATCC	American Association of Textile Chemists and Colorists (The) www.aatcc.org	(919) 549-8141
ABMA	American Bearing Manufacturers Association www.abma-dc.org	(202) 367-1155
ACI	ACI International (American Concrete Institute) www.aci-int.org	(248) 848-3700
ACPA	American Concrete Pipe Association www.concrete-pipe.org	(972) 506-7216
AEIC	Association of Edison Illuminating Companies, Inc. (The) www.aeic.org	(205) 257-2530
AF&PA	American Forest & Paper Association www.afandpa.org	(800) 878-8878 (202) 463-2700
AGA	American Gas Association www.aga.org	(202) 824-7000
AGC	Associated General Contractors of America (The) www.agc.org	(703) 548-3118
AHA	American Hardboard Association (Now part of CPA)	
AHAM	Association of Home Appliance Manufacturers www.aham.org	(202) 872-5955
AI	Asphalt Institute www.asphaltinstitute.org	(859) 288-4960
AIA	American Institute of Architects (The) www.aia.org	(800) 242-3837 (202) 626-7300
AISC	American Institute of Steel Construction www.aisc.org	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute www.steel.org	(202) 452-7100
AITC	American Institute of Timber Construction www.aitc-glulam.org	(303) 792-9559
ALCA	Associated Landscape Contractors of America www.alca.org	(800) 395-2522 (703) 736-9666

ALSC	American Lumber Standard Committee, Incorporated www.alsc.org	(301) 972-1700
AMCA	Air Movement and Control Association International, Inc. www.amca.org	(847) 394-0150
ANSI	American National Standards Institute www.ansi.org	(202) 293-8020
AOSA	Association of Official Seed Analysts www.aosaseed.com	(505) 522-1437
APA	APA - The Engineered Wood Association www.apawood.org	(253) 565-6600
APA	Architectural Precast Association www.archprecast.org	(239) 454-6989
API	American Petroleum Institute www.api.org	(202) 682-8000
ARI	Air-Conditioning & Refrigeration Institute www.ari.org	(703) 524-8800
ARMA	Asphalt Roofing Manufacturers Association www.asphaltroofing.org	(202) 207-0917
ASCE	American Society of Civil Engineers www.asce.org	(800) 548-2723 (703) 295-6300
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers www.ashrae.org	(800) 527-4723 (404) 636-8400
ASME	ASME International (The American Society of Mechanical Engineers International) www.asme.org	(800) 843-2763 (212) 591-7722
ASSE	American Society of Sanitary Engineering www.asse-plumbing.org	(440) 835-3040
ASTM	ASTM International (American Society for Testing and Materials International) www.astm.org	(610) 832-9585
AWCI	AWCI International (Association of the Wall and Ceiling Industries International) www.awci.org	(703) 534-8300
AWCMA	American Window Covering Manufacturers Association (Now WCSC)	

AWI	Architectural Woodwork Institute www.awinet.org	(800) 449-8811 (703) 733-0600
AWPA	American Wood-Preservers' Association www.awpa.com	(334) 874-9800
AWS	American Welding Society www.aws.org	(800) 443-9353 (305) 443-9353
AWWA	American Water Works Association www.awwa.org	(800) 926-7337 (303) 794-7711
BHMA	Builders Hardware Manufacturers Association www.buildershardware.com	(212) 297-2122
BIA	Brick Industry Association (The) www.bia.org	(703) 620-0010
BICSI	BICSI www.bicsi.org	(813) 979-1991
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International) www.bifma.com	(616) 285-3963
BISSC	Baking Industry Sanitation Standards Committee www.bissc.org	(773) 761-4100
	Cast Stone Institute www.caststone.org	(770) 972-3011
CCC	Carpet Cushion Council www.carpetcushion.org	(203) 637-1312
CDA	Copper Development Association Inc. www.copper.org	(800) 232-3282 (212) 251-7200
CEA	Canadian Electricity Association www.canelect.ca/connections_online/home.htm	(613) 230-9263
CFFA	Chemical Fabrics & Film Association, Inc. www.chemicalfabricsandfilm.com	(216) 241-7333
CGA	Compressed Gas Association www.cganet.com	(703) 788-2700
CGSB	Canadian General Standards Board w3.pwgsc.gc.ca/cgsb	(800) 665-2472 (819) 956-0425

CIMA	Cellulose Insulation Manufacturers Association www.cellulose.org	(888) 881-2462 (937) 222-2462
CISCA	Ceilings & Interior Systems Construction Association www.cisca.org	(630) 584-1919
CISPI	Cast Iron Soil Pipe Institute www.cispi.org	(423) 892-0137
CLFMI	Chain Link Fence Manufacturers Institute www.chainlinkinfo.org	(301) 596-2583
CPA	Composite Panel Association www.pbmdf.com	(301) 670-0604
CPPA	Corrugated Polyethylene Pipe Association www.cppa-info.org	(800) 510-2772 (202) 462-9607
CRI	Carpet & Rug Institute (The) www.carpet-rug.com	(800) 882-8846 (706) 278-3176
CRSI	Concrete Reinforcing Steel Institute www.crsi.org	(847) 517-1200
CSA	CSA International (Formerly: IAS - International Approval Services) www.csa-international.org	(800) 463-6727 (416) 747-4000
CSI	Construction Specifications Institute (The) www.csinet.org	(800) 689-2900 (703) 684-0300
CSSB	Cedar Shake & Shingle Bureau www.cedarbureau.org	(604) 820-7700
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute) www.cti.org	(281) 583-4087
DHI	Door and Hardware Institute www.dhi.org	(703) 222-2010
EIA	Electronic Industries Alliance www.eia.org	(703) 907-7500
EIMA	EIFS Industry Members Association www.eima.com	(800) 294-3462 (770) 968-7945
EJCDC	Engineers Joint Contract Documents Committee www.asce.org	(800) 548-2723 (703) 295-6300
EJMA	Expansion Joint Manufacturers Association, Inc.	(914) 332-0040

	www.ejma.org	
ESD	ESD Association www.esda.org	(315) 339-6937
FCI	Fluid Controls Institute www.fluidcontrolsinstitute.org	(216) 241-7333
FIBA	Federation Internationale de Basketball Amateur (The International Basketball Federation) www.fiba.com	41 22 545 00 00
FIVB	Federation Internationale de Volleyball (The International Volleyball Federation) www.fivb.ch	41 21 345 35 35
FM	Factory Mutual System (Now FMG)	
FMG	FM Global (Formerly: FM - Factory Mutual System) www.fmglobal.com	(401) 275-3000
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc. www.floridaroof.com	(407) 671-3772
FSA	Fluid Sealing Association www.fluidsealing.com	(610) 971-4850
FSC	Forest Stewardship Council www.fsc.org	52 951 5146905
GA	Gypsum Association www.gypsum.org	(202) 289-5440
GANA	Glass Association of North America www.glasswebsite.com	(785) 271-0208
GRI	(Now GSI)	
GS	Green Seal www.greenseal.org	(202) 872-6400
GSI	Geosynthetic Institute www.geosynthetic-institute.org	(610) 522-8440
HI	Hydraulic Institute www.pumps.org	(888) 786-7744 (973) 267-9700
HI	Hydronics Institute	(908) 464-8200

	www.gamanet.org	
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)	
HPVA	Hardwood Plywood & Veneer Association www.hpva.org	(703) 435-2900
HPW	H. P. White Laboratory, Inc. www.hpwhite.com	(410) 838-6550
IAS	International Approval Services (Now CSA International)	
IBF	International Badminton Federation www.intbadfed.org	441-24 223-4904
ICEA	Insulated Cable Engineers Association, Inc. www.icea.net	(770) 830-0369
ICRI	International Concrete Repair Institute, Inc. www.icri.org	(847) 827-0830
IEC	International Electrotechnical Commission www.iec.ch	41 22 919 02 11
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The) www.ieee.org	(212) 419-7900
IESNA	Illuminating Engineering Society of North America www.iesna.org	(212) 248-5000
IGCC	Insulating Glass Certification Council www.igcc.org	(315) 646-2234
IGMA	Insulating Glass Manufacturers Alliance (The) www.igmaonline.org	(613) 233-1510
ILI	Indiana Limestone Institute of America, Inc. www.iliai.com	(812) 275-4426
ISO	International Organization for Standardization www.iso.ch	41 22 749 01 11
ISSFA	International Solid Surface Fabricators Association www.issfa.net	(702) 567-8150
ITS	Intertek www.intertek.com	(800) 345-3851 (607) 753-6711
ITU	International Telecommunication Union	41 22 730 51 11

	www.itu.int/home	
KCMA	Kitchen Cabinet Manufacturers Association www.kcma.org	(703) 264-1690
LMA	Laminating Materials Association (Now part of CPA)	
LPI	Lightning Protection Institute www.lightning.org	(800) 488-6864 (847) 577-7200
MBMA	Metal Building Manufacturers Association www.mbma.com	(216) 241-7333
MFMA	Maple Flooring Manufacturers Association www.maplefloor.org	(847) 480-9138
MFMA	Metal Framing Manufacturers Association www.metalframingmfg.org	(312) 644-6610
MH	Material Handling (Now MHIA)	
MHIA	Material Handling Industry of America www.mhia.org	(800) 345-1815 (704) 676-1190
MIA	Marble Institute of America www.marble-institute.com	(440) 250-9222
MPI	Master Painters Institute www.paintinfo.com	(888) 674-8937
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc. www.mss-hq.com	(703) 281-6613
NAAMM	National Association of Architectural Metal Manufacturers www.naamm.org	(312) 332-0405
NACE	NACE International (National Association of Corrosion Engineers International) www.nace.org	(281) 228-6200
NADCA	National Air Duct Cleaners Association www.nadca.com	(202) 737-2926
NAGWS	National Association for Girls and Women in Sport www.aahperd.org/nagws/	(800) 213-7193 ext. 453
NAIMA	North American Insulation Manufacturers Association (The)	(703) 684-0084

	www.naima.org	
NBGQA	National Building Granite Quarries Association, Inc. www.nbgqa.com	(800) 557-2848
NCAA	National Collegiate Athletic Association (The) www.ncaa.org	(317) 917-6222
NCMA	National Concrete Masonry Association www.ncma.org	(703) 713-1900
NCPI	National Clay Pipe Institute www.ncpi.org	(262) 248-9094
NCTA	National Cable & Telecommunications Association www.ncta.com	(202) 775-3550
NEBB	National Environmental Balancing Bureau www.nebb.org	(301) 977-3698
NECA	National Electrical Contractors Association www.necanet.org	(301) 657-3110
NeLMA	Northeastern Lumber Manufacturers' Association www.nelma.org	(207) 829-6901
NEMA	National Electrical Manufacturers Association www.nema.org	(703) 841-3200
NETA	InterNational Electrical Testing Association www.netaworld.org	(303) 697-8441
NFHS	National Federation of State High School Associations www.nfhs.org	(317) 972-6900
NFPA	NFPA (National Fire Protection Association) www.nfpa.org	(800) 344-3555 (617) 770-3000
NFRC	National Fenestration Rating Council www.nfrc.org	(301) 589-1776
NGA	National Glass Association www.glass.org	(703) 442-4890
NHLA	National Hardwood Lumber Association www.natlhardwood.org	(800) 933-0318 (901) 377-1818
NJSDA	New Jersey Schools Development Authority www.njsda.com	(609) 943-5955

NLGA	National Lumber Grades Authority www.nlga.org	(604) 524-2393
NOFMA	National Oak Flooring Manufacturers Association www.nofma.org	(901) 526-5016
NRCA	National Roofing Contractors Association www.nrca.net	(800) 323-9545 (847) 299-9070
NRMCA	National Ready Mixed Concrete Association www.nrmca.org	(888) 846-7622 (301) 587-1400
NSF	NSF International (National Sanitation Foundation International) www.nsf.org	(800) 673-6275 (734) 769-8010
NSSGA	National Stone, Sand & Gravel Association www.nssga.org	(800) 342-1415 (703) 525-8788
NTMA	National Terrazzo & Mosaic Association, Inc. www.ntma.com	(800) 323-9736 (540) 751-0930
NTRMA	National Tile Roofing Manufacturers Association (Now TRI)	
NWWDA	National Wood Window and Door Association (Now WDMA)	
OPL	Omega Point Laboratories, Inc. www.opl.com	(800) 966-5253 (210) 635-8100
PCI	Precast/Prestressed Concrete Institute www.pci.org	(312) 786-0300
PDCA	Painting & Decorating Contractors of America www.pdca.com	(800) 332-7322 (314) 514-7322
PDI	Plumbing & Drainage Institute www.pdionline.org	(800) 589-8956 (978) 557-0720
PGI	PVC Geomembrane Institute http://pgi-tp.ce.uiuc.edu	(217) 333-3929
PTI	Post-Tensioning Institute www.post-tensioning.org	(602) 870-7540
RCSC	Research Council on Structural Connections www.boltcouncil.org	(800) 644-2400 (312) 670-2400
RFCI	Resilient Floor Covering Institute www.rfci.com	(301) 340-8580

RIS	Redwood Inspection Service www.calredwood.org	(888) 225-7339 (415) 382-0662
RTI	(Formerly: NTRMA - National Tile Roofing Manufacturers Association) (Now TRI)	
SAE	SAE International www.sae.org	(724) 776-4841
SDI	Steel Deck Institute www.sdi.org	(847) 462-1930
SDI	Steel Door Institute www.steeldoor.org	(440) 899-0010
SEFA	Scientific Equipment and Furniture Association www.sefalabs.com	(516) 294-5424
SEI	Structural Engineering Institute www.seinstitute.com	(800) 548-2723 (703) 295-6195
SGCC	Safety Glazing Certification Council www.sgcc.org	(315) 646-2234
SIA	Security Industry Association www.siaonline.org	(703) 683-2075
SIGMA	Sealed Insulating Glass Manufacturers Association (Now IGMA)	
SJI	Steel Joist Institute www.steeljoist.org	(843) 626-1995
SMA	Screen Manufacturers Association www.smacentral.org	(561) 533-0991
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association www.smacna.org	(703) 803-2980
SMPTE	Society of Motion Picture and Television Engineers www.smpte.org	(914) 761-1100
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division) www.sprayfoam.org	(800) 523-6154
SPIB	Southern Pine Inspection Bureau (The)	(850) 434-2611

	www.spib.org	
SPI/ SPFD	Society of the Plastics Industry, Inc. (The) Spray Polyurethane Foam Division (Now SPFA)	
SPRI	SPRI (Single Ply Roofing Institute) www.spri.org	(781) 647-7026
SSINA	Specialty Steel Industry of North America www.ssina.com	(800) 982-0355 (202) 342-8630
SSPC	SSPC: The Society for Protective Coatings www.sspc.org	(877) 281-7772 (412) 281-2331
STI	Steel Tank Institute www.steeltank.com	(847) 438-8265
SWI	Steel Window Institute www.steelwindows.com	(216) 241-7333
SWRI	Sealant, Waterproofing, & Restoration Institute www.swrionline.org	(816) 472-7974
TCA	Tile Council of America, Inc. www.tileusa.com	(864) 646-8453
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance www.tiaonline.org	(703) 907-7700
TMS	The Masonry Society www.masonrysociety.org	(303) 939-9700
TPI	Truss Plate Institute, Inc. www.tpinst.org	(608) 833-5900
TPI	Turfgrass Producers International www.turfgrasssod.org	(800) 405-8873 (847) 705-9898
TRI	Tile Roofing Institute (Formerly: RTI - Roof Tile Institute) www.tileroofing.org	(312) 670-4177
UL	Underwriters Laboratories Inc. www.ul.com	(800) 285-4476 (847) 272-8800
UNI	Uni-Bell PVC Pipe Association www.uni-bell.org	(972) 243-3902

USAV	USA Volleyball www.usavolleyball.org	(888) 786-5539 (719) 228-6800
USGBC	U.S. Green Building Council www.usgbc.org	(202) 828-7422
USITT	United States Institute for Theatre Technology, Inc. www.usitt.org	(800) 938-7488 (315) 463-6463
WASTEC	Waste Equipment Technology Association www.wastec.org	(800) 424-2869 (202) 244-4700
WCLIB	West Coast Lumber Inspection Bureau www.wclib.org	(800) 283-1486 (503) 639-0651
WCMA	Window Covering Manufacturers Association (Now WCSC)	
WCSC	Window Covering Safety Council (Formerly: WCMA - Window Covering Manufacturers Association) www.windowcoverings.org	(800) 506-4636 (212) 661-4261
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association) www.wdma.com	(800) 223-2301 (847) 299-5200
WI	Woodwork Institute (Formerly: WIC - Woodwork Institute of California) www.wicnet.org	(916) 372-9943
WIC	Woodwork Institute of California (Now WI)	
WMMPA	Wood Moulding & Millwork Producers Association www.wmmpa.com	(800) 550-7889 (530) 661-9591
WSRCA	Western States Roofing Contractors Association www.wsrca.com	(800) 725-0333 (650) 548-0112
WWPA	Western Wood Products Association www.wwpa.org	(503) 224-3930

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

BOCA	BOCA International, Inc. (See ICC)

CABO	Council of American Building Officials (See ICC)	
IAPMO	International Association of Plumbing and Mechanical Officials www.iapmo.org	(909) 472-4100
ICBO	International Conference of Building Officials (See ICC)	
ICBO ES	ICBO Evaluation Service, Inc. (See ICC-ES)	
ICC	International Code Council (Formerly: CABO - Council of American Building Officials) www.iccsafe.org	(703) 931-4533
ICC-ES	ICC Evaluation Service, Inc. www.icc-es.org	(800) 423-6587 (562) 699-0543
NES	National Evaluation Service (See ICC-ES)	
SBCCI	Southern Building Code Congress International, Inc. (See ICC)	

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CE	Army Corps of Engineers www.usace.army.mil	
CPSC	Consumer Product Safety Commission www.cpsc.gov	(800) 638-2772 (301) 504-6816
DOC	Department of Commerce www.commerce.gov	(202) 482-2000
DOD	Department of Defense www.dodssp.daps.mil	(215) 697-6257
DOE	Department of Energy www.eren.doe.gov	(202) 586-9220
EPA	Environmental Protection Agency www.epa.gov	(202) 272-0167
FAA	Federal Aviation Administration www.faa.gov	(202) 366-4000

FCC	Federal Communications Commission www.fcc.gov	(888) 225-5322
FDA	Food and Drug Administration www.fda.gov	(888) 463-6332
GSA	General Services Administration www.gsa.gov	(800) 488-3111 (202) 501-1888
HUD	Department of Housing and Urban Development www.hud.gov	(202) 708-1112
LBL	Lawrence Berkeley National Laboratory www.lbl.gov	(510) 486-4000
NCHRP	National Cooperative Highway Research Program (See TRB)	
NIST	National Institute of Standards and Technology www.nist.gov	(301) 975-6478
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) 321-6742 (202) 693-1999
PBS	Public Building Service (See GSA)	
PHS	Office of Public Health and Science http://phs.os.dhhs.gov	(202) 690-7694
RUS	Rural Utilities Service (See USDA)	(202) 720-9540
SD	State Department www.state.gov	(202) 647-4000
TRB	Transportation Research Board www.nas.edu/trb	(202) 334-2934
USDA	Department of Agriculture www.usda.gov	(202) 720-2791
USPS	Postal Service www.usps.com	(202) 268-2000

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CBHF	State of California, Department of Consumer Affairs Bureau of Home Furnishings and Thermal Insulation www.dca.ca.gov/bhfti	(800) 952-5210 (916) 574-2041
CPUC	California Public Utilities Commission www.cpuc.ca.gov	(415) 703-2782
TFS	Texas Forest Service Forest Products Laboratory http://txforestservice.tamu.edu	(936) 639-8180

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01420

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection; as may be applicable to this specific project.

B. Temporary utilities required include but are not limited to:
   1. Temporary electric and power.

C. Temporary construction and support facilities required include but are not limited to:
   1. Temporary enclosures.
   2. Cranes, hoists and lifts.
   3. Construction aids and miscellaneous services and facilities

D. Security and protection facilities required include but are not limited to:
   1. Temporary fire protection.
   2. Barricades, warning signs, lights.
   3. Environmental protection and construction debris disposal units.
   4. Soil erosion a sediment control shall be installed and maintained in accordance with the approved site plan drawings.

1.3 CONTRACTOR RESPONSIBILITY

A. The Contractor is responsible for:
   1. Installation, operation, maintenance and removal of each temporary service or facility usually considered as its own normal construction activity, unless noted otherwise within the Contract Documents.
   2. Plug-in electric power cords and extension cords, and supplementary plug-in task lighting and special lighting necessary exclusively for its own activities.
   3. Its own storage and fabrication sheds.
   4. Daily and final clean-up and continuous removal of all rubbish at the building Site. The trash, waste and debris including discarded equipment and material, shall be collected and deposited within dumpsters, trash receptacles, trash canister or other trash collection vessel provided by the Contractor. Failure of the Contractor to do so will require that this be done by the Owner after prior notice to the Contractor and all labor and associated costs for doing so shall be charged to the Contractor.

5. The Contractor shall be responsible for all hoisting including Special hoisting requirements, including hoisting loads in excess of 2-ton, hoisting material or equipment into spaces below grade and hoisting requirements outside the building enclosure.
6. Collection and disposal of its own hazardous, dangerous, unsanitary or other harmful waste material.
7. Secure lockup of its own tools, materials and equipment.
8. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
9. Temporary wash facilities, including disposable supplies.
10. Barricades, warning signs and lights.
11. Temporary Fire Protection including supplying sufficient fire extinguishers. G.C. will provide a Fire Safety Plan and have local Fire Marshall approve it.
12. Security enclosure and lockup of the building area and temporary construction fence.
13. Environmental protection.
14. All temporary barriers, barricades will be constructed of fire rated materials and will comply with requirements of the local building inspector/Fire Marshall.

1.4 USE CHARGES

A. General: Cost or use charges for temporary facilities are to be paid for by the Owner, except as noted below.
   1. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
   2. All telephone/DSL use charges for all contractor’s usage shall be borne by the contractor.

1.5 SUBMITTALS

A. Temporary Utilities: Submit reports of tests, inspections, meter readings and similar procedures performed on temporary utilities.

B. Implementation and Termination Schedule: Submit a schedule indicating implementation and termination of each temporary utility within 15 days of the date established for commencement of the Work.

1.6 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations if authorities having jurisdiction, including but not limited to:
   1. All State, County and Local authorities having jurisdiction over this Project.
   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.

B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities."
   1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.

C. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).

D. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.7 PROJECT CONDITIONS

A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

B. Damages: Promptly repair damages caused to adjacent facilities by Construction Work at no cost to owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials; if acceptable to the Architect and Construction Manager, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.

B. Lumber and Plywood: Comply with Architect's specific requirements for rough carpentry.
   1. For job-built temporary offices, shops and sheds within the construction area, provide UL labeled, fire treated lumber and plywood for framing, sheathing and siding.
   2. For signs and directory boards, provide exterior type, Grade B-B High Density Concrete Form Overlay Plywood conforming to PS-1, of sizes and thickness indicated.
   3. For fences and vision barriers, see site plan drawings.
   4. For safety barriers and similar uses, provide minimum 5/8" thick exterior plywood.

2.2 EQUIPMENT

A. General: Provide new equipment; if acceptable to the Architect and Construction Manager, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.

B. The crane schedule must be approved in writing by the Owner prior to equipment delivery.

C. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.

D. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.

E. Toilet Facilities: Contractors shall provide temporary toilet facilities.

F. First Aid Supplies: Comply with authorities having jurisdiction.

G. 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.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed as determined by the CM and Architect, or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the company's recommendations.
   1. Arrange with the company and existing users for a time when service can be interrupted, where necessary, to make connections for temporary services.
   2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
   3. Obtain easements to bring temporary utilities to the site, where the Owner's easements cannot be used for that purpose.
   4. See appropriate Division-21 through 28 sections for specific requirements related to temporary facilities.

B. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload protected disconnects, automatic ground-fault interrupters and main distribution switchgear.
   1. Except where overhead service must be used, install electric power service underground.

C. Power Distribution System: Install wiring overhead, and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, AC 20 ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.

3.3 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

A. Locate storage sheds, disposal facilities and other temporary construction and support facilities as indicated in the contract documents and/or subject to the approval of the CM and Architect.

B. Maintain temporary construction and support facilities until near Substantial Completion, unless noted otherwise in this specification. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

C. Storage and Fabrication Sheds: Install storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on the site. Construction Manager will provide location, which shall not be adjacent to project.

D. All temporary work shall be designed and installed so that the work can be conveniently erected without building-in any of the temporary work. Temporary work shall be changed, rebuilt, and adjusted as needed to suit the conditions of the work and the work of subcontractors. Such temporary work shall be removed from the project by the Contractor on or before completion of the work when no longer required as determined by CM and Architect.

E. Temporary Hoists and Lifts: Provide facilities for hoisting and lifting materials as may be required for this Project. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities. Contractor shall make accommodations for Owners use of the list for maintenance of ceiling mounted lighting and devices during the course of the project.

F. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer as requested by the Construction Manager.

B. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."

1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
2. Store combustible materials in containers in fire-safe locations.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.

C. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.

D. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

E. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment, which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.5 OPERATION, TERMINATION AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour day basis where required to achieve indicated results and to avoid possibility of damage.

C. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

D. Termination and Removal: Unless the Construction Manager requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.

E. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves the right to take possession of Project identification signs.

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

B. Related Sections include the following:

1. Division 01 Section "Allowances" for products selected under an allowance.
2. Division 01 Section "Alternates" for products selected under an alternate.
3. Division 01 Section "References" for applicable industry standards for products specified.
4. Division 01 Section "Closeout Procedures" for submitting warranties for Contract closeout.
5. Divisions 02 through 33 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility**,** unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

1.4 SUBMITTALS

A. Product List: Submit a list, in tabular from, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.

1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
2. Form: Tabulate information for each product under the following column headings:

a. Specification Section number and title.
b. Generic name used in the Contract Documents.
c. Proprietary name, model number, and similar designations.
d. Manufacturer's name and address.
e. Supplier's name and address.
f. Installer's name and address.
g. Projected delivery date or time span of delivery period.
h. Identification of items that require early submittal approval for scheduled delivery date.

3. Initial Submittal: Within 28 days after date of commencement of the Work, submit 3 copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.

a. At Contractor's option, initial submittal may be limited to product selections and designations that must be established early in Contract period.

4. Completed List: Within 56 days after date of commencement of the Work, submit 3 copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
5. Architect's Action: Architect will respond in writing to Contractor within 14 days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.

B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified material or product cannot be provided.
b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days through the Construction Manager, of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

a. Form of Acceptance: Change Order.
b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.

C. Comparable Product Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."

b. Use product specified if Architect cannot make a decision on use of a comparable product request within time allocated.

D. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
3. Refer to Divisions 02 through 49 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
5. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
6. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
7. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
8. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

    a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.

10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.

    a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
    b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Architect will consider requests for substitution if received within 56 days after the issuance of the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.

B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
2. Requested substitution does not require extensive revisions to the Contract Documents.
3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
4. Substitution request is fully documented and properly submitted.
5. Requested substitution will not adversely affect Contractor's Construction Schedule.
6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.
10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

2.3 COMPARABLE PRODUCTS

A. Conditions: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 016500 – AMERICAN GOODS AND PRODUCTS

PART 1-GENERAL

1.1 SUMMARY

A. Pursuant to *N.J.S.A. 18A:18A-20* only manufactured and farm products of the United States, wherever available, shall be used for this work.

1.2 RELATED SECTIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 016500

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
   1. Construction layout.
   2. Field engineering and surveying.
   3. General installation of products.
   4. Coordination of Owner-installed products.
   5. Progress cleaning.
   6. Starting and adjusting.
   7. Protection of installed construction.
   8. Correction of the Work.

B. Related Sections include the following:
   1. Division 01 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
   2. Division 01 Section "Submittal Procedures" for submitting surveys.
   3. Division 01 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
   4. Division 01 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 SUBMITTALS

A. Certificates: Submit certificate signed by professional engineer certifying that location and elevation of improvements comply with requirements.

B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.4 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
   1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
   1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
      a. Description of the Work.
      b. List of detrimental conditions, including substrates.
      c. List of unacceptable installation tolerances.
      d. Recommended corrections.
   2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
   3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
   4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
   5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect.

Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings. If discrepancies are discovered, notify Architect and Construction Manager promptly.

B. General: Lay out the Work using accepted surveying practices.
   1. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
   2. Inform installers of lines and levels to which they must comply.
   3. Check the location, level and plumb, of every major element as the Work progresses.
   4. Notify Architect when deviations from required lines and levels exceed allowable tolerances.

C. Building Lines and Levels: Locate and lay out control lines and levels for ceilings and equipment including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels.

D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

A. Not Applicable.

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
   1. Make vertical work plumb and make horizontal work level.
   2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
   3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
   4. Maintain minimum headroom clearance of 8 feet (2.4 m) in spaces without a suspended ceiling.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction forces.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction forces.
   1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
   2. Preinstallation Conferences: Include Owner's construction forces at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction forces if portions of the Work depend on Owner's construction.

3.7 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F (27 deg C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
4. With the exception of mechanical equipment rooms, the GC shall perform all daily clean up and removal of debris from the site including that of his subcontractors and other prime contractors.
    a. The GC shall maintain an adequate supply of laborers and dumpsters to accomplish daily clean up and removal of debris from the site and work areas.
    b. No debris will be allowed to accumulate in or around the building including masonry debris. The building must be maintained free of litter and debris on a daily basis.
    c. No accumulation of flammable material is permitted. Prior to installation of finishes the floors will be swept and kept free of dust and dirt until turned over to the Owner.
        1) The General Construction Contractor shall permit no accumulations of any sort, which would create a fire hazard to the Work.
5. The General Construction Contractor shall be responsible for managing and coordinating all policing and clean-up operations.
6. The HVAC Contractor is responsible to provide the same services described in 3.7.A for the mechanical rooms.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

C. The Contractor shall protect existing finishes at all times throughout the course of construction. Within the Gymnasiums, the existing wood floors are to be covered in their entirety with a construction protection cover board (Ram Board or equal), installed in accordance with the manufacturer’s written guidelines. Seams shall be taped, however, the protection board shall not be taped directly to the finished floor. Damaged cover board shall be removed and replaced immediately. At all locations subjected to lift or similar vehicle traffic, and where new and existing equipment are temporarily placed prior to installation or following removal, the floor shall be protected with two layers of ¾” 4’ x 8’ plywood, laid with the 8’ dimension perpendicular to the direction of traffic, and seams staggered no less than 12.

3.10 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."
   1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

SECTION 017329 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. Related Sections include the following:

1. Division 02 Section "Selective Site Demolition" for demolition of selected portions of the site.
2. Division 02, 03, 31, 32 and 33 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:

1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
3. Products: List products to be used and firms or entities that will perform the Work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.

6. Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.5 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
   1. Foundation construction.
   2. Bearing and retaining walls.
   3. Concrete construction.

B. Miscellaneous Elements: Do not cut and patch miscellaneous 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.

C. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the site's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

D. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

   1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete/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 31 Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

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.

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.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.
    1. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied.
    2. Restore damaged pipe covering to its original condition.

END OF SECTION 017329

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

B. Related Sections include the following:

1. Division 01 Section "Temporary Facilities and Controls" for environmental-protection measures during construction, and location of waste containers at Project site.
2. Division 02 Section “Reclamation of Acoustical Ceiling Panels” for additional information concerning recycling of ceiling panels.

1.3 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.)

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 SITE ACCESS AND TEMPORARY CONTROLS

A. General: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.

2. Coordinate locations with Owner.
3. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work:

1 Clean salvaged items.
2 Store items in a secure area until installation.
3 Protect items from damage during transport and storage.
4 Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not Permitted on Project site.

C. Salvaged Items for Owner's Use:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and metal /glass/plastic beverage containers used by on-site workers.

B. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

A. Concrete Work: Break up and transport to recycling facility.

B. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

C. Metals: Separate metals by type.

1. Structural Steel: Stack members according to size, type of member, and length.

D. Remove and dispose of bolts, nuts, washers, and other rough hardware.

E. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

F. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.

1. Separate suspension system, trim, and other metals from panels and tile and sort with other metals.

2. See Division 2 section for additional information.

G. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

H. Plumbing Fixtures: Separate by type and size.

I. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

J. Lighting Fixtures: Separate lamps by type and protect from breakage.

K. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

L. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Site-Clearing Wastes: Chip brush, branches, and trees on-site at landfill facility.

1. Comply with requirements in Division 32 Section for use of chipped organic waste as organic mulch.

C. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

    a. Comply with requirements in Division 32 Section for use of clean sawdust as organic mulch.

3.6 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Contractor shall submit disposal slips for all material removed from the project site, including, but not limited to, the existing direct fired absorption chiller and accessories. Resale of demolished materials or equipment removed from the project site shall not be permitted.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Warranties.
3. Final cleaning.

B. Related Sections include the following:

1. Division 01 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
2. Division 01 Section "Photographic Documentation" for submitting Final Completion construction photographs and negatives.
3. Division 01 Section "Execution" for progress cleaning of Project site.
4. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
5. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
6. Division 01 Section "Demonstration and Training" for requirements for instructing Owner's personnel.
7. Divisions 02 through 49 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion for a part of the work, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why Architect of pending insurance changeover requirements.
2. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
3. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

4. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs and photographic negatives, data files, damage or settlement surveys, and similar final record information.
5. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
6. Make final changeover of locks and deliver keys to Owner.
7. Complete startup testing of systems.
8. Submit test/adjust/balance records.
9. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
10. Advise Owner of changeover in heat and other utilities.
11. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
12. Complete final cleaning requirements, including touchup painting.
13. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion to the Architect. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
2. Submit certified copy of each Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems, including parts lists and special tools for mechanical and electrical Work, in approval form,
5. Delivery to the Architect of specified Project record documents.
6. Delivery to Owner of a Final Waiver of Liens (AIA Document G-706 or other form satisfactory to Owner), covering all Work including that of all Subcontractors, vendors, labor, materials and services, executed by an authorized officer and duly notarized.

7. In addition to the foregoing, all other submissions required by other articles and paragraphs of the Specifications including final construction schedule shall be submitted to the Architect before approval of final payment.

B. Inspection: Submit a written request for final inspection for acceptance to the Architect. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

a. Project name.
b. Date.
c. Name of Architect.
d. Name of Contractor.
e. Page number.

1.6 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or

installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
   a. Remove tools, construction equipment, machinery, and surplus material from Project site.
   b. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
   c. Removal of marks, stains, finger prints, other soil, dust, dirt, from painted, decorated, or stained woodwork, plaster or plasterboard, metal, acoustic tile, and equipment surfaces.
   d. Remove spots, paint, soil, from resilient flooring.
   e. Clean all interior finished surfaces, including doors and window frames, and hardware required to have a polished finish, of oil, stains, dust, dirt, paint, and the like; leave without finger prints, blemishes.
   f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
   g. Remove labels that are not permanent.

h. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

i. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
j. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
k. Clean ducts, blowers, and coils if units were operated without filters during construction.
l. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Emergency manuals.
3. Operation manuals for systems, subsystems, and equipment.
4. Maintenance manuals for the care and maintenance of products, materials, and finishes.

B. Related Sections include the following:

1. Division 01 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
2. Division 01 Section "Closeout Procedures" for submitting operation and maintenance manuals.
3. Division 01 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
4. Divisions 02 through 49 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS

A. Initial Submittal: Submit 2 draft copies of each manual at least 15 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect will return one copy of draft and mark whether general scope and content of manual are acceptable.

B. Final Submittal: Submit one copy of each manual in final form at least 15 days before final inspection. Architect will return copy with comments within 15 days after final inspection.

1. Correct or modify each manual to comply with Architect's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Architect's comments.

1.5 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:

1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 ELECTRONIC COPIES OF MANUALS

A. In addition to providing physical hard copies of manuals, submit one (1) electronic copy of each submission (preliminary and final) for Architect’s review.

2.3 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect.
7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

    a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
    b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.

4. Supplementary Text: Prepared on 8-1/2-by-11-inch (215-by-280-mm) white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.4 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

2.5 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions.
2. Performance and design criteria if Contractor is delegated design responsibility.

3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.6 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.7 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard printed maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.

3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals.
2. Comply with requirements of newly prepared Record Drawings in Division 01 Section "Project Record Documents."

G. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.

B. Related Sections include the following:

1. Division 01 Section "Closeout Procedures" for general closeout procedures.
2. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
3. Divisions 02 through 49 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

A. Record Drawings: Submit one (1) electronic submission set of all record drawings; format to be pdf.

B. Record Product Data: Submit one (1) electronic submission set of all product data; format to be pdf.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Accurately record information in an understandable drawing technique.
c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to Drawings.
b. Revisions to details shown on Drawings.
c. Depths of foundations below first floor.
d. Locations and depths of underground utilities.
e. Revisions to routing of piping and conduits.
f. Revisions to electrical circuitry.
g. Actual equipment locations.
h. Duct size and routing.
i. Locations of concealed internal utilities.
j. Changes made by Change Order or Construction Change Directive.
k. Changes made following Architect's written orders.
l. Details not on the original Contract Drawings.
m. Field records for variable and concealed conditions.
n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing Record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.

1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
2. Consult Architect for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect.
    e. Name of Contractor.

2.2 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

2.3 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION 017839

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.
2. Training in operation and maintenance of systems, subsystems, and equipment.

B. Related Sections include the following:
1. Division 01 Section "Project Management and Coordination" for requirements for preinstruction conferences.
2. Divisions 02 through 49 Sections for specific requirements for demonstration and training for products in those Sections.

1.3 SUBMITTALS

A. Instruction Program: Submit two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. At completion of training, submit one complete training manual(s) for Owner's use.

B. Attendance Record: For each training module, submit list of participants and length of instruction time.

1.4 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:

1. Equipment.
2. HVAC systems, including air-handling equipment, air distribution systems and terminal equipment and devices.
3. HVAC instrumentation and controls.
4. Electrical service and distribution, including panelboards uninterruptible power supplies, and motor controls.
5. Lighting equipment and controls.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:

1. Basis of System Design, Operational Requirements, and Criteria
2. Documentation:
3. Emergencies.
4. Operations
5. Adjustments
6. Troubleshooting
7. Maintenance
8. Repairs

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
2. Owner will furnish an instructor to describe Owner's operational philosophy.
3. Owner will furnish Contractor with names and positions of participants.

B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner, with at least seven days' advance notice.

C. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.

D. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION 017900

SECTION 020700 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

A. Extent of selective demolition work is indicated on drawings. The Contractor shall review the Drawings and review the site to evaluate the condition of the structures prior to construction. The Contractor shall further review the site to establish and confirm the amount of construction performed by other trades.

B. Types of Selective Demolition Work: Demolition requires the selective removal and subsequent offsite disposal of the following:

1. Portions of building structure indicated on drawings and as required to accommodate new construction.

2. Portions of building structure indicated on drawings and as required to accommodate existing altered construction.

3. Removal and disposal of ceiling systems and components as indicated.

4. Removal and disposal of wood window sill construction and finishes.

5. Removal of built-in casework indicated "remove”.

6. Removal and protection of existing fixtures and equipment items indicated "salvage". Miscellaneous fixtures and equipment include, but are not limited to, the following:

    a. Any and all equipment or fixtures indicated to be removed, disposed of and/or salvaged and stored as directed by the Architect.

7. Removal work specified elsewhere.

    a. Existing ceiling mounted lighting fixtures where noted.

    b. Existing electrical services shall be properly terminated and capped.

    c. Abatement of Asbestos containing materials: The scope of this project does not include the removal and disposal of asbestos containing materials including vinyl asbestos tile (VAT) associated mastic. Removal of asbestos shall be via a separate contract. Removal of all such materials shall be performed by a licensed, qualified

asbestos abatement contractor under a separate contract. This contractor for this contract shall coordinate their work this separate contractor.

d. Remodeling construction work and patching is included within the respective sections of specifications, including removal of materials for re-use and incorporated into remodeling or new construction, and including installation of new structural members.

1.3 SUBMITTALS

A. Schedule: Submit schedule indicating proposed methods and sequence of operations for selective demolition work to Architect for review prior to commencement of work. Include coordination for shut-off, capping, and continuation of utility services as required, together with details for dust and noise control protection.

B. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.

C. Coordinate with Owner's continuing occupation of portions of existing building. See "Special Note" below.

1.4 JOB CONDITIONS

A. Occupancy: Owner will be continuously occupying areas of the building immediately adjacent to areas of selective demolition. Conduct selective demolition work in manner that will minimize need for disruption of Owner's normal operations. Provide minimum of 72 hours advance notice to Owner of demolition activities which will severely impact Owner's normal operations.

SPECIAL NOTE: To the greatest extent possible, demolition work which could disturb the Owner's normal operations will be scheduled to occur during the Owner's off-peak operation period, as specified by the Owner

B. Condition of Structures: The Owner assumes no responsibility for actual condition of items or structures to be demolished.

1. Conditions existing at time of commencement of contract will be maintained by the Owner insofar as practicable. However, variations within structure may occur by the Owner's removal and salvage operations prior to start of selective demolition work.

C. Partial Demolition and Removal: Items indicated to be removed but of salvable value to Contractor may be removed from structure as work progresses. Transport salvaged items from site as they are removed.

D. **The Owner retains the right to salvage for his own use any and all items noted to be "removed" during the course of construction.**

1. Storage or sale of removed items on site will not be permitted.

E. Protections: Provide temporary barricades and other forms of protection as required to protect Owner's personnel and general public from injury due to selective demolition work.
   1. Provide protective measures as required to provide free and safe passage of Students and Owner personnel and general public to and from occupied portions of building.
   2. Erect temporary covered passageways as required by authorities having jurisdiction.
   3. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished, and adjacent facilities or work to remain. The General Contractor bears the responsibility for determining and evaluating the structural stability and condition of all construction prior to demolition or alteration of any portion of the structure.
   4. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
   5. Protect floors with suitable coverings when necessary.
   6. Construct temporary insulated solid dustproof partitions where required to separate areas where noisy or extensive dirt or dust operations are performed. Equip partitions with dustproof doors and security locks if required.
   7. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces, and installation of new construction to insure that no water leakage or damage occurs to structure or interior areas of existing building.
   8. Remove protections at completion of work.

F. Damages: Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.

G. Traffic: Conduct selective demolition operations and debris removal in a manner to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
   1. Do not close, block or otherwise obstruct streets, walks or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

H. Explosives: Use of explosives will not be permitted.

I. Utility Services: Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.
   1. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.

J. Environmental Controls: Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.
   1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.
   2. It shall be the responsibility of the General Contractor to maintain all portions of the site throughout the construction period.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 INSPECTION

A. Prior to commencement of selective demolition work, inspect areas in which work will be performed. PHOTOGRAPH existing conditions to structure surfaces, equipment or to surrounding properties which could be misconstrued as damage resulting from selective demolition work; file with Owner's Representative prior to starting work.

3.2 PREPARATION

A. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement or collapse of structures to be demolished and adjacent facilities to remain.
   1. Cease operations and notify the Owner's Representative immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.

B. Cover and protect furniture, equipment and fixtures to remain from soiling or damage when demolition work is performed in rooms or areas from which such items have not been removed. Protect existing construction including but not limited to, other floor, wall and ceiling finishes noted to remain.

C. Erect and maintain dust-proof partitions and closures as required to prevent spread of dust or fumes to occupied portions of the building.
   1. Where selective demolition occurs immediately adjacent to occupied portions of the building, construct dust-proof partitions of minimum 4" studs, 5/8" drywall (joints taped) on occupied side, 1/2" fire-retardant plywood on demolition side, and fill partition cavity with sound-deadening insulation.
   2. Where new partitions are noted to be constructed immediately adjacent to occupied portions of the building, these partitions will be scheduled to be built while the building is unoccupied.
   3. Provide weatherproof closures for exterior openings resulting from demolition work.

D. Locate, identify, stub off and disconnect utility services that are not indicated to remain.
   1. Provide by-pass connections as necessary to maintain continuity of service to occupied areas of building. Provide minimum of 72 hours advance notice to Owner if shut-down of service is necessary during change-over.

3.3 DEMOLITION

A. Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated on Drawings in accordance with demolition schedule and governing regulations.

1. 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.
2. In areas where demolition work will be exposed after new construction is in place, cleanly cut door frames, masonry, and other finishes to provide neat joints. Repoint masonry work that will be exposed.
3. Locate demolition equipment throughout structure and promptly remove debris to avoid imposing excessive loads on supporting walls, floors or framing.
4. Provide services for effective air and water pollution controls as required by local authorities having jurisdiction.
5. For interior slabs on grade, use removal methods that will not crack or structurally disturb adjacent slabs or partitions. Use power saw where possible.

B. If unanticipated mechanical, electrical or structural elements which conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Owner's Representative in written, accurate detail. Pending receipt of directive from Owner's Representative rearrange selective demolition schedule as necessary to continue overall job progress without delay.

C. Flooring removal
1. Remove resilient floor coverings in accordance with recommendations of the Resilient Floor Covering Institute.

3.4 SALVAGE MATERIALS

A. Salvage Items: Where indicated on Drawings as "Salvage-Deliver to Owner", carefully remove indicated items, clean, store and turn over to Owner and obtain receipt.
1. Historic artifacts, including cornerstones and their contents, commemorative plaques and tablets, antiques, and other articles of historic significance remain the property of the Owner. Notify Owner's Representative if such items are encountered and obtain acceptance regarding method of removal and salvage for Authority.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove debris, rubbish and other materials resulting from demolition operations from building site. Transport and legally dispose of materials off site.
1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling and protection against exposure or environmental pollution.
2. Burning of removed materials is not permitted on project site.

3.6 CLEAN-UP AND REPAIR

A. Upon completion of demolition work, remove tools, equipment and demolished materials from site. Remove protections and leave interior areas broom clean.

B. Repair demolition performed in excess of that required. Return structures and surfaces to remain to condition existing prior to commencement of selective demolition work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

3.7 GENERAL

A. Any damage to existing construction to remain shall be repaired or replaced as required to match existing adjacent construction, to match pre-demolition conditions.

B. Refer to the structural drawings for additional information regarding the removal of existing structural building elements, and the structural work required for the support of the remaining construction.

C. Refer to the mechanical drawings, the plumbing drawings, and the electrical drawings for information regarding the removal of existing building mechanical, plumbing, and electrical improvements including, but not limited to, existing HVAC systems and components, domestic as well as mechanical piping, gas piping, and electrical conduit, raceways, wiring, panel boards, switchgear, etc.

D. All contractors shall review the architectural floor plans and demolition plans and remove, extend, relocate or properly disconnect any and all service as required to accommodate the proposed conditions on these plans, whether or not these items have been specifically shown or noted on the mechanical, plumbing or electrical drawings

E. Rough patching of any and all openings, holes, or damaged construction within the existing building(s) shall be the responsibility of the applicable **subcontractor**. Repair and application of all finishes, including, but not limited to brick (where applied as a finish), wood paneling, wood trim, plaster, ceramic floor and wall tile, VCT, carpet shall be the responsibility of the **general contractor**. Finishes shall match the adjacent existing construction even if not specifically indicated on the construction documents.

F. Where the rough patch is to be exposed, (such as concrete or CMU) the rough patch shall be constructed by the responsible **subcontractor**. This patch shall be of finished quality, and shall completely match the adjacent existing construction. Repair and replacement of damaged or missing acoustical ceiling tile shall be the responsibility of the applicable **sub contractor**.

G. Finish painting of **all** patches shall be the responsibility of the **general contractor** with in the existing structure even if not specifically indicated on the construction documents.

END OF SECTION 020700

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:

1. Slabs-on-grade and foundations.
2. Polyethylene vapor retarders.

B. Related Sections include the following:
1. Division 02 Section "Earthwork" for soils materials and compaction under slabs-on-grade.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

D. Samples: For waterstops vapor retarder.

E. Welding certificates.

F. Qualification Data: For Installer manufacturer testing agency .

G. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:

1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity .

H. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Steel reinforcement and accessories.
4. Curing compounds.
5. Floor and slab treatments.
6. Bonding agents.
7. Adhesives.
8. Vapor retarders.
9. Joint-filler strips.
10. Repair materials.

I. Floor surface flatness and levelness measurements to determine compliance with specified tolerances.

J. Field quality-control test and inspection reports.

K. Minutes of preinstallation conference.

L. Construction Joint Layout: Indicate proposed joints required to construct the structure. Locations subject to approval of the Architect.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.

D. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5 and Section 7, "Lightweight Concrete."
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

E. Concrete Testing Service: Owner will engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

F. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade I, according to ACI CP-01 or an equivalent certification program.
2. Personnel performing laboratory tests shall be ACI certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician – Grade I. Testing Agency laboratory supervisor shall be an ACI Certified Concrete Laboratory Testing Technician – Grade II

1.6 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.

B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Products: Subject to compliance with requirements, provide one of the products specified.
2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
3. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I , gray

a. Fly Ash: ASTM C 618, Class C .
b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

2. Blended Hydraulic Cement: ASTM C 595, Type IS, portland blast-furnace slag cement.

B. Silica Fume: ASTM C 1240, amorphous silica.

C. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials .

1. Maximum Coarse-Aggregate Size: 3/4 inch (19 mm) nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Lightweight Aggregate: ASTM C 330, 3/4-inch (19-mm) nominal maximum aggregate size.

E. Water: ASTM C 94/C 94M and potable .

2.3 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

C. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C 494/C 494M, Type C.

1. Products:

a. Boral Material Technologies, Inc.; Boral BCN.
b. Euclid Chemical Company (The); Eucon CIA.
c. Grace Construction Products, W. R. Grace & Co.; DCI.
d. Master Builders, Inc.; Rheocrete CNI.
e. Sika Corporation; Sika CNI.

D. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

1. Products:

a. Axim Concrete Technologies; Catexol 1000CI.
b. Boral Material Technologies, Inc.; Boral BCN2.
c. Cortec Corporation; MCI 2000 2005NS .
d. Grace Construction Products, W. R. Grace & Co.; DCI-S.
e. Master Builders, Inc.; Rheocrete 222+.
f. Sika Corporation; FerroGard-901.

2.4 POLYETHYLENE VAPOR RETARDERS

A. Polyethylene Vapor Retarders: ASTM D4397, **10-mil- (0.25-mm-)** thick sheet, with maximum permeance rating of 0.1 perm (5.7 ng/Pa x s x sq. m).

1. Products:

a. Henry, A Carlisle Company; Moistop Ultra 10.
b. Reef Industries, Inc.; Griffolyn Type 10 .
c. Stego Industries, LLC; Stego Wrap, 10 mils.
d. Or approved equal.

B. Granular Fill: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D 448, Size 57, with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-mm) sieve.

C. Fine-Graded Granular Material: Clean mixture of crushed stone, crushed gravel, and manufactured or natural sand; ASTM D 448, Size 10, with 100 percent passing a 3/8-inch (9.5-mm) sieve, 10 to 30 percent passing a No. 100 (0.15-mm) sieve, and at least 5 percent passing No. 200 (0.075-mm) sieve; complying with deleterious substance limits of ASTM C 33 for fine aggregates.

2.5 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork .

B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 per ASTM D 2240.

C. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

D. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. Types I and II, non-load bearing IV and V, load bearing , for bonding hardened or freshly mixed concrete to hardened concrete.

2.6 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi (34.5 MPa) at 28 days when tested according to ASTM C 109/C 109M.

2.7 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash: 25 percent.
2. Combined Fly Ash and Pozzolan: 25 percent.
3. Ground Granulated Blast-Furnace Slag: 50 percent.

4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
5. Silica Fume: 10 percent.
6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
7. Combined Fly Ash or Pozzolans, Ground Granulated Blast-Furnace Slag, and Silica Fume: 50 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

2.8 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength:
   a. 3,000 psi at 28 days unless noted otherwise.
   b. 4,000 psi at 28 days at exterior locations.
2. Minimum Cementitious Materials Content: 300 lb/cu. yd. (297 kg/cu. m) .
3. Slump Limit: 4 inches (100 mm) , plus or minus 1 inch (25 mm).
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch (19-mm) nominal maximum aggregate size for slabs exposed to freeze and thaw only.
5. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent.
6. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate.

2.9 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.

2.10 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.11 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116 , and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixer capacity of 1 cu. yd. (0.76 cu. m) or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd. (0.76 cu. m), increase mixing time by 15 seconds for each additional 1 cu. yd. (0.76 cu. m).
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

1. Class A, 1/8 inch (3.2 mm) for smooth-formed finished surfaces.
2. Class C, 1/2 inch (13 mm) for rough-formed finished surfaces.

C. Construct forms tight enough to prevent loss of concrete mortar.

D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

E. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

F. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

G. Chamfer exterior corners and edges of permanently exposed concrete.

H. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

I. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

J. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

K. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
3. Install dovetail anchor slots in concrete structures as indicated.

3.3 SHORES AND RESHORES

A. Comply with ACI 318 (ACI 318M) and ACI 301 for design, installation, and removal of shoring and reshoring.

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.4 VAPOR RETARDERS

A. Plastic Vapor Retarders: Place, protect, and repair vapor retarders according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.

B. Bituminous Vapor Retarders: Place, protect, and repair vapor retarders according to manufacturer's written instructions.

C. Granular Course: Cover vapor retarder with granular fill , moisten, and compact with mechanical equipment to elevation tolerances of plus 0 inch (0 mm) or minus 3/4 inch (19 mm).

1. Place and compact a 1/2-inch- (13-mm-) thick layer of fine-graded granular material over granular fill.

3.5 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Weld reinforcing bars according to AWS D1.4, where indicated.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

F. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.

G. Zinc-Coated Reinforcement: Repair cut and damaged zinc coatings with zinc repair material according to ASTM A 780. Use galvanized steel wire ties to fasten zinc-coated steel reinforcement.

3.6 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches (38 mm) into concrete.
3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
5. Space vertical joints in walls as indicated . Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

3.7 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6

inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

F. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.8 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces indicated exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system .
2. Finish surfaces to the following tolerances, according to ASTM E 1155 (ASTM E 1155M), for a randomly trafficked floor surface:

    a. Specified overall values of flatness, F(F) 25; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 17; and of levelness, F(L) 15.

3. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-foot- (3.05-m-) long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 3/16 inch (4.8 mm)

C. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated where ceramic or quarry tile is to be installed by either thickset or thin-set method . While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel finished floor surfaces.

D. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, sidewalks and ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.9 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

3.10 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

a. Water.

b. Continuous water-fog spray.
c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

a. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project .

3. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.11 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches (50 mm) deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.12 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.

C. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch (0.25 mm) wide or

that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

D. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

E. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.13 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:
1. Verification of use of required design mixture.
2. Concrete placement, including conveying and depositing.
3. Curing procedures and maintenance of curing temperature.
4. Verification of concrete strength before removal of shores and forms from beams and slabs.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.
2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. (76 cu. m) or fraction thereof of each concrete mixture placed each day.

    a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

3. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
4. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173/C 173M, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
5. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.
6. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
7. Compression Test Specimens: ASTM C 31/C 31M.

    a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
    b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.

8. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

    a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
    b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
10. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).
11. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

12. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
13. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
14. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
15. Correct deficiencies in the Work that test reports and inspections indicate dos not comply with the Contract Documents.

END OF SECTION 033000

SECTION 042000 - UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes unit masonry assemblies consisting of the following:
   1. Concrete masonry units (CMUs).
   2. Mortar and grout.
   3. Masonry joint reinforcement.
   4. Ties and anchors.
   5. Post -Installed Anchors
   6. Miscellaneous masonry accessories.

B. Related Sections include the following:
   1. Division 07 Section "Penetration Firestopping" for firestopping at openings in masonry walls.
   2. Division 07 Section "Joint Sealants" for sealing control and expansion joints in unit masonry.

1.3 DEFINITIONS

A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 PERFORMANCE REQUIREMENTS, TESTING STANDARDS & REFERENCES

A. Provide structural unit masonry that develops indicated net-area compressive strengths (f'_m) at 28 days.

B. Determine net-area compressive strength (f'_m) of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

C. Determine net-area compressive strength (f'_m) of masonry by testing masonry prisms according to ASTM C 1314 .

D. ASTM E488: Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements.

E. ASTM E1512: Standard Test Methods for Testing Bond Performance of Bonded Anchors.

F. ICC-ES AC60: Acceptance Criteria for Anchors in Masonry Elements.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Qualification Data: For product testing agency.

C. 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." Show elevations of reinforced walls.
3. Retrofit proprietary epoxy anchor system.

D. Material Certificates: Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards. Provide for each type and size of the following:
1. Masonry units.
a. Include material test reports substantiating compliance with requirements.
b. For masonry units used in structural masonry, 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. Joint reinforcement.
6. Reinforcing bars.
7. Anchors, ties, and metal accessories.

E. Mix Designs: For each type of mortar and grout . Include description of type and proportions of ingredients.
1. Include test reports, per ASTM C 780, for mortar mixes required to comply with property specification.
2. Include test reports, per ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

F. 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.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1093 for testing indicated, as documented according to ASTM E 548.

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, through one source from a 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 a single manufacturer for each cementitious component and from one source or producer for each aggregate.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 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 and hold cover securely in place.

B. 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.

C. 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 above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Products: Subject to compliance with requirements, provide one of the products specified.
   2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 MASONRY UNITS, GENERAL

A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not uses units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

2.3 CONCRETE MASONRY UNITS (CMUs)

A. Shapes: Provide shapes indicated and as follows:
   1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
   2. Provide bullnose units for outside corners, unless otherwise indicated.

B. Concrete Masonry Units: ASTM C 90 .
   1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi (13.1 MPa) .
   2. Weight Classification: Medium weight.
   3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
   4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.

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. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207, Type S.

D. Masonry Cement: ASTM C 91 .
   1. Products:
      a. Capital Materials Corporation; Flamingo Color Masonry Cement.
      b. Lafarge North America Inc.; Magnolia Masonry Cement Lafarge Masonry Cement Florida Super Masonry Trinity Super White Masonry Type S Trinity White Masonry Type N .

c. Lehigh Cement Company; Lehigh Masonry Cement Lehigh White Masonry Cement .

E. Mortar Cement: ASTM C 1329 .
1. Products:
a. Lafarge North America Inc.; Lafarge Mortar Cement or Magnolia Superbond Mortar Cement.

F. 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 (6.5 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.

G. Aggregate for Grout: ASTM C 404.

H. 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:
a. Addiment Incorporated; Mortar Kick.
b. Euclid Chemical Company (The); Accelguard 80.
c. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Morset.
d. Sonneborn, Div. of ChemRex; Trimix-NCA.

I. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with concrete masonry units, containing integral water repellent by same manufacturer.
1. Products:
a. Addiment Incorporated; Mortar Tite.
b. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Dry-Block Mortar Admixture.
c. Master Builders, Inc.; Color Cure Mortar Admix or Rheomix Rheopel .

J. 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 .
1. Interior Walls: Mill- Hot-dip galvanized, carbon steel.
2. Exterior Walls: Hot-dip galvanized, carbon steel.
3. Wire Size for Side Rods: W1.7 or 0.148-inch (3.8-mm) diameter.
4. Wire Size for Cross Rods: W1.7 or 0.148-inch (3.8-mm) diameter.
5. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches (407 mm) o.c.
6. 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.

2.6 TIES AND ANCHORS

A. Materials: Provide ties and anchors specified in subsequent paragraphs that are made from materials that comply with eight subparagraphs below, unless otherwise indicated.
   1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153/A 153M, Class B-2 coating.
   2. Galvanized Steel Sheet: ASTM A 653/A 653M, Commercial Steel, G60 (Z180) zinc coating.
   3. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, hot-dip galvanized after fabrication to comply with ASTM A 153/A 153M.
   4. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Corrugated Metal Ties: Metal strips not less than 7/8 inch (22 mm) wide with corrugations having a wavelength of 0.3 to 0.5 inch (7.6 to 12.7 mm) and an amplitude of 0.06 to 0.10 inch (1.5 to 2.5 mm) made from steel sheet, galvanized after fabrication not less than 0.043 inch (1.1 mm) 0.053 inch (1.3 mm) 0.067 inch (1.7 mm) 0.097 inch (2.5 mm) thick. Ties made from galvanized steel sheet may be used in interior walls, unless otherwise indicated.

C. 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.

D. 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 or hollow units laid with cells horizontal.
   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- (4.8-mm-) diameter, hot-dip galvanized steel wire. Mill-galvanized wire ties may be used in interior walls, unless otherwise indicated.

2.7 MISCELLANEOUS ANCHORS

A. Unit Type Inserts in Concrete: Cast-iron or malleable-iron wedge-type inserts.

B. Dovetail Slots in Concrete: Furnish dovetail slots with filler strips, of slot size indicated, fabricated from 0.034-inch (0.9-mm), galvanized steel sheet.

C. Anchor Bolts: 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.

D. Postinstalled Anchors: Provide chemical or torque-controlled expansion anchors, with capability to sustain, without failure, a load equal to six times the load imposed when installed in solid or grouted unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
   1. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (5 microns) for Class SC 1 service condition (mild).
   2. Corrosion Protection: Stainless-steel components complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Alloy Group 1 or 4) for bolts and nuts; ASTM A 666 or ASTM A 276, Type 304 or 316, for anchors.

3. System: Two-component, injection-type hybrid mortar system. System shall include the adhesive, injection dispenser, static mixing nozzles, and required anchoring elements (threaded rods or steel reinforcing bars).
   a. Acceptable Manufacturer: Subject to compliance with requirements, provide the Hilti HIT-HY 270 Adhesive Anchoring System by Hilti, Inc., or an approved equal meeting the performance properties of ESR-4143

E. Retrofit Lateral Movement Anchor Channels And Ties
1. System Description: Provide a two-piece surface-mounted structural anchorage system engineered to connect new concrete masonry unit (CMU) infill walls laterally to existing raw concrete masonry substrates. The system shall provide rigid lateral load restraint against wind and seismic forces perpendicular to the wall plane, while permitting unrestricted vertical differential movement between the existing structural wall frame and the new un-loaded infill panel.
2. Surface-Mounted Slotted Guide Channels: Continuous or semi-continuous C-shaped steel anchor tracks configured for direct surface mechanical fastening to existing CMU face shells.
   a. Material and Coating: Carbon steel sheet, structural or commercial quality, minimum 14-gauge (0.075-inch / 1.9 mm) thickness, Hot-Dip Galvanized after fabrication conforming to ASTM A153, Class B-2.
   b. Dimensions: Minimum slot width opening of 5/8 inch (16 mm) with internal return legs designed to securely capture and retain sliding anchors.
   c. Acceptable Products:
      1) Hohmann & Barnard, Inc.: No. 363 Gripstay Anchor Channel.
      2) Heckmann Building Products: No. 100 Anchor Channel.
      3) Blok-Lok (A Hohmann & Barnard Company): Flex-O-Lok Gripstay Track.
3. Flexible Sliding Wire Ties: Fabricated metal wire ties featuring a specialized flat loop or tee-head configuration engineered to insert and slide freely within the guide channel slots.
   a. Material and Coating: Graded structural steel wire, minimum 3/16-inch (4.76 mm) diameter, Hot-Dip Galvanized after fabrication conforming to ASTM A153, Class B-2.
   b. Geometry: Provide triangular or box-style closed wire loops extending horizontally from the track slot deep into the fresh mortar bedding planeof the new CMU infill. Wire tie length shall be selected to provide a minimum 2-inch (50 mm) masonry bed joint embedment, with a minimum 5/8-inch (16 mm) mortar cover to the exterior face shell.
   c. Acceptable Products:
      1) Hohmann & Barnard, Inc.: No. 363-BT Flexible Vee-Byna Tie.
      2) Heckmann Building Products: No. 129 Channel Slot Triangular Wire Tie.
      3) Blok-Lok (A Hohmann & Barnard Company): Gripstay Triangular Wire Anchor.
4. Substrate Mechanical Fasteners: Masonry fasteners must be completely compatible with the selected anchor channel alloys to prevent galvanic corrosion.
   a. Provide heavy-duty, high-performance concrete/masonry screw anchors (e.g., Elco Tapcon or ITW Buildex) with a minimum 1/4-inch diameter. Fasteners must achieve a minimum effective embedment depth of 1-1/4 inches into solid units or grout-filled cores of the existing wall structure.

2.8 EMBEDDED FLASHING MATERIALS

A. Flexible Flashing: For flashing not exposed to the exterior, use one of the following, unless otherwise indicated:
1. Copper-Laminated Flashing: 5-oz./sq. ft. (1.5-kg/sq. m) copper sheet bonded with asphalt between 2 layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.
   a. Products:

1) AFCO Products Inc.; Copper Fabric.
2) Hohmann & Barnard, Inc.; H & B C-Fab Flashing.
3) Sandell Manufacturing Co., Inc.; Copper Fabric Flashing.
4) York Manufacturing, Inc.; York Copper Fabric Flashing.

B. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.9 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene urethane or PVC .

B. 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.

C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

D. Weep/Vent Products: Use the following, unless otherwise indicated:
1. Round Plastic Weep/Vent Tubing: Medium-density polyethylene, 3/8-inch (9-mm) OD by 4 inches (100 mm) long.

E. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.142-inch (3.6-mm) steel wire, hot-dip galvanized after fabrication. Provide units with either two loops or four loops as needed for number of bars indicated.
1. Products:
a. Dayton Superior Corporation, Dur-O-Wal Division; D/A 810, D/A 812 or D/A 817.
b. Heckmann Building Products Inc.; No. 376 Rebar Positioner.
c. Hohmann & Barnard, Inc.; #RB or #RB-Twin Rebar Positioner.
d. Wire-Bond; O-Ring or Double O-Ring Rebar Positioner.

2.10 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:
a. Diedrich Technologies, Inc.
b. EaCo Chem, Inc.
c. ProSoCo, Inc.

2.11 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. Limit cementitious materials in mortar to portland cement , mortar cement, and lime.
   3. Limit cementitious materials in mortar for exterior and reinforced masonry to portland cement , mortar cement, and lime.
   4. 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 .

D. Mortar for Unit Masonry: Comply with ASTM C 270 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 S.
   2. For reinforced masonry, use Type S.
   3. For mortar parge coats, use Type S.
   4. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls use types; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.

E. 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 1.15.1 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 (200 to 280 mm) as measured according to ASTM C 143/C 143M.

2.12 SOURCE QUALITY CONTROL

A. Owner will engage a qualified independent testing agency to perform source quality-control testing indicated below:
   1. Payment for these services will be made by Owner.
   2. Retesting of materials failing to comply with specified requirements shall be done at Contractor's expense.

B. Concrete Masonry Unit Test: For each type of unit furnished, per ASTM C 140.

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 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. Build chases and recesses to accommodate items specified in this and other Sections.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.

D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
   1. Mix units from several pallets or cubes as they are placed.

F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

G. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:
   1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
   2. 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.
   3. 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.
   4. For exposed 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). Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch (3 mm).

5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm). Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch (3 mm).
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.
7. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch (1.5 mm) from one masonry unit to the next.

3.3 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond ; do not use units with less than nominal 4-inch (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 2 inches (50 mm) 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 concrete masonry units 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. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch (13-mm) clearance between end of anchor rod and end of tube. Space anchors 48 inches (1200 mm) o.c., unless otherwise indicated.
   3. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
   4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Division 07 Section "Fire-Resistive Joint Systems."
      a. At non-fire rated roof construction, provide approved fire rated compressible filler at e3ntire joint between wall and roof.

3.4 MORTAR BEDDING AND JOINTING

A. Lay concrete masonry units 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.
   1. For glazed masonry units, use a nonmetallic jointer 3/4 inch (19 mm) or more in width.

D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint), unless otherwise indicated.

3.5 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. Tie new CMU walls into existing
   3. Space reinforcement not more than 8 inches (203 mm) o.c. in foundation walls and parapet walls.
   4. Provide reinforcement not more than 8 inches (203 mm) above and below wall openings and extending 12 inches (305 mm) beyond openings.
      a. Reinforcement above is 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.

3.6 POST INSTALLED ANCHOR INSTALLATION

A. Adhesive Anchors in Masonry:
   1. Drill holes to the diameter and depth recommended by the manufacturer using a rotary hammer drill or as required by the code evaluation report. Do not use core drills unless explicitly approved by the anchor manufacturer.

2. Clean the drilled hole thoroughly prior to adhesive injection. Comply with the manufacturer's printed installation instructions, utilizing standard wire brushes and oil-free compressed air or a hand pump to clear all loose dust and debris.
3. For hollow or multi-wythe masonry construction, insert the appropriate mesh screen into the cleaned hole before injecting adhesive.
4. Where indicated, grout CMU cores solid with ASTM C476 grout.
5. Inject adhesive starting from the back of the hole or screen tube, withdrawing the mixing nozzle slowly to avoid trapping air pockets.
6. Insert the anchoring element (threaded rod or rebar) to the required embedment depth with a slow rotating motion.
7. Do not disturb or load the anchor until the adhesive has reached its full cure time based on the ambient temperature and the manufacturer's published cure schedule

3.7 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. Form control joints in concrete masonry using one of the following methods :
1. Fit bond-breaker strips into hollow contour in ends of concrete masonry units 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.

C. Form expansion joints in brick made from clay or shale 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 Division 07 Section "Joint Sealants."

D. 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 Division 07 Section "Joint Sealants," but not less than 3/8 inch (10 mm)
1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

3.8 FIELD QUALITY CONTROL

A. Inspectors: Owner will engage qualified independent inspectors to perform 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 Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections indicated below and prepare test reports:
   1. Payment for these services will be made by Owner .
   2. Retesting of materials failing to comply with specified requirements shall be done at Contractor's expense.

C. Testing Frequency: One set of tests for each 5000 sq. ft. (465 sq. m) of wall area or portion thereof.

D. Concrete Masonry Unit Test: For each type of unit provided, per ASTM C 140.

E. Mortar Test (Property Specification): For each mix provided, per ASTM C 780 . Test mortar for mortar air content and compressive strength .

F. Grout Test (Compressive Strength): For each mix provided, per ASTM C 1019 .

G. Prism Test: For each type of construction provided, per ASTM C 1314 at 28 days.

3.9 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 masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
   6. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

3.10 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. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
   1. Crush masonry waste to less than 4 inches (100 mm) in each dimension.
   2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Division 31 Section "Earth Moving."
   3. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.

C. 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 04 73 00 MANUFACTURED STONE VENEER

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Cultured Stone Veneer.

B. Cultured Stone Veneer specialty shapes.

C. Metal Lath and accessories

D. Polymer-modified mortar for adherence of manufactured stone veneer units.

E. Grouting and tooling of manufactured stone veneer joints.

1.3 RELATED SECTIONS

A. Section 04 20 00 - Unit Masonry.

B. Section 06 10 00 - Rough Carpentry.

C. Section 07 25 00 – Weather Resistive Barriers.

D. Section 07 60 00 - Sheet Metal Flashing & Trim.

1.4 REFERENCES

A. ASTM C 39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

C. ASTM C 67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.

D. ASTM C 177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.

E. ASTM C 192 - Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory.

F. ASTM C 482 - Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement.

G. ASTM C1063 - Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster

H. ASTM C 1670 - Standard Specification for Adhered Manufactured Veneer Veneer Units.

I. ASTM C 1780 - Standard Practice for Installation Methods for Adhered Manufactured Veneer Veneer.

J. ASTM D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

K. ASTM C270 - Standard Specification for Mortar for Unit Masonry.

L. ASTM C979 - Standard Specification for Pigments for Integrally Colored Concrete.

M. ASTM C1714 - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry.

N. UL 723 - Standard for Safety for Surface Burning Characteristics of Building Materials.

O. ICC ES AC 51 Acceptance Criteria for Manufactured Stone Veneer

P. Masonry Veneer Manufactures Association (MVMA): Installation Guide for Adhered Manufactured Stone Veneer.

Q. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures.

R. LEED: US Green Building Council's Leadership in Energy and Environmental Design Green Building Rating System.

1.5 DESIGN / PERFORMANCE REQUIREMENTS

A. Building Code Compliance:

1. International Code Council (ICC):

a. ES Report: ICC ESR 1364

2. Tested by Underwriters Laboratories, Inc.

B. Average Recycled Content of 58 percent validated by 3rd party analysis.

C. Backup Wall System and installation method for manufactured stone veneer shall meet the requirements of ASTM C 1780–Standard Practice for Installation Methods for Adhered Manufactured Veneer.

1.6 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.

2. Storage and handling requirements and recommendations.

3. Installation standards and methods.

C. Shop Drawings: Submit drawings depicting proper installation and flashing techniques. Coordinate locations with those found on the Drawings.

D. Selection Samples: For each finish product specified, two complete sets of color sample representing manufacturer's full range of available colors and textures.

E. Verification Samples: For each finish product specified, two samples, minimum size 8

inches (203 mm) square, representing actual product, color, and texture.

F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

G. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for cleaning and repair of components.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer who is a current member of Masonry Veneer Manufactures Association (MVMA) with a minimum of 5 years documented experience manufacturing and marketing all Manufactured Stone products of the type specified in this section.

B. Installer Qualifications: Company with documented experience in installation of manufactured masonry of the type specified including at least five projects within a 400 mile (650km) radius of the Project.

C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

1. Finish panel of size and location designated by Architect.
2. Minimum size 3 foot by 3 foot and showing transition to adjacent materials anticipated.
3. Do not proceed with remaining work until workmanship, color, texture and pattern are approved by Architect.
4. Refinish mock-up area as required to produce acceptable work.

D. Pre-Installation Conference:

1. Contractor shall arrange a meeting not less than thirty days prior to starting stone veneer work.
2. Attendance: Contractor, Architect/Owner Representative, veneer stone installer and manufacturer's representative.

1.8 DELIVERY, STORAGE & HANDLING

A. Store and handle products in conformance with the manufacturer's requirements and recommendations.

B. Store products off the ground on pallets in manufacturer's unopened packaging until ready for installation.

C. Protect materials from precipitation and freezing temperatures. Product with visible frozen moisture should not be installed.

1.9 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Cold weather installations: Maintain materials and ambient temperature at minimum

40 degrees F (4 degrees C) prior to, during, and 48 hours after installation.

C. Hot weather installations: Mist water on the scratch coated surface and the backs of the masonry veneer for installations that exceed 90 degrees (32 degrees C). Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1.10 WARRANTY

A. Provide manufacturers 50-year limited warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer Adhered Veneer Manufacturer: Subject to compliance with requirements, provide products for the following:

1. Cultured Stone, Westlake Royal Stone Solutions
2. Coronado Stone Products
3. Or approved equal.

B. Manufacturer Pre-Blended Polymer-Modified Adhered Veneer Mortar: Subject to compliance with project requirements, provide one of the following commercially available factory-controlled products:

1. Laticrete International, Inc.: MVIS Hi-Bond Veneer Mortar.
2. Spec Mix (A Quikrete Company): Polymer Modified Adhered Veneer Mortar (Pmavm).
3. Mapei Corporation: Mapestone VMHigh-Bond Mortar.
4. Sakrete: Pro-Mix Accelerated Stone Veneer Mortar.

2.2 MANUFACTURED STONE VENEER–GENERAL

A. Manufactured Stone Veneer Performance Requirements: Conforming to ASTM C 1670 and as follows:

1. Compressive Strength: Not less than 1800 psi (12.4 MPa) average for 5 specimens and not less than 2100 psi (14.4 MPa) for individual specimen when tested in accordance with ASTM C 39 & ASTM C 192.
2. Bond Between Manufactured Masonry Unit, Mortar and Backing: Not less than 50 psi (345 kPa) when tested in accordance with ASTM C 482 using Type S mortar.
3. Thermal Resistance: R-value of not less than 0.355 per inch (25.4 mm) of thickness when tested in accordance with ASTM C 177.
4. Freeze/Thaw: No disintegration and less than 3 percent weight loss when tested in accordance with ASTM C 67.
5. Water Absorption: Tested in accordance with UBC 15-5 9-22% depending on density value.

6. Unit Weight: Not more than 15 psf (73 kg/m2) saturated.
7. Surface Burning Characteristics: Not more than the following when tested in accordance with UL 723:
   a. Flamespread: 25.
   b. Smoke Development: 450.
8. UV Stable - Mineral oxide pigments.

B. Certifications:

1. ICC ES AC 51 Acceptance Criteria for Manufactured Stone Veneer
2. ICC Evaluation Service - Evaluation Report ESR 1364 & ASTM C 1670.
3. HUD Material Release Number 1316c
4. UL Tested for Surface Burning Characteristics
5. Texas Department of Insurance Product Evaluation EC-21
6. Florida Product Approval Number FL15047

2.3 CULTURED STONE VENEER

A. Stone Veneer:

1. Profile: Country Ledgestone. Include matching corner pieces.
2. Color: Ashfall.

B. Accessories

1. Stone Accessories: All shapes and sizes as required including watertable/sill, pier cap, flat textured capstone and flagstone slope wall cap.
2. Color: Manufacturer’s standard as selected by Architect..

2.4 MORTAR MATERIALS

A. Mortar Mix Standard: Provide a factory-packaged, dry, pre-blended cementitious mixture containing optimized aggregates and polymer modifiers conforming to ASTM C1714 and engineered to meet ASTM C270, Type S physical requirements.

B. Performance Attributes:

1. Shear Bond Strength: Minimum 50 psi (0.34 MPa) at 28 days when evaluated according to ASTM C482.
2. Water Retention: Conforming to standard ASTM C270 parameters to optimize curing window against highly absorptive concrete substrates.
3. Properties: High tack, anti-sag property configured specifically for un-supported vertical placement of heavy concrete units.

2.5 JOINT MATERIALS & COLORING

A. Mortar Pigments: Provide custom-colored joints to match stone matrix, provide pure mineral oxide pigments conforming to ASTM C979.

B. Pigments must be factory pre-blended by the manufacturer into dry batching to assure batch-to-batch uniformity.

C. Field-added powder pigments are strictly prohibited.

2.6 MIXES

A. Mixing Protocol: Thoroughly mix dry pre-blended mortar materials with clean, potable water at the job site using a mechanical mixer.

1. Follow manufacturer's strict liquid-to-powder ratios to avoid overwatering and drop-off in mechanical shear capacity.
2. Mix for a minimum of 3 to 5 minutes to fully activate dry polymer additives.
3. Re-tempering of polymer-modified mortars that have begun their initial set is prohibited.

2.7 FOUNDATION WEEP SCREED

A. Specifically designed for use at the bottom of adhered manufactured veneer walls over concrete substrates to allow trapped moisture to drain

B. Material: Hot-dip galvanized steel sheet, minimum 0.0217 inch (26 gauge), G60 or G90 coating complying with ASTM A653] OR [Rigid, UV-resistant Polyvinyl Chloride (PVC) complying with ASTM D1784.

C. Configuration: Minimum 3-1/2 inch (89 mm) vertical attachment flange with a sloped weep leg projecting outward to match the scratch coat/mortar bed thickness, and integral weep holes.

2.5 LATH AND FURRING

A. Metal Lath: Self-furring, diamond-mesh metal lath complying with ASTM C847.

1. Weight: Minimum 3.4 lb/sq yd (1.84 kg/sq m).
2. Material: Hot-dip galvanized steel sheet, G60 coating minimum, complying with ASTM A653/A653M.
3. Configuration: Self-furring dimples or grooves providing a minimum 1/4-inch (6.4 mm) continuous clearance between the lath body and the substrate to ensure complete mortar encapsulation.
4. Fasteners for Plywood Substrates: Corrosion-resistant fasteners complying with ASTM C1063.
   a. Screws: Minimum No. 8 Type S or W wafer-head wood screws, or sharp-point bugle-head drywall screws, with a minimum 7/16-inch (11 mm) diameter head or fitted with minimum 7/16-inch (11 mm) diameter galvanized washers. Finishes must be hot-dip galvanized or zinc-plated to resist corrosion.
   b. Staples: Minimum 16-gauge, galvanized, powered staples with a minimum 3/4-inch (19 mm) crown.
   c. Length: Fasteners must be of sufficient length to penetrate through the plywood sheathing and extend a minimum of 1/4 inch (6.4 mm) beyond the backside of the plywood, OR penetrate a minimum of 1 inch (25 mm) into underlying structural wood framing members.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared in conformance with ASTM C 1780 for the backup wall system indicated on the Drawings.

B. Examine concrete substrate to verify it is flat, clean, and free of defects that would prevent the secure, level installation of the weep screed

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION, GENERAL

A. Install in accordance with manufacturer's instructions.

B. Install/Apply Related Materials in accordance with type of substrate and manufactured stone veneer manufacture's installation instructions.

3.4 FOUNDATION WEEP SCREED PLACEMENT:

A. Install a continuous weep screed along the bottom terminating edge of the adhered stone veneer system

B. Secure the vertical attachment flange tightly to the substrate using concrete screws, powder-actuated fasteners, or masonry nails spaced a maximum of 12 inches (305 mm) on center.

C. Ensure the weep screed is installed level to facilitate proper drainage.

D. Water-Resistive Barrier (WRB) Integration: Overlap the vertical attachment flange of the weep screed with the water-resistive barrier (WRB) by a minimum of 2 inches (51 mm). The WRB must be installed on the outside (exterior side) of the screed flange to direct moisture outward

E. Lath Integration: Install metal lath over the WRB and terminate it terminating just above the V-groove or sloped nose of the weep screed. Do not allow the lath to extend past the weep holes.

F. Fastening Tolerances and Methods:

1. Secure the vertical flange to the concrete substrate fasteners of sufficient length to achieve a minimum embedment depth of 1 inch (25 mm) into solid substrate

2. Locate fasteners within 2 inches (51 mm) of all ends, joints, and corners to prevent warping or peeling of the flange away from the wall.

3. Drive fasteners flush and tight against the attachment flange without distorting or denting the metal or PVC profile.

G. Corners and Terminations:

1. Do not butt-joint manufactured lengths at building corners.

2. Miter and field-fabricate internal and external corners from a single piece of screed where possible, or utilize pre-manufactured corner accessories.

3. Extend the vertical attachment flange a minimum of 6 inches (152 mm) beyond any corner transition before splicing.

4. Seal all corner joints internally using a high-performance, exterior-grade polyurethane or MS-polymer sealant prior to installing the water-resistive barrier (WRB).

a. At terminations (such as where the veneer meets a door frame or other transition), cap or seal the open end of the weep screed profile to prevent mortar or debris from plugging the drainage track.

3.5. INSTALLATION OF METAL LATH

A. General Installation: Install lath in accordance with ASTM C1063 and manufacturer's written instructions.

B. Orientation: Apply lath horizontally with the long dimension perpendicular to fasteners. Ribs or pockets must face upward to trap and hold the mortar scratch coat.

C. Lapping:

1. Lap sides a minimum of ½ inch (13 mm).

2. Lap ends a minimum of 1 inch (25 mm).

3. Stagger end laps between adjacent courses to prevent continuous vertical seams.

D. Installation of metal lath on plywood

1. Fastening Pattern and Spacing:

a. Into Structural Framing: Wherever possible, drive fasteners through the lath and ¾-inch plywood directly into the underlying wood studs. Space fasteners vertically at a maximum of 6 inches (152 mm) on center along the line of each stud. Stud spacing must not exceed 16 inches (406 mm) on center.

b. Into Plywood Sheathing (Between Framing): Where fasteners fall between framing members, secure the lath directly to the ¾-inch plywood sheathing. Space fasteners in a grid pattern at a maximum of 6 inches (152 mm) on center vertically and 6 inches (152 mm) on center horizontally.

2. Locate fasteners within 2 inches (51 mm) of all outer edges, corners, and lath terminations.

3. Fastener Depth and Tightness:

a. Drive fasteners straight and perpendicular to the wall surface.

b. Seat fastener heads or staple crowns snugly against the wire mesh without distorting, cutting, or crushing the lath profile or flattening the self-furring dimples.

c. Do not over-drive screws or staples, which could strip the plywood threads or tear the underlying water-resistive barrier (WRB)

3.5 SCRATCH COAT APPLICATION

A. Materials: Utilize the specified pre-blended mortar or a designated scratch coat mix conforming to ASTM C926.

B. Placement: Apply mortar forcefully over the metal lath to completely encapsulate the wire mesh structure.

1. Maintain an overall scratch coat thickness between 3/8 inch (10 mm) and 1/2 inch (13 mm).

C. Scoring: Once the scratch coat has achieved initial set but before it fully hardens, use a notched trowel or scoring tool to produce horizontal score lines. Score lines shall be crisp and deep enough to provide a high-quality mechanical interlock for the setting bed mortar.

D. Curing: Allow the scratch coat to cure for a minimum of 24 hours before installing veneer units. Moist cure if required by high temperature or arid conditions.

3.6 MANUFACTURER VENEER INSTALLATION

A. Install manufactured veneer in accordance with MVMA Installation Guide for Adhered Manufactured Stone Veneer, ASTM C 1780 and applicable Codes.

B. Install/Apply Related Materials in accordance with type of substrate and manufactured stone veneer manufacture's installation instructions.

C. General:

1. Walls: Provide with Blended Color and texture based on color specified.

2. Special Shapes: Color to match stones specified.

a. Provide Stones manufactured specifically for installation at corners where located on the Drawings.

3. Mortar Joints

a. Style: Standard 1/2 inch tooled

b. Tool all grout joints.

4. Stone Direction:

a. Random placement

5. Windows, Doors & Wall Openings:

a. Butt field stones to wall opening.

b. Install specified trim stones where located on the Contract Drawings.

6. Sills: Install Sills where located on the Drawings.

7. Caps: Install Capstones where located on the Drawings.

D. Seal all joints at wall openings and penetrations with a sealant approved for use with masonry products.

E. Flashing: Coordinate with Flashings specified in Section 07 62 00 - Sheet Metal Flashing and Trim.

F. Rainscreen: Coordinate with Rainscreens with other specification sections.

3.7 GROUTING AND JOINT FINISHING

A. Joint Filling: Utilize a grout bag to fill the spaces between individual stone units with the specified polymer-modified mortar mix. Avoid smearing mortar onto the visible face of the stone units.

B. Tooling: Monitor the curing state of the grout joints. When the mortar becomes "thumb-print" dry and firm to pressure, tool the joints.

C. Compact and finish the joints firmly utilizing a concave metal jointing tool or a wooden striking stick.

D. Ensure the compaction forces the mortar tightly against all stone unit edges to establish a watertight perimeter seal.

E. Cleaning: Allow excess or smeared mortar to dry until it crumbles easily. Remove loose fragments with a dry bristle brush. Do not use wire brushes, acid cleaners, or wet sponges on the face of the stone.

3.8 FIELD QUALITY CONTROL

A. Manufacturer’s Field Services: Provide periodic site visits as requested by Architect. Report any discrepancies to the Contractor with copies to the Architect within 24 hours of each visit.

3.9 ADJUSTING AND CLEANING

A. Clean manufactured veneer in accordance with manufacturer’s installation instructions.

B. Remove and replace veneer of the following description:

1. Broken, chipped, stained, or otherwise damaged veneer. Veneer may be repaired if methods and results are approved by Architect.
2. Defective joints.
3. Veneer not matching approved samples and mockups.
4. Veneer not complying with other requirements indicated.

C. Replace in a manner that results in veneer matching approved samples and mockups, complying with other requirements, and showing no evidence of replacement.

D. In-Progress Cleaning: Clean veneer as work progresses. Remove mortar fins and smears before tooling joints.

E. Final Cleaning: After mortar is thoroughly set and cured, clean veneer as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on mockup; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before cleaning veneer.
3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.

3.10 PROTECTION

A. Protect finished work from rain and work on either side of the wall during and for 48 hours following installation.

B. Protect installed products until completion of project.

C. Clean prior to project closeout.

D. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 047300

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification Sections, apply to this Section..

1.2 SUMMARY

A. This Section includes the following:

1. Metal bollards.

B. Related Sections include the following:
1. Division 03 Section "Concrete" for foundations.

1.3 SUBMITTALS

A. Product Data: For the following:
1. Metal Bollards.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.

1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
2. Provide templates for anchors and bolts specified for installation under other Sections.
3. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
4. Provide Shop Drawings for the following:
   a. Metal bollards.

1.4 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.

1.5 COORDINATION

A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

B. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

1.6 WARRANTY

A. Provide bollard manufacturer's standard warranty against defects in materials and workmanship.
   1. Warranty Period: Five years from date of invoice, except as otherwise indicated.
      a. Coatings: Two years, against peeling, cracking, or significant color change.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

   1. Products: Subject to compliance with requirements, provide one of the products specified.

2.2 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.3 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.4 MISCELLANEOUS MATERIALS

A. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

B. 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.

C. Concrete Materials and Properties: Comply with requirements in Division 03 Section "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 3000 psi (20 MPa), unless otherwise indicated.

2.5 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form exposed work true to line and level with accurate angles and surfaces and straight edges.

D. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.

E. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

F. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

G. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.6 METAL BOLLARDS

A. Manufacturer: Subject to compliance with specifications provide the following:
   1. Reliance Foundry, R-7902
   2. Or approved equal.

B. Properties
   1. Height: 36 inches (91.4 cm)
   2. Diameter: 4 3/8 inches (11.1 cm) body; 7 1/2 inches (19.1 cm) base
   3. Weight: 29 lbs. (13.2 kg)
   4. Design: Cylindrical with rounded top.
   5. Material: Steel: ASTM A36; 25 percent recycled-material content.
   6. Color Coating: Black textured semi gloss.
   7. Type: Polyester powder coat over epoxy primer.

C. Installation:
   1. Fixed, new concrete, embedded.

2.7 MISCELLANEOUS MATERIALS

A. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

B. Shrinkage-Resistant Grout: Factory-packaged, nonmetallic, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. 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.

3.2 INSTALLATION

A. General: Comply with manufacturer's installation instructions and setting drawings.
1. Do not install damaged, cracked, chipped, deformed or marred bollards.

B. Anchor bollards in place with concrete footings. Center and align bollards in holes 3 inches (75 mm) above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.

3.3 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.

B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint in accordance with manufacturer's instructions.

C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 055000

SECTION 055213 - PIPE AND TUBE RAILINGS

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this section

1.2 SUMMARY

A. Section Includes:
   1. Aluminum railings.

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.4 ACTION SUBMITTALS

A. Product Data:

   1. Manufacturer's product lines of mechanically connected railings.
   2. Fasteners.
   3. Post-installed anchors.
   4. Handrail brackets.
   5. Bituminous paint.
   6. Anchoring cement.
   7. Metal finishes.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Samples for Initial Selection: For products involving selection of color, texture, or design.

D. Samples for Verification: For each type of exposed finish required.

   1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters, including finish.
   2. Fittings and brackets.
   3. Assembled Sample of railing system, made from full-size components, including top rail, post, handrail, and infill. Sample need not be full height.

a. Show method of connecting and finishing members at intersections.

E. Delegated Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For delegated design professional engineer.

B. Mill Certificates: Signed by manufacturers of stainless steel products, certifying that products furnished comply with requirements.

C. Product Test Reports: For tests on railings performed by a qualified testing agency, in accordance with ASTM E894 and ASTM E935.

D. Research Reports: For post-installed anchors, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect mechanical finishes on exposed surfaces of railings from damage by applying a strippable, temporary protective covering before shipping.

1.7 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design railings, including attachment to building construction.

B. Structural Performance: Railings, including attachment to building construction, withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:

a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces .

2.2 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

1. Provide type of bracket with flange tapped for concealed anchorage to threaded hanger bolt and that provides 1-1/2-inch (38-mm) clearance from inside face of handrail to finished wall surface.

2.3 ALUMINUM RAILINGS

A. Manufacturers: Subject to compliance with requirements provide products by the following.
1. R&B Wagner Inc.
   a. 10600 W Brown Deer Rd, Milwaukee, WI 53224. Phone: 1-888-243-6914.
   b. Email: rfq@mailwagner.com. Web: www.wagnercompanies.com.
   c. Product: Series 5H Horizontal Aluminum Pipe Railing.
2. Or approved equal.

B. Source Limitations: Obtain railing from single source from single manufacturer.

C. Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of alloy and temper designated below for each aluminum form required.

2.4 RAILING MATERIALS

A. Rail and Posts: Aluminum extrusions; alloy and temper 6063-T4 or 6063-T6 for rails and posts.
1. Pipe: ASTM B 429.

B. Base Flanges, Anchors, and railing accessories: ASTM B 247.
1. Bases cast from manufacturer’s standard A-356-T6, 535, or 713 aluminum alloys or solid extruded 6063 aluminum alloy stock.
2. Base flanges and railing accessories cast from manufacturer’s standard 319, A-356, A-356-T6, 535, or 713 aluminum alloys.
3. Anchorages: Provide anchorage for fastening and complying with applicable Federal standards. All fasteners used in the system shall be stainless steel.

2.5 HORIZONTAL PIPE RAILINGS

A. Horizontal Pipe Rail Guard Railing Series 5H: 1-1/2 inch (3.81 cm) Schedule 40 pipe with 1.9 inch (4.83 cm) outside diameter runs between posts and utilizes concealed fasteners. No joints shall be fastened via welding. Top rail shall be continuous through the full length of the system.

B. Horizontal Pipe Rail
   1. Pipe: 1-1/2 inch (3.81 cm) Schedule 40 pipe with 1.9 inch (4.83 cm) outside diameter runs between posts and utilizes concealed fasteners.
   2. Top rail shall be continuous through the full length of the system.

C. Round posts
   1. Post: 1-1/2 inch Schedule 40 pipe (3.81 cm) with 1.9 inch (4.83 cm) outside diameter with reinforcement rebar inserts.

D. Height:
   1. 42 inches (106.68 cm) and as indicated on the drawings.

E. Design
   1. As indicated on the drawing.

F. Component Parts:
   1. Provide all connecting components and fittings as required.

G. Base: Size to fit the posts specified.
   1. Cover Flange for Embedded Posts and as indicated on the drawings.

H. Hand Rail: Series 5H Mounted Hand Rail:
   1. Pipe: 1-1/2 inch (3.81 cm) Schedule 40 pipe with 1.9 inch (4.83 cm) outside diameter.
   2. Handrail to run continuously throughout the whole length of handrail system.
   3. Mount to wall, railing, or other structure by utilizing mounting plates.
   4. No components shall be fastened via welding.
   5. Handrail will be installed at a height of 34 – 38 inches above ramp surface or nosing.
      a. See drawings for additional information.
   6. Clearance of a minimum 1-½” shall exist between the wall or post surface and the handrail.
   7. Top and bottoms of handrail sections that stop at a landing, the handrail shall extend 12 in horizontally beyond the top riser and 12 in. horizontally beyond the bottom tread.
   8. Handrail shall be continuous, without interruption by newel posts or other obstructions.
   9. Handrails shall return to a guard or walking surface.
      a. Handrails shall not be returned to columns or walls.

2.6 FASTENERS

A. Fastener Materials:
   1. Aluminum Railing Components: Type 316 stainless steel fasteners.
   2. Finish exposed fasteners to match appearance, including color and texture, of railings.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction and capable of withstanding design loads.

C. Fasteners for Interconnecting Railing Components:

1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.

D. Post-Installed Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193.
1. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 2 (A4) stainless steel bolts, ASTM F593, and nuts, ASTM F594.

2.7 MISCELLANEOUS MATERIALS

A. Handrail Brackets: Cast aluminum edge of handrail 2” from face of railing or wall.

B. Bituminous Paint: Cold-applied asphalt emulsion, complying with ASTM D1187/D1187M.

C. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.

1. Water-Resistant Product: At exterior locations, provide portland cement based mix formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.8 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations.

1. Clearly mark units for reassembly and coordinated installation.
2. Use connections that maintain structural value of joined pieces.

C. Cut, drill, and punch metals cleanly and accurately.

1. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated.
2. Remove sharp or rough areas on exposed surfaces.

D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that are exposed to weather in a manner that excludes water.

1. Provide weep holes where water may accumulate.
2. Locate weep holes in inconspicuous locations.

F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

G. Connections: Fabricate railings with nonwelded concealed connections unless otherwise indicated.

H. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

1. Fabricate splice joints for field connection, using an epoxy structural adhesive, if this is manufacturer's standard splicing method.

I. Form changes in direction as follows:
1. By bending or by inserting prefabricated elbow fittings as is standard with manufacturer.

J. Bend members in jigs to produce uniform curvature for each configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

K. Close exposed ends of hollow railing members with prefabricated cap and end fittings of same metal and finish as railings.

L. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch (6 mm) or less.

M. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.

N. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work.

1. Fabricate anchorage devices capable of withstanding loads imposed by railings.
2. Coordinate anchorage devices with supporting structure.

O. For railing posts set in concrete, provide stainless steel sleeves not less than 6 inches (150 mm) long with inside dimensions not less than 1/2 inch (13 mm) greater than outside dimensions of post, with metal plate forming bottom closure.

P. For removable railing posts, fabricate slip-fit sockets from stainless steel tube or pipe whose ID is sized for a close fit with posts; limit movement of post without lateral load, measured at top, to not more than one-fortieth of post height.

1. Provide socket covers designed and fabricated to resist being dislodged.

2. Provide chain with eye, snap hook, and staple across gaps formed by removable railing sections at locations indicated. Fabricate from same metal as railings.

2.9 FABRICATION

1. Tolerances: Verify dimensions on site prior to shop fabrication for proper connection to building structure or substrate.
2. Components or railing sections shall be fabricated to exact measurements specified through Drawings and field dimensions.
3. Components or railing sections shall be fabricated at the manufacturing facility in largest practical site delivery sizes.
4. Pipe cuts shall be square and accurate for minimum joint-gap. Cuts shall be clean and free of chamfer, from deburring, nicks and burrs.
5. Railings angled horizontally, machine castings to proper angle.
6. Fabricate railing system to meet step railing requirements; riser and tread dimensions of the steps.
7. Posts grouted in concrete to have one nominal 1/4 inch (6.0 mm) nominal diameter weep hole, 1/2 inch (12.0 mm) nominal above post collar, in the plane of the rail.
8. Provide components required for anchorage of framing. Fabricate anchors and related components of material and finish as required, or as specifically noted.

2.10 ALUMINUM FINISHES

A. 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 unacceptable. 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.

B. Color Anodic Finish: AAMA 611, AA-M12C22A42.

1. Color: Black.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.2 INSTALLATION, GENERAL

A. Perform cutting, drilling, and fitting required for installing railings.

1. Fit exposed connections together to form tight, hairline joints.
2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.

3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
4. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
5. Set posts plumb within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).
6. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet (6 mm in 3.5 m).

B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1. Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a two heavy coats of bituminous paint.

C. Adjust railings before anchoring to ensure matching alignment at abutting joints.

D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.3 RAILING CONNECTIONS

A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings. Seal recessed holes of exposed locking screws, using plastic cement filler colored to match finish of railings.

B. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve, extending 2 inches (50 mm) beyond joint on either side; fasten internal sleeve securely to one side; and locate joint within 6 inches (150 mm) of post.

3.4 ANCHORING POSTS

A. Form or core-drill holes not less than 5 inches (125 mm) deep and 3/4 inch (20 mm) larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with Portland cement based anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

B. Cover anchorage joint with flange of same metal as post, welded to post after placing anchoring material, or attached to post with setscrews, as is standard with manufacturer.

C. Anchor posts to metal surfaces with flanges, angle type, or floor type, as required by conditions, connected to posts and to metal supporting members as follows:
1. For aluminum railings, attach posts to railing system using manufacturer’s standard fitting, designed and engineered for this purpose.

3.5 ATTACHING RAILINGS

A. Return handrail system to itself or posts. Secure to posts with manufacturer's standard cast fittings.

3.6 FIELD QUALITY CONTROL AND DEFECT CORRECTION

A. Inspection:
   1. Prior to Substantial Completion, the Contractor shall conduct a comprehensive visual inspection of all installed aluminum assemblies under clear, natural lighting conditions to identify surface defects, scratches, abrasions, and exposed bare metal.

B. Unacceptable Field Correction Materials:
   1. The use of standard consumer-grade permanent markers, ink-based pens, or unapproved generic hardware-store spray paints for touch-up work is strictly prohibited. Any assembly touched up with unauthorized materials shall be rejected and replaced at the Contractor's sole expense.

C. Correction of Minor Damage (Exposed Silver/Hairline Scratches):
   1. Clean the immediate area utilizing denatured alcohol and a lint-free cloth to ensure the surface is completely free of grease, dirt, and field debris.
   2. For raw metal abrasions under 1/16-inch width, apply a specialized, cold chemical conversion coating formulated specifically for aluminum substrates (e.g., Birchwood Casey Aluminum Black or approved equivalent).
   3. Apply the chemical conversion fluid strictly within the boundary of the scratch. Allow the solution to react per the manufacturer's written duration, rinse thoroughly with clean water to neutralize the acid reaction, and wipe dry.

D. Correction of Moderate Surface Scuffs:
   1. For wider, non-structural cosmetic scuffs where chemical conversion is visually impractical, utilize a professional-grade, fast-drying architectural lacquer or acrylic touch-up pen specifically matched to the original factory anodized color profile and gloss factor (e.g., CRL AlumaColor or approved matching system).
   2. Mask adjacent undamaged factory surfaces using high-quality painter's tape prior to application.

   1. Apply the touch-up coating in thin, uniform layers using a fine-tipped artist brush or manufacturer-provided touch-up applicator to prevent sagging, pooling, or excessive film build-up.

E. Field Rejection Criteria:

   2. Aluminum assemblies exhibiting deep structural gouges, extensive surface pitting, or visual splotching from improper touch-up applications that cannot be cleanly blended to match the surrounding factory-anodized finish shall be deemed defective. Such members shall be completely removed and replaced with new factory-finished units.

3.7 CLEANING

A. Clean aluminum by washing thoroughly with clean water and soap and rinsing with clean water.

3.8 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

B. Restore finishes damaged during installation and construction period, so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 055213

SECTION 061000 - ROUGH CARPENTRY

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. Framing with dimension lumber.
2. Wood blocking, cants, and nailers.
3. Wood furring and grounds.
4. Wood sleepers.

B. Related Requirements:
1. Section 061600 "Sheathing."
2. Section 061715 “Engineered Structural Wood” for LVL, PSL and I-Joists.
3. Section 061753 “Shop-Fabricated Wood Trusses” for dimension lumber trusses.
4. Section 062013 “Exterior Finish Carpentry” for PVC trim.
5. Section 064014 “Exterior Architectural Woodwork” for cedar dimension lumber, boards and brackets.

1.3 DEFINITIONS

A. Exposed Framing: Framing not concealed by other construction.

B. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) or greater but less than 5 inches nominal (114 mm actual) in least dimension.

C. Timber: Lumber of 5 inches nominal (114 mm actual) or greater in least dimension.

D. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NeLMA: Northeastern Lumber Manufacturers' Association.
2. NLGA: National Lumber Grades Authority.
3. RIS: Redwood Inspection Service.
4. SPIB: The Southern Pine Inspection Bureau.
5. WCLIB: West Coast Lumber Inspection Bureau.
6. WWPA: Western Wood Products Association.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.5 INFORMATIONAL SUBMITTALS

A. 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.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Fire-retardant-treated wood.
3. Engineered wood products.
4. Power-driven fasteners.
5. Powder-actuated fasteners.
6. Expansion anchors.
7. Metal framing anchors.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Certified Wood: Materials shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

1. Dimension lumber framing.
2. Timber.
3. Rim boards.
4. Miscellaneous lumber.

B. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
3. Provide dressed lumber, S4S, unless otherwise indicated.

C. Maximum Moisture Content of Lumber: 15 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U2; 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. Do not use inorganic boron (SBX) for sill plates.
2. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Kiln-dry lumber after treatment to a maximum moisture content of 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. Preservative Treatment by Pressure Process: AWPA U1, Use categories as follows:

1. UC2: Interior construction not in contact with ground but may be subject to moisture. Include the following items:

a. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
b. Wood floor plates that are installed over concrete slabs-on-grade.

2. UC3A (Commodity Specification A - sawn lumber): Coated sawn products in exterior construction not in contact with ground but exposed to all weather cycles including intermittent wetting. Include the following items:

a. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

3. UC4A (Commodity Specification A - sawn lumber): Non-critical sawn products in contact with ground and exposed to all weather cycles including continuous or prolonged wetting, and sawn products not in contact with ground but with ground contact-type hazards or that are critical or hard to replace. Include the following items:

a. Wood framing members that are less than 6 inches (152 mm) above the ground.
b. Wood plates, blocking and framing in enclosed column enclosures.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (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. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
3. Design Value Adjustment Factors: Treated lumber shall be tested according ASTM D 5664 and design value adjustment factors shall be calculated according to ASTM D 6841. For enclosed roof framing, framing in attic spaces, and where high temperature fire-retardant treatment is indicated, provide material with adjustment factors of not less than 0.85 modulus of elasticity and 0.75 for extreme fiber in bending for Project's climatological zone.

C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent

D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.

E. Application: Treat items indicated on Drawings

2.4 DIMENSION LUMBER FRAMING

A. Non-Load-Bearing Interior Partitions by Grade: Construction or No. 2 grade.

1. Application: Interior partitions not indicated as load bearing.
2. Species:

a. Hem-fir (north); NLGA.
b. Southern pine or mixed southern pine; SPIB.
c. Spruce-pine-fir; NLGA.
d. Hem-fir; WCLIB, or WWPA.
e. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
f. Northern species; NLGA.
g. Eastern softwoods; NeLMA.
h. Western woods; WCLIB or WWPA.

B. Machine Stress-Rated (MSR) Lumber Partitions: Any species of MSR dimension lumber with a grade of not less than 2100f-1.8E.

1. Application: Exterior walls and interior load-bearing partitions.

C. Load-Bearing Interior and Exterior Joist and Rafters: Southern Yellow Pine machine stress-rated dimension lumber of not less than the following:
1. Modulus of Elasticity: 1,100,000 psi .
2. Extreme fiber stress in bending: Fb= 1,250 psi
3. Extreme fiber stress in shear: Fv-175 psi

2.5 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Rooftop equipment bases and support curbs.
4. Cants.
5. Furring.
6. Grounds.

B. For items of dimension lumber size, provide Construction or No. 2 and the following species:

1. Hem-fir (north); NLGA.
2. Mixed southern pine; SPIB.

C. 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.

D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.6 FASTENERS

A. General: Provide fasteners of size and type indicated that 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 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. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).

F. Bolts: 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.

G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry assemblies and equal to four times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Grade A1 or A4).

2.7 METAL FRAMING ANCHORS

A. Manufacturers: Subject to compliance with requirements, provide products by the following
1. Simpson Strong-Tie Co., Inc.
2. Or approved equal.

B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

C. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.

1. Use for interior locations unless otherwise indicated.

D. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.

1. Use for wood-preservative-treated lumber and where indicated.

2.8 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.

B. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).

C. Adhesives for Gluing Furring to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

1. Adhesives shall have a VOC content of 70 <Insert value> g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.

D. Install sill sealer gasket/termite barrier in accordance with manufacturer's written instructions at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

E. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

F. Do not splice structural members between supports unless otherwise indicated.

G. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.

H. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:

1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches (2438 mm) o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
2. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet (6 m) o.c.

I. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

J. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

K. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.
2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

L. Securely attach roofing nailers to substrates by anchoring and fastening to withstand bending, shear, or other stresses imparted by Project wind loads and fastener-resistance loads as designed in accordance with ASCE/SEI 7.

M. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 INSTALLATION OF WOOD FURRING

A. Install level and plumb with closure strips of same size as furring at all edges and openings. Shim with wood as required for tolerance of finish work.

B. Furring to Receive Plywood or Cementitious Siding or Paneling: Install flat face 2” x 4” studs at 16” o.c. vertically.
1. Install horizontal 1” x 3” furring at 24” o.c. as may be required by siding manufacturer.

3.3 INSTALLATION OF CEILING JOIST AND RAFTER FRAMING

A. Ceiling Joists: Install with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters.

B. Rafters: Notch to fit exterior wall plates and use metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.

1. At valleys, provide double-valley rafters of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches (50 mm) deeper. Bevel ends of jack rafters for full bearing against valley rafters.
2. At hips, provide hip rafter of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches (50 mm) deeper. Bevel ends of jack rafters for full bearing against hip rafter.

C. Provide collar beams (ties) as indicated or, if not indicated, provide 1-by-6-inch nominal- (19-by-140-mm actual-) size boards between every third pair of rafters, but not more than 48 inches (1219 mm) o.c. Locate below ridge member, at third point of rafter span. Cut ends to fit roof slope and nail to rafters.

D. Provide special framing as indicated for eaves, overhangs, dormers, and similar conditions if any.

3.4 WOOD GROUND, SLEEPER, BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

D. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.5 INSTALLATION OF WALL AND PARTITION FRAMING

A. General: Provide single bottom plate and double top plates using members of 2-inch nominal (38-mm actual) thickness whose widths equal that of studs, except single top plate may be used for non-load-bearing partitions and for load-bearing partitions where framing members bearing on partition are located directly over studs. Fasten plates to supporting construction unless otherwise indicated.

1. For exterior walls, spaced 16 inches (406 mm) o.c. unless otherwise indicated.
2. For interior partitions and walls, provide 2-by-4-inch nominal- (38-by-89-mm actual-) size wood studs spaced 16 inches (406 mm) o.c. unless otherwise indicated.
3. Provide continuous horizontal blocking at midheight of partitions more than 96 inches (2438 mm) high, using members of 2-inch nominal (38-mm actual) thickness and of same width as wall or partitions.

B. Construct corners and intersections with three or more studs.

C. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Support headers on jamb studs.

1. For non-load-bearing partitions, provide double-jamb studs and headers not less than 4-inch nominal (89-mm actual) depth for openings 48 inches (1200 mm) and less in width, 6-inch nominal (140-mm actual) depth for openings 48 to 72 inches (1200 to 1800 mm) in width, 8-inch nominal (184-mm actual) depth for openings 72 to 120 inches (1800 to 3000 mm) in width, and not less than 10-inch nominal (235-mm actual) depth for openings 10 to 12 feet (3 to 3.6 m) in width.
2. For load-bearing walls, provide double-jamb studs for openings 60 inches (1500 mm) and less in width, and triple-jamb studs for wider openings. Provide headers of depth indicated.

D. Provide diagonal bracing in exterior walls, at both walls of each external corner, at 45-degree angle, full-story height unless otherwise indicated. Use metal wall bracing, let into studs in saw kerf.

3.6 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes sufficiently wet that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 061600 - SHEATHING

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 sheathing.
2. Roof sheathing.
3. Sheathing joint and penetration treatment.

B. Related Requirements:
1. Division 7 sections for roofing.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Wall sheathing.
2. Roof sheathing.
3. Sheathing joint-and-penetration treatment materials.

B. Include Product Data Submittals: 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. For fire-retardant treatments, include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5516.

4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

C. LEED Submittals:
1. Product Data for Credit IEQ 4.1: For adhesives, documentation including printed statement of VOC content.
2. Product Data for Credit IEQ 4.4: For composite wood products, documentation indicating that product contains no urea formaldehyde.
3. Laboratory Test Reports for Credit IEQ 4: For adhesives and composite wood products, documentation indicating that products 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."

1.5 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For following products, from ICC-ES:

1. Preservative-treated plywood.
2. Fire-retardant-treated plywood.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PANEL PRODUCTS

A. Emissions: Products shall meet the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Certified Wood: For the following wood products, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship":

1. Plywood.

C. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.

D. Factory mark panels to indicate compliance with applicable standard.

2.2 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. 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 WALL SHEATHING

A. Plywood Sheathing, Walls: DOC PS 1, Exposure 1, Structural I sheathing.

1. Span Rating: Not less than 48/24.
2. Nominal Thickness: Not less than 23/32 inch (18 mm).

2.4 ROOF SHEATHING

A. Plywood Sheathing, Roofs: , Exposure 1, Structural I sheathing.

1. Span Rating: Not less than 32/16.
2. Nominal Thickness: Not less than 5/8 inch (16mm).

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 roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.

B. Nails, Brads, and Staples: ASTM F1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Screws for Fastening Sheathing to Wood Framing: ASTM C1002.

2.6 MISCELLANEOUS MATERIALS

A. Panel Sheathing Clips. Use in conjunction with the installation of all new sheathing. Install midway between panel supports.
   1. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Simpson Strong-Tie Co., Inc. (Model: Panel Sheathing Clip / PSCL)
      b. MiTek Inc. (Model: H-Clip / HSC)
      c. Approved equal conforming to this specification.
   2. Materials
      a. Base Steel: Fabricated from structural-quality sheet steel conforming to ASTM A653/A653M or ASTM A1008/A1008M.
      b. Thickness: Minimum 20-gauge (0.033 inch / 0.84 mm) structural sheet steel.
      c. Protective Coating: Galvanized finish conforming to ASTM A653/A653M, G90 minimum coating designation for standard applications.
   3. Design & Manufacture
      a. Configuration: Formed "H" shape engineered to fit snugly over the edges of adjacent structural wood panels.
      b. Sizing: Clips must exactly match the nominal thickness of the specified panel sheathing.
      c. Specifier Note: Select applicable size(s) below:
         1) 5/8 inch (15.9 mm)
      d. Expansion Gap Feature: The center projecting tab of the clip must establish a mandatory 1/8-inch (3.2 mm) expansion gap between adjacent panel edges to prevent buckling, in accordance with APA guidelines.

B. Adhesives for Field Gluing Panels to Wood Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

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", except at stricter requirements of FM I-90 roof rating.

D. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.

E. Coordinate roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions and in proper relationship with adjacent construction.

3.3 INSTALLATION OF WOOD STRUCTURAL PANEL

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Wall and Roof Sheathing:

a. Nail or staple to wood framing. Apply a continuous bead of glue to framing members at edges of wall sheathing panels.
b. Screw to cold-formed metal framing.
c. Space panels 1/8 inch (3 mm) apart at edges and ends.

END OF SECTION 061600

SECTION 061715 - ENGINEERED STRUCTURAL WOOD

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 of this section.

1.2 SUMMARY

A. Section Includes:

1. Structural composite lumber.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for dimension lumber items associated with engineered structural wood.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include data on adhesives, fabrication, and protection.
2. For preservative-treated wood products, include manufacturer's written instructions for handling, storing, installing, and finishing treated material.
3. For connectors, include installation instructions.

A. Delegated Design Submittal: For structural glued-laminated timber and timber connectors.

B. Shop Drawings:

1. Submit roof-framing layouts including dimension lumber, engineered wood products, and brackets. Include computer-generated design calculations for representative joist and beam types.
2. Identify location and magnitude of design loads on layouts and in member calculations.
3. Include alternate span loading design results in design calculations.
4. Identify metal connectors (joist, beam, post cap, anchors, etc.) by manufacturer and model number. Include a list of accessories required for installation at each connector (blocking, squash blocks, stiffeners, fasteners, etc.). Include allowable design loads for selected metal connectors in design calculation analysis.

5. Identify manufacturer's recommended installation details in layouts.
6. Provide documentation that allowable design stresses comply with allowable design properties of each product indicated.
7. Include large-scale details of connections.
8. Fastener Patterns: Full-size templates for fasteners in exposed framing.

1.5 INFORMATIONAL SUBMITTALS

A. Material Certificates: For preservative-treated wood products, from manufacturer. Indicate type of preservative used and net amount of preservative retained.

B. Research Reports: For engineered structural wood, from ICC-ES or recognized third-party testing laboratory.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program, complies with quality-control procedures in ASTM D5055 or ASTM D5456, and involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.

B. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store, stack, and handle engineered wood products to comply with recommendations of APA EWS E705.

1. Store wrapped or banded together until ready for installation, on level well-drained area. Do not store in direct contact with the ground. Use stickers to separate bundles, spaced as recommended in writing by manufacturer.
2. Store I-joists level with the webs vertically.

B. Do not stack other material on top of structural composite lumber or I-joists.

1.8 WARRANTY

A. The products delivered shall be free from manufacturing errors or defects in workmanship and material. The products, when correctly installed and maintained, shall be warranted to perform as designed for the normal and expected life of the building.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain each type of engineered wood product from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Division 01 Section "Quality Requirements," to design structural LVL, PSL and connectors.

B. Structural Performance: Structural glued-laminated timber and connectors are to withstand the effects of structural loads shown on Drawings without exceeding allowable design working stresses listed in ANSI 117 or determined according to ASTM D3737 and acceptable to authorities having jurisdiction.

C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
   1. These products shall be designed and manufactured to the standards set forth in the ICC Evaluation Service Report No. ESR-1387

   2. Allowable design stresses, as published by manufacturer, are to meet or exceed those indicated. Manufacturer's published values are to be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.3 STRUCTURAL COMPOSITE LUMBER

A. Laminated-Veneer Lumber (LVL): Preservative-treated, structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored in accordance with ASTM D5456, and manufactured with exterior-type adhesive complying with ASTM D2559.

   1. Manufacturers: Subject to compliance with requirements, provide products by the following:
      a. Weyerhaeuser
      b. Approved equal.
   2. Allowable Stresses:
      a. See drawings.

   3. Moisture Protection: Factory seal face, edge and ends with manufacturer's standard water-resistant coating.

B. Parallel-Strand Lumber (PSL): Preservative-treated, structural composite lumber made from wood strand elements with grain primarily parallel to member lengths, evaluated and monitored in accordance with ASTM D5456, and manufactured with exterior-type adhesive complying with ASTM D2559.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
   a. Weyerhaeuser
   b. Approved equal.
2. Allowable Stresses:
   a. See drawings

3. Moisture Protection: Factory seal face, edge and ends with manufacturer's standard water-resistant coating.

2.4 PRESERVATIVE TREATMENT

A. Description: Preservative treatment; AWPA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3B for exterior construction not in contact with ground, and Use Category UC4A for items in contact with ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
2. For exposed items indicated to receive a stained or natural finish, chemical formulations must not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

2.5 FASTENERS

A. General: Fasteners are to be of size and type indicated and to comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches (38 mm) into wood substrate.

B. Nails, Brads, and Staples: ASTM F1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Wood Screws and Lag Screws: ASME B18.2.1, ASME B18.6.1, or ICC-ES AC233.

E. Carbon Steel Bolts: ASTM A307 with ASTM A563 (ASTM A563M) hex nuts and, where indicated, flat washers all hot-dip zinc coated.

F. Stainless Steel Bolts: ASTM F593, Alloy Group 1 or 2; with ASTM F594, Alloy Group 1 or 2 (ASTM F836M, Grade A1 or Grade A4) hex nuts and, where indicated, flat washers.

G. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on .based on ICC-ES AC193 for mechanical concrete anchors, ICC-ES AC308 for adhesive concrete anchors, ICC-ES AC01 for mechanical masonry anchors, and ICC-ES AC58 for adhesive masonry anchors, as appropriate for the substrate.

2.6 METAL FRAMING ANCHORS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:
   1. Simpson Strong Tie
   2. Approved equal.

B. Allowable design loads, as published by manufacturer, are to meet or exceed of products of manufacturers listed. Manufacturer's published values are to be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by qualified independent testing agency. Framing anchors are to be punched for fasteners adequate to withstand same loads as framing anchors.

C. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.

   1. Strap Width: 1-1/2 inches (38 mm).
   2. Thickness: [0.062 inch (1.6 mm).

D. Bridging: Rigid, V-section, nailless type, 0.050 inch (1.3 mm) thick, length to suit joist size and spacing.

E. Post Bases: Custom design as noted on drawings.

F. Materials: Unless otherwise indicated, fabricate from the following materials:

   1. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A653/A653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.

      a. Use for wood-preservative-treated lumber and where indicated.

   2. Stainless steel bars and shapes complying with ASTM A276/A276M, Type 304.

      a. Use for exterior locations and where indicated.

2.7 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets:
   1. Self-adhering sheet consisting of 64 mils (1.6 mm) of rubberized asphalt laminated on one side to 4-mil- (0.10-mm-) 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.

B. Flexible Flashing: Composite, self-adhesive, flashing product consisting of pliable, butyl rubber or rubberized-asphalt compound, bonded to high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce overall thickness of not less than 0.025 inch (0.6 mm).

2.8 FABRICATION

1. Parallam® PSL shall be manufactured in a plant listed in the reports referred to above and under the supervision of an approved third-party inspection agency. It shall be manufactured from strands of wood fiber in a continuous process with all strands oriented to the length of the member and then fed into a press in the desired lay-up pattern. All members are to be free of finger or scarf joints or mechanical connections in full-length members.

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.

1. Verify that joist flange widths match hanger widths.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Do not install in direct contact with concrete or masonry.

B. Where wood-preservative-treated members are installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

C. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use treatment approved in writing by manufacturer.

3.3 INSTALLATION OF STRUCTURAL COMPOSITE LUMBER

A. Install to comply with ESR report, manufacturer's written instructions, and applicable code.
1. If stored prior to installation, shall be protected from the weather. It shall be installed in accordance with the plans and approved drawings and installation suggestions. Temporary construction loads that cause stresses beyond design limits are not permitted. Safety bracing is to be provided by the installer to keep the PSL straight and plumb as required and to assure adequate lateral support for the individual PSL members and the entire system until the sheathing material has been applied.

2. Install in dry, covered conditions where average in-service moisture content of lumber is 16 percent or less.
3. Install metal framing connections in accordance with AWC's "National Design Specification (NDS) for Wood Construction." Install fasteners through each fastener hole.

a. Connections based on NDS or manufacturer's test or code reports.

4. Install lumber plumb and level. Accurately fit, align, securely fasten, and install free from distortion or defects.
5. Provide temporary bracing to maintain lines and levels until permanent supporting members are in place.

B. Cutting: Confirm size and location of field cutting, notching, and drilling with ESR report, registered design professional, and manufacturer.

3.4 INSTALLATION OF PREFABRICATED WOOD I-JOISTS AND PSL

A. Install to comply with ESR report, manufacturer's written instructions, and applicable code.

1. Install in dry, covered conditions where in-service moisture content of wood does not exceed 16 percent.
2. Install metal framing connections in accordance with AWC's "National Design Specification (NDS) for Wood Construction." Install fasteners through each fastener hole.
3. Install joists with top and bottom flanges within 1/2 inch (12.7 mm) of true vertical alignment, and support ends of each member with not less than 1-3/4 inches (44.5 mm) for end bearing and 3-1/2 inches (76 mm) for intermediate bearings.
4. Provide temporary bracing to maintain lines and levels until permanent supporting members are in place.
5. Provide lateral restraint at supports to prevent rotation, and along the compression flange of each joist.
6. Completely install and properly nail hangers, rim joists, rim boards, blocking panels, and x-bracing as each joist is set.

B. Cantilevered portions of joists must not exceed a maximum length equal to one-third the adjacent span, and support only uniform loads, unless designed by a design professional and approved by authorities having jurisdiction.

1. Temporarily secure ends of cantilevers with strut lines on both top and bottom flanges. Remove only as required to install permanent sheathing.

C. Cutting: Do not splice structural members between supports unless otherwise indicated.

1. Do not cut, drill, or notch I-joist top and bottom flanges except for cutting to length.

3.5 PROTECTION

A. Protect wood that has been treated with SBX from weather. If, despite protection, SBX-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061715

SECTION 061753 - SHOP-FABRICATED WOOD TRUSSES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood products and accessories.

1.2 DEFINITIONS

A. Metal-Plate-Connected Wood Trusses: Planar structural units consisting of metal-plate-connected members fabricated from dimension lumber and cut and assembled before delivery to Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For metal-plate connectors, metal truss accessories, and fasteners.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification from treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.

B. Shop Drawings: Show fabrication and installation details for trusses.

1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
2. Indicate sizes, stress grades, and species of lumber.
3. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.
4. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.
5. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
6. Show splice details and bearing details.

C. Delegated Design Submittals: For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For metal connector-plate manufacturer, professional engineer, and fabricator.

B. Product Certificates: For metal-plate-connected wood trusses, signed by officer of truss-fabricating firm.

C. Evaluation Reports: For the following, from ICC-ES:
1. Metal-plate connectors.
2. Metal truss accessories.

1.5 QUALITY ASSURANCE

A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.

1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program, complies with quality-control procedures in TPI 1, and involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.

C. 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. Handle and store trusses to comply with recommendations in SBCA BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

1. Store trusses flat, off of ground, and adequately supported to prevent lateral bending.
2. Protect trusses from weather by covering with waterproof sheeting, securely anchored.
3. Provide for air circulation around stacks and under coverings.

B. Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal-plate-connected wood trusses.

B. Structural Performance: Metal-plate-connected wood trusses are to be capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.

1. Design Loads: As indicated.
2. Maximum Deflection under Design Loads:

a. Roof Trusses: Vertical deflection of 1/360 of span.

C. Comply with applicable requirements and recommendations of TPI 1, TPI DSB, and SBCA BCSI.

D. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

2.2 WOOD PRODUCTS

A. Lumber: DOC PS 20 and applicable rules of any rules-writing agency certified by the American Lumber Standard Committee (ALSC) Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, omit grade stamp and provide certificates of grade compliance issued by grading agency.
3. Provide dressed lumber, S4S.
4. Provide dry lumber with 15 percent maximum moisture content at time of dressing.

B. Minimum Chord Size for Roof Trusses: 2 by 6 inches nominal (38 by 140 mm actual) for both top and bottom chords.

C. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Section 061000 "Rough Carpentry."

2.3 METAL CONNECTOR PLATES

A. Fabricate connector plates to comply with TPI 1.

B. Hot-Dip Galvanized-Steel Sheet: ASTM A653/A653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 (Z180) coating designation; and not less than 0.036 inch (0.9 mm) thick.

1. Use for interior locations unless otherwise indicated.

2.4 FASTENERS

A. Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.
2. Where trusses are exposed to weather, in ground contact, made from pressure-preservative treated wood, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M

B. Nails, Brads, and Staples: ASTM F1667.

2.5 METAL FRAMING ANCHORS AND ACCESSORIES

A. Allowable design loads, as published by manufacturer, are to comply with or exceed those indicated. Manufacturer's published values are to be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors are to be punched for fasteners adequate to withstand same loads as framing anchors.

B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 (Z180) coating designation.

1. Use for interior locations unless otherwise indicated.

C. Truss Tie-Downs (Hurricane or Seismic Ties): Bent strap tie for fastening roof trusses to wall studs below, 2-1/4 inches (57 mm) wide by 0.062 inch (1.6 mm) thick. Tie fits over top of truss and fastens to both sides of truss, top plates, and one side of stud below.

D. Roof Truss Clips: Angle clips for bracing bottom chord of roof trusses at non-load-bearing walls, 1-1/4 inches (32 mm) wide by 0.050 inch (1.3 mm) thick. Clip is fastened to truss through slotted holes to allow for truss deflection.

2.6 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: SSPC-Paint 20, with dry film containing a minimum of 92 percent zinc dust by weight.

2.7 FABRICATION

A. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.

B. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.

C. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly, with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.

1. Fabricate wood trusses within manufacturing tolerances in TPI 1.

D. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install wood trusses only after supporting construction is in place and is braced and secured.

B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.

C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.

D. Install and brace trusses according to TPI recommendations and as indicated.

E. Install trusses plumb, square, and true to line and securely fasten to supporting construction.

F. Space trusses as indicated; adjust and align trusses in location before permanently fastening.

G. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.

H. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.

1. Install bracing to comply with Section 061000 "Rough Carpentry."
2. Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.

I. Install wood trusses within installation tolerances in TPI 1.

J. Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.

K. Replace wood trusses that are damaged or do not comply with requirements.

1. Damaged trusses may be repaired according to truss repair details signed and sealed by the qualified professional engineer responsible for truss design, when approved by Architect.

3.2 REPAIRS AND PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect wood trusses from weather. If, despite protection, wood trusses become wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

C. Repair damaged galvanized coatings on exposed surfaces in accordance with ASTM A780/A780M and manufacturer's written instructions.

3.3 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform special inspections to verify that temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package.

END OF SECTION 061753

SECTION 062000 - FINISH CARPENTRY

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 of this section.

1.2 DESCRIPTION OF WORK:

A. Definition: Finish carpentry includes carpentry work which is exposed to view, is non-structural, and which is not specified as part of other sections.

B. Types of finish carpentry work in this section include:

1. Interior standing and running trim and rails.

C. Related Sections: The following Sections contain requirements that relate to this Section:

1. Doors are specified in Division-8 sections.
2. Wood laboratory casework is Doors are specified in a Division 12 section.

1.3 QUALITY ASSURANCE:

A. Factory-mark each piece of lumber and plywood with type, grade, mill and grading agency identification; except omit marking from surfaces to receive transparent finish, and submit mill certificate that material has been inspected and graded in accordance with requirements if it cannot be marked on a concealed surface.

1.4 SUBMITTALS:

A. Product Data: Submit manufacturer's specifications and installation instructions for each item of factory-fabricated item.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Protect finish carpentry materials during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

B. Do not deliver finish carpentry materials, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, finish carpentry materials must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

1.6 JOB CONDITIONS:

A. Conditioning: Installer shall advise Contractor of temperature and humidity requirements for finish carpentry installation areas. Do not install finish carpentry until required temperature and relative humidity conditions have been stabilized and will be maintained in installation areas.

1. Maintain temperature and humidity in installation area as required to maintain moisture content of installed finish carpentry within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. The fabricator of woodwork shall determine optimum moisture content and required temperature and humidity conditions.

PART 2 - PRODUCTS

2.1 WOOD PRODUCT QUALITY STANDARDS:

A. Softwood Lumber Standards: Comply with PS 20 and with applicable grading rules of the respective grading and inspecting agency for the species and product indicated.

B. Woodworking Standard: Where indicated for a specific product comply with specified provision of the following:

1. Architectural Woodwork Institute (AWI) "Quality Standards".
2. Glued-up Lumber Standard: Comply with PS 56.

2.2 MATERIALS:

A. General: Provide materials that comply with requirements of the AWI Woodworking Standard for each type of woodwork and quality grade. Nominal sizes are indicated, except as shown by detailed dimensions. Provide dressed or worked and dressed lumber, as applicable, manufactured to the actual sizes as required by PS 20 or to actual sizes and pattern as shown, unless otherwise indicated.

B. Moisture Content of Softwood Lumber: Provide kiln-dried (KD) lumber having a moisture content from time of manufacture until time of installation not greater than values required by the applicable grading rules of the respective grading and inspecting agency for the species and product indicated.

C. Moisture Content of Hardwood Lumber: Provide kiln-dried (KD) lumber having a moisture content from time of manufacture until time of installation within the ranges required in the referenced woodworking standard.

2.4 STANDING AND RUNNING TRIM AND RAILS FOR OPAQUE FINISH

D. Quality Standard: Comply with AWI Section 300.

1. Backout or groove backs of flat trim members and kerf backs of other wide flat members, except for members with ends exposed in finished work.
2. Assemble casings in plant except where limitations of access to place of installation require field assembly.
3. Profile: Provide profiles as indicated on the drawings.

B. OPAQUE FINISH

1. Grade: Custom, Grade I Lumber.
2. Lumber Species: S.Y. Pine, Poplar.
3. Finish: Pine, opaque; in accordance with Division 9 sections.

2.6 MISCELLANEOUS MATERIALS:

A. Fasteners and Anchorages: Provide nails, screws and other anchoring devised of the type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible, and complying with applicable Federal Specifications.

PART 3 - EXECUTION

3.1 PREPARATION:

A. Condition wood materials to average prevailing humidity conditions in installation areas prior to installing.

B. Pre-Installation Meeting: Meet at project site prior to delivery of finish carpentry materials and review coordination and environmental controls required for proper installation and ambient conditioning in areas to receive work. Include in meeting the Contractor, Architect and other Owner Representatives (if any), Installers of finish carpentry, wet work including plastering, other finishes, painting, mechanical work and electrical work, and firms and persons responsible for continued operation (whether temporary or permanent) of HVAC system as required to maintain temperature and humidity conditions. Proceed with finish carpentry on interior only when everyone concerned agrees that required ambient conditions can be properly maintained.

3.2 INSTALLATION:

A. Discard units of material which are unsound, warped, bowed twisted, improperly treated, not adequately seasoned or too small to fabricate work with minimum of joints or optimum jointing arrangements, or which are of defective manufacture with respect to surfaces, sizes or patterns.

B. Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level countertops; and with 1/16" maximum offset in flush adjoining 1/8" maximum offsets in revealed adjoining surfaces.

C. Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

D. Standing and Running Trim and Rails: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to the greatest extent possible. Stagger joints in adjacent and related members. Cope at returns and miter at corners.

E. Anchor finish carpentry work to anchorage devices or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fasteners heads are required, use fine finishing nail for exposed nailings, countersunk and filled flush with finished surface, and matching final finish where transparent is indicated.

3.3 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION:

A. Repair damaged and defective finish carpentry work wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.

B. Clean finish carpentry work on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas.

C. Refer to Division-9 sections for final finishing of installed finish carpentry work.

D. Protection: Installer of finish carpentry work shall advise Contractor of final protection and maintained conditions necessary to ensure that work will be without damage or deterioration at time of acceptance.

END OF SECTION 062000

SECTION 062013 - EXTERIOR FINISH CARPENTRY

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 of this section.

1.2 SUMMARY

A. Section Includes:

1. Exterior trim.

1.3 DEFINITIONS

A. PVC: Polyvinyl chloride.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.

1. Include data for wood-preservative treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained. Include chemical-treatment manufacturer's written instructions for finishing treated material.
2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced before shipment to Project site to levels specified.

B. Samples: For each exposed product and for each color and texture specified.

C. Samples for Initial Selection: For each type of product involving selection of colors, profiles, or textures.

D. Samples for Verification:

1. For each species and cut of lumber and panel products, with half of exposed surface finished; 50 sq. in. (300 sq. cm) for lumber and 8 by 10 inches (200 by 250 mm) for panels.
2. For cellular PVC trim, with half of exposed surface finished; 50 sq. in. (300 sq. cm).

1.5 INFORMATIONAL SUBMITTALS

A. Compliance Certificates:

1. For lumber that is not marked with grade stamp.
2. For preservative-treated wood that is not marked with treatment-quality mark.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Cellular PVC trim.

C. Sample Warranties: For manufacturer's warranties.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation.

1. Protect materials from weather by covering with waterproof sheeting, securely anchored.
2. Provide for air circulation around stacks and under coverings.

1.7 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecast weather conditions permit work to be performed and at least one coat of specified finish can be applied without exposure to rain, snow, or dampness.

B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.

1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

1.8 WARRANTY

A. Engineered Wood Manufacturer's Warranty: Manufacturer agrees to repair or replace components of engineered wood trim that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, deformation or deterioration beyond normal weathering.
2. Warranty Period: Trim (Excluding Finish), 25 years from date of Substantial Completion.

PART 2 - PRODUCTS

A. Basis-of-Design Product: Subject to compliance with requirements, provide cellular polyvinyl chloride (PVC) exterior trim and profiles manufactured by EchoN Building Products or:
   1. AZEK Exteriors (AZEK Building Products).
   2. Approved equal.

B. EXTERIOR TRIM
   1. Cellular PVC Trim: Extruded, expanded PVC with a small-cell microstructure, recommended by manufacturer for exterior use, made from UV- and heat-stabilized rigid material.
   2. Density: Not less than 31 lb/cu. ft. (500 kg/cu. m), in accordance with ASTM D792.
   3. Heat Deflection Temperature: Not less than 130 deg F (54 deg C), in accordance with ASTM D648.
   4. Coefficient of Thermal Expansion: Not more than 4.5 x 10(-5) inches/inch x deg F (8.1 x 10(-5) mm/mm x deg C).
   5. Water Absorption: Not more than 1 percent, in accordance with ASTM D570.
   6. Flame-Spread Index: 75 or less, in accordance with ASTM E84.

2.2 MISCELLANEOUS MATERIALS

A. Fasteners for Exterior Finish Carpentry: Provide nails or screws, in sufficient length to penetrate not less than 1-1/2 inches (38 mm) into wood substrate.
   1. For prefinished items, provide matching prefinished aluminum fasteners where face fastening is required.
   2. For applications not otherwise indicated, provide hot-dip galvanized-steel fasteners.

B. Wood Glue: Waterproof resorcinol glue recommended by manufacturer for exterior carpentry use.

C. Adhesive for Cellular PVC Trim: Product recommended by trim manufacturer.

D. Flashing: Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim" for flashing materials installed in exterior finish carpentry.

E. Sealants: Latex, complying with ASTM C834 and applicable requirements in Section 079200 "Joint Sealants," and recommended by sealant and substrate manufacturers for intended application.

2.3 FABRICATION

A. Back out or kerf backs of standing and running trim wider than 5 inches (125 mm), except members with ends exposed in finished work.

B. Ease edges of lumber less than 1 inch (25 mm) in nominal thickness to 1/16-inch (1.5-mm) radius and edges of lumber 1 inch (25 mm) or more in nominal thickness to 1/8-inch (3-mm) radius.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of projections and substances detrimental to application.

3.3 INSTALLATION, GENERAL

A. Do not use materials that are unsound, warped, improperly treated or finished, inadequately seasoned, or too small to fabricate with proper jointing arrangements.

1. Do not use manufactured units with defective surfaces, sizes, or patterns.

B. Install exterior finish carpentry level, plumb, true, and aligned with adjacent materials.

1. Use concealed shims where necessary for alignment.
2. Scribe and cut exterior finish carpentry to fit adjoining work.
3. Refinish and seal cuts as recommended by manufacturer.
4. Install to tolerance of 1/8 inch in 96 inches (3 mm in 2438 mm) for level and plumb. Install adjoining exterior finish carpentry with 1/32-inch (0.8-mm) maximum offset for flush installation and 1/16-inch (1.5-mm) maximum offset for reveal installation.
5. Coordinate exterior finish carpentry with materials and systems in or adjacent to it.
6. Provide cutouts for mechanical and electrical items that penetrate exterior finish carpentry.

3.4 INSTALLATION OF STANDING AND RUNNING TRIM

A. Install cellular PVC trim to comply with manufacturer's written instructions.

B. Install trim with minimum number of joints as is practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches (610 mm) long, except where necessary.

1. Use scarf joints for end-to-end joints.
2. Stagger end joints in adjacent and related members.

C. Fit exterior joints to exclude water.

1. Cope at returns and miter at corners to produce tight-fitting joints, with full-surface contact throughout length of joint.
2. Plane backs of casings to provide uniform thickness across joints, where necessary for alignment.

D. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.

3.5 ADJUSTING

A. Replace exterior finish carpentry that is damaged or does not comply with requirements.

1. Exterior finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

B. Adjust joinery for uniform appearance.

3.6 CLEANING

A. Clean exterior finish carpentry on exposed and semiexposed surfaces.

B. Touch up factory-applied finishes to restore damaged or soiled areas.

3.7 PROTECTION

A. Protect installed products from damage from weather and other causes during construction.

B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.

1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 062013

SECTION 064013 - EXTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Exterior custom cedar trusses.
2. Exterior cedar decking, boards and dimensional lumber.
3. Exterior cedar joists, dimensional lumber.
4. Exterior cedar beams, dimensional lumber.
5. Shop finishing.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing exterior architectural woodwork that are concealed within other construction before exterior architectural woodwork installation.
2. Section 062013 "Exterior Finish Carpentry" for exterior carpentry exposed to view that is not specified in this Section.
3. Division 9 sections for finishings.

1.2 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections, to ensure that exterior architectural woodwork can be supported and installed as indicated.

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:

1. Include dimensioned plans, elevations, sections, and attachment details.
2. Show large-scale details.
3. Show locations and sizes of furring, blocking, and hanging strips, including blocking and reinforcement concealed by construction and specified in other Sections.

C. Delegated Design Submittals: For custom structural cedar wood trussed brackets and structural cedar dimensional lumber indicated to comply with performance requirements and design

criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation

D. Samples: For each exposed product and for each color and finish specified.

1. Size:
   a. Lumber Products: Not less than 5 inches (125 mm) wide by 12 inches (300 mm) long, for each species and cut, finished on one side and one edge.

E. Samples for Verification: For the following:
1. Lumber for Transparent Finish: Not less than 5 inches (125 mm) wide by 12 inches (300 mm) long, for each species and cut, finished on one side and one edge.

   a. Finish one-half of exposed surface.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For architectural woodwork manufacturer and Installer.

B. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Lumber Grading Agency Qualifications: All solid sawn heavy timbers and dimension lumber shall be graded and visually stamped by an independent inspection agency certified by the American Lumber Standard Committee (ALSC) Board of Review.
1. Western Red Cedar shall be graded in accordance with the West Coast Lumber Inspection Bureau (WCLIB) or the Western Wood Products Association (WWPA) standard grading rules.

C. 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 mockups of typical exterior architectural woodwork trussed brackets as shown on Drawings.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Owner specifically approves such deviations by Change Order.
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. Comply with Architectural Woodwork Standards, Section 2 for trussed brackets.

B. Store woodwork in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1. Handle and store fire-retardant-treated wood to comply with chemical-treatment manufacturer's written instructions.

1.8 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation of exterior architectural woodwork only when existing and forecasted weather conditions permit work to be performed and at least one coat of specified finish to be applied without exposure to rain, snow, or dampness.

B. Field Measurements: Where exterior architectural woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being concealed by construction, and indicate measurements on Shop Drawings.

C. Established Dimensions: Where exterior architectural woodwork is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Division 01 Section "Quality Requirements," to design:
1. Dimensional lumber decking and connectors.
2. Trussed brackets and connectors.
3. Dimension lumber and connectors.

B. Structural Performance: Structural red cedar trussed bracket and connectors are to withstand the effects of structural loads shown on Drawings without exceeding allowable design working stresses listed in ANSI 117 or determined according to ASTM D3737 and acceptable to authorities having jurisdiction.

C. Seismic Performance: Dimension lumber and connectors are to withstand the effects of earthquake motions determined according to ASCE/SEI 7**.**

2.2 ARCHITECTURAL WOODWORK 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. TimberBuild Inc., Lilburn, GA.
2. Thomas Lumber, Atlanta, GA.
3. Approved Equal

2.3 ARCHITECTURAL WOODWORK, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of exterior architectural woodwork indicated for construction, finishes, installation, and other requirements.

2.4 EXTERIOR STRUCTURAL TRUSSED BRACKETS FOR TRANSPARENT FINISH

A. Architectural Woodwork Standards Grade: Premium.

B. Trussed Brackets: Design and construct of western red cedar for loads and locations as indicated on the contract drawings.
   1. Style: Timber Build Bracket Truss 113T35, with custom features.
   2. Features:
      a. Heavy duty joining biscuits to form a mortise and tenon type joint.
      b. Notch and cut horizontal to vertical members with rabbet joint for shear strength.
      c. Timber screws as needed for shear strength.

C. Wood Species: Western red cedar.
   1. Wood Moisture Content: 10 to 15percent unless noted otherwise.

2.5 STRUCTURAL BEAMS AND JOISTS FOR TRANSPARENT FINISH

A. Solid Wood Members: Western Red Cedar dimension lumber.
   1. Structural Profile: S4S, planed.
   2. Grade: No.1 & Better Structural, Selected for Appearance
   3. Moisture Content: Green/unseasoned.
   4. Quality Level: Clear veneer facing free of knots, pitch streaks, and surface defects on the exposed face.
   5. Size: 4”x8”, 4”x6”, and as shown on the drawings.

2.6 TRIM AND CEILING MATERIALS FOR TRANSPARENT FINISH

A. Engineered Wood Trim: Factory-laminated and finger-jointed Western Red Cedar appearance-grade boards bonded with exterior waterproof adhesives.
   1. Structural Profile: S1S2E (Surfaced 1 Side, 2 Edges) with a reversible smooth/textured face profile.
   2. Quality Level: Clear veneer facing free of knots, pitch streaks, and surface defects on the exposed face.
   3. Size: 1x4, T&G with V-groove

B. Solid Wood Decking: Western Red Cedar.
   1. Structural Profile: S4S

2. Moisture Content: Kiln dryed, 12%-15%
3. Quality Level: Select Tight Knotty
4. Size: 2x6 w/V-groove

2.7 FASTENERS

A. General: Provide fasteners of size and type indicated, acceptable to authorities having jurisdiction, and that comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches (38 mm) into wood substrate.

1. Use fasteners with hot-dip zinc coating complying with ASTM A153/A153M or ASTM F2329/F2329M unless otherwise indicated.

B. Nails: ASTM F1667.

C. Power-Driven Fasteners: ICC-ES AC70.

D. Wood Screws and Lag Screws: ASME B18.2.1, ASME B18.6.1, or ICC-ES AC233.

E. Stainless Steel Bolts: ASTM F593, Alloy Group 1 or 2; with ASTM F594, Alloy Group 1 or 2 (ASTM F836M, Grade A1 or Grade A4) hex nuts and, where indicated, flat washers.

F. Postinstalled Anchors: Stainless steel, chemical or torque-controlled expansion anchors with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing according to ASTM E488/E488M conducted by a qualified independent testing and inspecting agency.

1. Stainless steel bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2 (ASTM F836M, Grade A1 or Grade A4).

2.8 MISCELLANEOUS MATERIALS

A. Blocking, Shims, and Nailers: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.

2.9 FABRICATION

A. Fabricate exterior architectural woodwork to dimensions, profiles, and details indicated.

1. Ease edges to radius indicated for the following:

a. Edges of Solid-Wood (Lumber) Members: 1/16 inch (1.5 mm) unless otherwise indicated.

B. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site.

1. Disassemble components only as necessary for shipment and installation.
2. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.
3. Notify Architect seven days in advance of the dates and times exterior architectural woodwork fabrication will be complete.
4. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled.

    a. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting.
    b. Verify that parts fit as intended, and check measurements of assemblies against field measurements indicated on approved Shop Drawings before disassembling for shipment.

2.10 SHOP PRIMING -TRUSSED BRACKETS

A. Preparations for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing exterior architectural woodwork, as applicable to each unit of work.

B. Exterior Architectural Woodwork for Transparent Finish:

1. Shop seal surfaces to be concealed
2. Shop seal exposed surfaces with stain (if specified).

2.11 SHOP FINISHING – TRUSSED BRACKETS

A. Finish exterior architectural woodwork with transparent finish at fabrication shop. Defer only final touchup, cleaning, and polishing until after installation.

B. Preparation for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing exterior architectural woodwork, as applicable to each unit of work.

1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of exterior architectural woodwork. Apply two coats to end-grain surfaces.

C. Transparent Finish: Comply with Section 099300 "Staining and Transparent Finishing."

2.12 FIELD FINISHING – DIMENSIONAL LUMBER AND BOARDS

A. Finish woodwork with transparent finish in the field.

B. Preparation for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing exterior architectural woodwork, as applicable to each unit of work.

1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of exterior architectural woodwork. Apply two coats to end-grain surfaces.

C. Transparent Finish: Comply with Section 099300 "Staining and Transparent Finishing."

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition exterior architectural woodwork to average prevailing humidity conditions at Project site.

B. Before installing exterior architectural woodwork, examine shop-fabricated work for completion, and complete work as required, including removing packing and backpriming concealed surfaces.

3.2 INSTALLATION

A. Grade: Install exterior architectural woodwork to comply with same grade as item to be installed.

B. Assemble exterior architectural woodwork, and complete fabrication at Project site to the extent that it was not completed during shop fabrication.

C. Install exterior architectural woodwork level, plumb, true in line, and without distortion.

1. Shim as required with concealed shims.
2. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

D. Scribe and cut exterior architectural woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor exterior architectural woodwork to anchors or blocking built in or directly attached to substrates.

1. Secure with countersunk, concealed fasteners and blind nailing.
2. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with exterior architectural woodwork.
3. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced and with adjacent rows staggered.
4. For shop-finished items, use filler matching finish of items being installed.

F. Touch up finishing work specified in this Section after installation of exterior architectural woodwork.

1. Fill nail holes with matching filler where exposed.

2. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are shop applied.

3.3 REPAIR

A. Repair damaged and defective exterior architectural woodwork, where possible, to eliminate functional and visual defects.

B. Where not possible to repair, replace defective woodwork.

3.4 CLEANING

A. Clean exterior architectural woodwork on exposed and semiexposed surfaces.

END OF SECTION 064013

SECTION 070150 - PREPARATION FOR RE-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. This Section includes the following:

1. Roof tear-off.
2. Temporary roofing membrane.
3. Removal of base flashings.
4. Protection of existing roofing system that is not reroofed.

B. Related Sections include the following:
1. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for reroofing preparation.
2. Division 06 Sections for wood nailers, curbs, and block parapet sheathing and wood deck panel replacement .
3. Division 07 Sections for roofing shingles and weather barrier, flashings and roofing accessories.
4. Division 07 Section for metal roof penetration flashings, flashings, and counterflashings.

1.3 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

B. Existing Shingle Roofing System: Roofing shingles, weather barrier and components and accessories between deck and roofing membrane.

C. Substrate Board: Rigid board or panel products placed over the roof deck that serve as thermal barriers, provide a smooth substrate, or serve as a component of a fire-resistance-rated roofing system.

D. Roof Tear-Off: Removal of existing shingle roofing system from deck.

E. Partial Roof Tear-Off: Removal of a portion of existing shingle roofing system from deck or removal of selected components and accessories from existing shingle roofing system.

F. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.

G. Existing to Remain: Existing items of construction that are not indicated to be removed.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Temporary Roofing: Include Product Data and description of temporary roofing system. If temporary roof will remain in place, submit surface preparation requirements needed to receive permanent roof, and submit a letter from roofing membrane manufacturer stating acceptance of the temporary membrane and that its inclusion will not adversely affect the roofing system's resistance to fire and wind or its FM Global rating.

C. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, that might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.

D. Landfill Records: Indicate receipt and acceptance of hazardous wastes, such as asbestos-containing material, by a landfill facility licensed to accept hazardous wastes.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Installer of new membrane roofing system , licensed to perform asbestos abatement in the State or jurisdiction where Project is located .

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Reroofing Conference: Conduct conference at Project site to comply with requirements in Division 01 Section 013100 "Project Management and Coordination." Review methods and procedures related to roofing system including, but not limited to, the following:

1. Meet with Owner; Architect; Owner's insurer if applicable; testing and inspecting agency representative; roofing system manufacturer's representative; deck Installer; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing system tear-off and replacement including, but not limited to, the following:

    a. Reroofing preparation, including shingle roofing system manufacturer's written instructions.

b. Temporary protection requirements for existing roofing system that is to remain during and after installation.
c. Existing roof drains and roof drainage during each stage of reroofing, and roof drain plugging and plug removal requirements.
d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
e. Existing deck removal procedures and Owner notifications.
f. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
g. Structural loading limitations of deck during reroofing.
h. HVAC shutdown and sealing of air intakes.
i. Shutdown of fire-suppression, -protection, and -alarm and -detection systems.
j. Governing regulations and requirements for insurance and certificates if applicable.
k. Existing conditions that may require notification of Architect before proceeding.

1.7 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately below reroofing area. Conduct reroofing so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.

1. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area if desired.
2. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area. Verify that occupants below the work area have been evacuated prior to proceeding with work over the impaired deck area.

B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

D. Owner assumes no responsibility for condition of areas to be reroofed.

1. Conditions existing at time of inspection for bidding will be maintained by Owner as far as practical.

E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering into existing roofing system or building.

F. Hazardous Materials: No hazardous materials are present in building to be reroofed. A report on the presence of hazardous materials is on file for review and use.

G. Conditions existing at time of inspection for bidding will be maintained by Owner as far as practical.

PART 2 - PRODUCTS

2.1 INFILL MATERIALS

A. Use infill materials matching existing membrane roofing system materials unless otherwise indicated.

2.2 AUXILIARY REROOFING MATERIALS

A. General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of existing and new membrane roofing system.

B. Base Sheet Fasteners: Capped head, factory-coated steel fasteners, listed in FM Approval's "Approval Guide."

C. Metal Flashing Sheet: Metal flashing sheet is specified in Division 07 Section "Sheet Metal Flashing and Trim."

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect existing shingle roofing system that is indicated not to be reroofed.

1. Loosely lay 1-inch- (25-mm-) minimum thick, molded expanded Polyisocyancrate insulation over the roofing membrane as required to protect existing roof areas. Loosely lay 15/32-inch (12-mm) plywood or OSB panels over board insulation. Extend Polyisocyancrate past edges of plywood or OSB panels a minimum of 1 inch (25 mm).
2. Limit traffic and material storage to areas of existing roofing membrane that have been protected.
3. Maintain temporary protection and leave in place until replacement roofing has been completed.

B. Coordinate with Owner to shut down air intake equipment in the vicinity of the Work. Cover air intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.

C. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

D. Maintain roof drains, gutters and downspouts in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors.

1. If roof drains will be temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

E. Verify that rooftop utilities and service piping have been shut off before commencing Work.

3.2 ROOF TEAR-OFF

A. General: Notify Owner each day of extent of roof tear-off proposed and obtain authorization to proceed .

B. Remove protection mat and polyisocyanurate insulation from protected shingle roofing.
   1. Discard polyisocyanurate insulation that is wet and exceeds 8 lb/cu. ft. (128 kg/cu. m).
   2. Store polyisocyanurate insulation for reuse and protect from physical damage.

C. Roof Tear-Off: Remove existing shingle roofing system, weather barrier and components down to the wood board or plywood roof deck.

D. Deck preparation
   1. Remove fasteners from deck in their entirety.

3.3 DISPOSAL

A. Collect and place demolished materials in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

   1. Storage or sale of demolished items or materials on-site will not be permitted.

B. Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION 070150

SECTION 072100 - THERMAL INSULATIONGENERAL

1.1 GENERAL

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Extruded polystyrene foam-plastic board insulation for walls.
2. Extruded polystyrene foam-plastic board insulation for under slabs.
3. Glass-fiber blanket insulation.
4. Mineral-wool blanket insulation.

B. Related Requirements:
1. Section 061600 "Sheathing" for foam-plastic board sheathing installed directly over wood or steel framing.
2. Division 7 Section "Preparation for Reroofing" for insulation specified as part of roofing construction.

1.3 REFERENCES

A. ASTM International (ASTM):
1. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
2. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
3. ASTM E96 - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission of Materials.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.5 INFORMATIONAL SUBMITTALS

A. Installer's Certification: Listing type, manufacturer, and R-value of insulation installed in each element of the building thermal envelope.

1. For blown-in or sprayed fiberglass and cellulosic-fiber loose-fill insulation, indicate initial installed thickness, settled thickness, settled R-value, installed density, coverage area, and number of bags installed.
2. Sign, date, and post the certification in a conspicuous location on Project site.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Research Reports: For foam-plastic insulation, from ICC-ES.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect foam-plastic board insulation as follows:

1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.
3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Maximum flame-spread and smoke-developed indexes less than Class A, 25 and 450 when tested in accordance with ASTM E84.

B. Fire-Resistance Ratings: Comply with ASTM E119 or UL 263; 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 listings of another qualified testing agency.

C. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

D. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches (305 mm) and wider in width.

E. Thermal-Resistance Value (R-Value): R-value as indicated on Drawings and as indicated below in accordance with ASTM C518.

1. Attic batt insulation : R-30

2. XPS Wall insulation: R-5 per inch

2.2 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD INSULATION (XPS) - WALLS

A. Extruded Polystyrene Board Insulation, Type X: ASTM C578, Type X, 15 psi (104 kPa) minimum compressive strength; unfaced.

B. Manufacturers: Subject to compliance with requirements, provide Type X XPS board insulation by one of the following:
1. Owens Corning; Product: FOAMULAR 150 (or FOAMULAR NGX 150).
2. Kingspan Insulation LLC; Product: GreenGuard GG15.
3. Or approved equal.

C. Physical Properties: Provide rigid closed-cell extruded polystyrene boards complying with ASTM C578, Type X, and meeting the following criteria:
1. Compressive Strength: Minimum 15 psi (104 kPa) at 10 percent deformation per ASTM D1621.
2. Thermal Resistance (R-Value): R-5.0 per inch minimum at 75 deg F (24 deg C) mean temperature.
3. Water Absorption: Maximum 0.3 percent by volume per ASTM C272.
4. Water Vapor Permeance: Maximum 1.5 perms for 1-inch thickness per ASTM E96.
5. Surface Burning Characteristics (ASTM E84): Flame Spread Index of 25 or less; Smoke Developed Index of 450 or less.

D. Accessories:
1. Insulation Adhesive: Solvent-free, compatible with polystyrene insulation board and substrate materials.
2. Joint Tape: Pressure-sensitive synthetic polymer tape recommended by the insulation manufacturer.

2.3 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD INSULATION (XPS) – UNDER SLAB

A. Extruded Polystyrene Board Insulation, Type IV: ASTM C578, Type IV, 25 psi (173 kPa) minimum compressive strength; unfaced.

B. Manufacturers: Subject to compliance with requirements, provide Type IV XPS board insulation by one of the following:
1. Owens Corning; Product: FOAMULAR NGX 250).
2. Kingspan Insulation LLC; Product: GreenGuard GWP-25 LG.
3. Or approved equal.

C. Physical Properties: Provide rigid closed-cell extruded polystyrene boards complying with ASTM C578, Type IV, and meeting the following criteria:
1. Compressive Strength: Minimum 25 psi (at 10 percent deformation per ASTM D1621.
2. Thermal Resistance (R-Value): R-5.0 per inch minimum at 75 deg F (24 deg C) mean temperature.
3. Water Absorption: Maximum 0.3 percent by volume per ASTM C272.
4. Water Vapor Permeance: Maximum 1.5 perms for 1-inch thickness per ASTM E96.
5. Surface Burning Characteristics (ASTM E84): Flame Spread Index of 25 or less; Smoke Developed Index of 450 or less.

D. Accessories:
1. Insulation Adhesive: Solvent-free, compatible with polystyrene insulation board and substrate materials.
2. Joint Tape: Pressure-sensitive synthetic polymer tape recommended by the insulation manufacturer.

2.4 GLASS-FIBER BLANKET INSULATION

A. Glass-Fiber Blanket Insulation, Kraft Faced: ASTM C665, Type II (nonreflective faced), Class C (faced surface not rated for flame propagation); Category 1 (membrane is a vapor barrier).

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Johns Manville; Kraft-Faced Formaldehyde-free Fiber Glass Insulation.
   2. Owens Corning; EcoTouch Kraft Faced Fiberglass Insulation Batts.
   3. Knauf Insulation; EcoBatt Kraft Faced Fiberglass Insulation.
   4. CertainTeed Corporation; Sustainable Insulation Kraft Faced Fiber Glass Building Insulation.

C. Vapor Permeance: Kraft facing shall have a maximum water vapor permeance of 1.0 perm when tested according to ASTM E96, Desiccant Method.

2.5 MINERAL-WOOL BLANKET INSULATION

A. Mineral-Wool Blanket Insulation, Unfaced: ASTM C665, Type I (blankets without membrane facing); consisting of fibers; complying with ASTM E136 for combustion characteristics.
   1. Rockwool International (e.g., Comfortbatt, Comfortboard, or Cavityrock).
   2. Owens Corning (e.g., Thermafiber SAFB or Thermafiber Fire & Sound Guard Plus).
   3. Johns Manville (e.g., TempControl or SAFB Mineral Wool Insulation Batts).

B. Physical Properties:
   1. Unfaced: ASTM C665, Type I (blankets without membrane facing); consisting of fibers; complying with ASTM E136 for combustion characteristics.
   2. Surface Burning Characteristics (ASTM E84): Flame-spread index of 0 and smoke-developed index of 0.
   3. Combustion Characteristics: Passed ASTM E136 testing for non-combustibility.

2.6 INSULATION FASTENERS

A. Insulation Fastener Accessories: Provide double-pointed weld pins, lagging pins, quilting pins, duct liner pins, insulation hangers, specialty washers, special caps, j-hooks, capacitor discharge annular weld pins, capacitor discharge acoustical lagging pins, and other accessory materials that are recommended in writing by insulation fastener manufacturer to produce complete insulation supports.

2.7 ACCESSORIES

A. Insulation for Miscellaneous Voids:

   1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.

B. Miscellaneous Application Accessories:

1. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.
2. Crack Sealer: Closed-cell insulating foam in aerosol dispenser recommended in writing by insulation manufacturer for filling gaps in board insulation.
3. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide ventilation between insulated attic spaces and vented eaves.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or those that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products, applications and applicable codes.

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. Install insulation with manufacturer's R-value label exposed after insulation is installed.

D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

E. 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 CAVITY-WALL INSULATION

A. Foam-Plastic Board Insulation: Install pads of adhesive spaced approximately 24 inches (610 mm) o.c. both ways on inside face and as recommended in writing by manufacturer.

1. Fit courses of insulation between wall ties and other obstructions, with edges butted tightly in both directions, and with faces flush.
2. Press units firmly against inside substrates.
3. Supplement adhesive attachment of insulation by securing boards with two-piece wall ties designed for this purpose and specified in Section 042000 "Unit Masonry."

3.4 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. Blanket Insulation: Install in cavities formed by framing members in accordance with 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 (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
4. Attics: Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
5. For wood-framed construction, install blankets in accordance with ASTM C1320 and as follows:

    a. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it.

B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).
2. Detailing Foam Insulation for Voids: Apply in accordance with manufacturer's written instructions.

3.5 INSTALLATION OF BOARD INSULATION

A. Install board insulation in accordance with manufacturer's written instructions per project applications and conditions.

B. Install insulation boards in accordance with manufacturer's written instructions.
1. Cut or otherwise trim insulation boards to fit snuggly between furring strips.
2. Butt edges tightly together and stagger joints vertically.

C. Fastening
1. Mechanical Fastening: Secure insulation boards using approved fasteners with plastic washers/caps, spaced according to engineering requirements.
2. Adhesive Fastening: Apply adhesive in a continuous ribbon or grid format to ensure full surface contact without damaging the foam matrix.
3. Layer fastening:
    a. Initial layer – adhesive or mechanical fasteners
    b. Final layer – mechanical fasteners

D. Joint Sealing: Tape all board joints where a continuous air/water barrier layer is detailed.

3.6 INSTALLATION OF MINERAL WOOL INSULATION

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Install insulation that is undamaged, dry, and unsoiled. Fit tightly in cavities and tightly around obstructions.

C. Maintain cavity widths and mechanical attachments as detailed by the manufacturer to avoid compression.

3.7 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.
   1. Do not leave board insulation exposed to ambient UV radiation for more than 30 days.

B. 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 072500 - WEATHER BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Building wrap
   2. Drainage wrap.
   3. Rainscreen drainage mat

1.3 ACTION SUBMITTALS

A. Product Data:

   1. For each type of product.

B. Product Data Submittals: For building wrap, drainage wrap, and rainscreen drainage mat, include data on air and water-vapor permeance based on testing in accordance with referenced standards.

C. Shop Drawings: Show details of building wrap, drainage wrap and rainscreen drainage mat at terminations, openings, and penetrations. Show details of flexible flashing applications.

1.4 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For water-resistive barrier and flexible flashing, from ICC-ES.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified firm that is approved, authorized, certified, or licensed by the weather barrier system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.

1.6 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.

1.7 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed in accordance with manufacturer's written installation instructions and warranty requirements.

1.8 WARRANTY

A. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 WEATHER BARRIERS

A. Drainage Wrap: Dimensional water-resistive barrier that also creates a drainage plane; Unidirectionally or multidirectionally textured, non-woven polyolefin or polymeric sheet membrane with integrated drainage channels, spacer spacers, or embossed patterns to facilitate vertical water drainage. with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested in accordance with ASTM E84; and acceptable to authorities having jurisdiction.

B. B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Benjamin Obdyke, Inc.
      a. Product: HydroGap Drainable Housewrap.
      b. . Contact: www.benjaminobdyke.com
   2. DuPont Building Solutions
      a. .Product: DuPont Tyvek DrainWrap.
      b. Contact: www.dupont.com
   3. Barricade Building Products
      a. Product: Barricade Drainage Wrap.
      b. Contact: www.barricadebp.com
   4. Or approved equal
   5. Drainage Wrap Type: Type I, ASTM E1677 Retain composition type in "Composition Type" Subparagraph below.
   6. Composition Type: Nonwoven polyolefin with nondirectional drainage pattern.
   7. Water-Vapor Permeance: Minimum 35 perms (2002 ng/Pa x s x sq. m) in accordance with ASTM E96/E96M, Desiccant Method (Procedure A).
   8. Air Permeance: Maximum 0.004 cfm/sq. ft. at 0.3 inch wg (0.02 L/s x sq. m at 75 Pa) when tested in accordance with ASTM E2178.
   9. Drainage: Not less than 98 percent when tested in accordance with ASTM E2273.
   10. Allowable UV Exposure Time: Not more than 120 days.

2.2 RAINSCREEN MAT

A. Rainscreen Drainage Map: Three-dimensional, open-weave, UV-stabilized polypropylene matrix heat-bonded to a non-woven, water-permeable filter fabric wrapper, designed to provide a continuous drainage cavity and ventilation air gap behind exterior cladding.

B. Basis-of-Design Product: Subject to compliance with requirements, provide Benjamin Obdyke Inc.; Slicker MAX Rainscreen (www.benjaminobdyke.com).
   1. Physical Characteristics:
      a. Thickness: Nominal 1/4 inch (6 mm).
      b. Matrix Configuration: Corrugated monofilament structural matrix providing a minimum 90% open ventilation cavity.
      c. Fabric Facer: Non-woven filter fabric designed to prevent cladding compression and block mortar/debris intrusion while maintaining high water vapor permeability.
   2. Performance Requirements:
      a. UV Exposure Limit: Maximum 90 days of open exposure prior to installation of cladding.
      b. Flame Spread Index: Class A rating, tested in accordance with ASTM E84

2.3 ACCESSORY MATERIALS

A. Requirement: Provide primers, fasteners, seam tapes, flashing, transition strips, termination strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by weather barrier manufacturer to produce a complete weather barrier assembly and that are compatible with primary weather barrier material and adjacent construction to which they may seal.

B. Drainage Accessories: Furring strips installed between water-resistive barrier and exterior cladding to create a continuous open space behind exterior cladding.

PART 3 - EXECUTION

3.1 INSTALLATION OF WEATHER BARRIERS

A. Weather Barriers:
   1. Building Wrap or Drainage Wrap: Comply with manufacturer's written instructions and warranty requirements.
   2. Drainage Material: Comply with manufacturer's written instructions.

B. Weather barrier shall be installed in accordance with the following requirements, when not specified otherwise by manufacturer.
   1. Clean surfaces, and prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   2. Weather barrier shall be installed before window and door installation as applicable for new construction and retrofit work. Do not install on saturated sheathing.
   3. Begin by affixing weather barrier extending at least 6 inches (152 mm) around a building corner. Unroll horizontally (with print side facing out) around the building covering rough window and door openings.

4. Temporary fasten to wall with manufacturer approved adhesives.
5. Attach weather barrier so that it is taut and flat. The vertical overlap shall have a minimum of 6 inches (152 mm) and the vertical seam shall be taped.
6. Assure that the bottom edge of the weather barrier extends over the sill plate and foundation interface by at least 1 inch (25 mm).
7. Overlap upper layers of weather barrier (in shingle lap fashion) by a minimum of 6 inches below the horizontal edge, and tape the horizontal seam line.
8. At roof to wall intersection (or wall to deck), affix wrap to the wall such that it overlaps any step flashing already in place on the wall by at least 2 inches (51 mm).
9. Use the inverted "Y" cut method at rough window and door openings. Do not place fasteners within 9 inches (229 mm) of the rough opening, door or window heads. This area shall not be fastened to allow for proper head flashing installation. At the top corners of the rough opening, cut the weather barrier at 45 degree to extend 9 inches (229 mm) past the joint. Fold the top flap up and out of the way and fasten temporarily. Fold the remaining three flaps in through the opening fastening them inside the opening with staples.
10. Rough Electrical and Plumbing Penetrations: Seal with a double layer of flashing. Install the top flashing piece over the bottom flashing piece overlapping flashing layers to cover flashing cut-out necessary for placement around penetration.

C. Repairs: For minor punctures or tears, less than 3 inches (76 mm), cover and completely seal with seam tape. For larger holes, greater than 3 inches (76 mm), use slit flashing technique. Slit flashing requires making a horizontal slit above the damaged area and placing a cut piece of weather barrier into the slit, covering the damaged area. Tape the perimeter of the patched area

D. Install weather barrier accessories for a complete installation with weather barriers in accordance with manufacturers written instructions.

3.2 RAINSCREEN DRAINAGE MAT INSTALLATION

A. General: Install rainscreen drainage mat over the primary weather-resistive barrier (WRB) after flashing window, door, and penetration assemblies are complete.

B. Orientation: Install drainage mat horizontally with the non-woven filter fabric wrapper facing outward toward the exterior cladding.
1. Exception for Stone Applications: Ensure fabric overlap covers succeeding courses to prevent mortar droppings from clogging the drainage cavity.

C. Fastening: Fasten matrix to the wall structure using pneumatic staples, large-head roofing nails, or cap-nails.
1. Space fasteners at a maximum of 24 inches on center horizontally and vertically, or as required to hold the mat flat against the wall prior to cladding installation.
2. Minimize penetrations; fasteners are intended only to temporarily secure the matrix until the exterior cladding is mechanically fastened through the matrix into the framing.

D. Joints and Overlaps: Butt vertical and horizontal matrix seams tightly together without overlapping the core matrix. Pull the extended filter fabric flaps over the seams to maintain a continuous debris barrier.

E. Terminations: Provide a designated insect screen or ventilation starter strip at the base of the wall assembly, above all window/door headers, and at roofline terminations to prevent pest entry while maintaining open airflow.

END OF SECTION 072500

SECTION 073100 - ASPHALT SHINGLES

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. Asphalt roofing shingles.
2. Leak barrier and roof deck protection.
3. Metal flashing associated with shingle roofing.
4. Roof System ventilation.

B. Related Sections:

1. Division 07 Section "Sheet Metal Flashing and Trim" for field-formed flashings, roof drainage systems, and other sheet metal work not part of metal roof panel assemblies.
2. Division 07 Section "Joint Sealants" for field-applied sealants not otherwise specified in this Section.
3. Division 07 Section “Metal Roof Panels” for gutters and downspouts used in conjunction with this section.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM) - Annual Book of ASTM Standards
1. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
3. ASTM D 3018 - Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules.
4. ASTM D 3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
5. ASTM D 3462 – Standard Specification for Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules.
6. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
7. ASTM D 7158 - Standard Test Method for Wind-Resistance of Sealed Asphalt Shingles (Uplift Force/Uplift Resistance Method).
8. National Roofing Contractors Association (NRCA).

9. American Society of Civil Engineers (ASCE).
10. Miami Dade County.
11. Florida Building Code.

B. Underwriters Laboratories (UL) - Roofing Systems and Materials Guide (TGFU R1306).
1. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
2. UL 997 - Wind Resistance of Prepared Roof Covering Materials.

C. Asphalt Roofing Manufacturers Association (ARMA).

D. Sheet Metal and Air Conditioning Contractors National Association, 1nc. (SMACNA) - Architectural Sheet Metal Manual.

E. National Roofing Contractors Association (NRCA).

1.4 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of roofing terms related to this section.

1.5 SUBMITTALS

A. Submit copies of product data sheets, detail drawings and samples for each type of roofing product.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide all primary roofing products, including shingles, underlayment, leak barrier, and ventilation, by a single manufacturer.

B. Installer Qualifications: Installer must be approved for installation of all roofing products to be installed under this section.

C. Factory Mutual Approval: It is a requirement of this project that all materials be approved materials by Factory Mutual Research Corporation.

1.7 REGULATORY REQUIREMENTS

A. Provide a roofing system achieving an Underwriters Laboratories (UL) Class A fire classification.

B. Install all roofing products in accordance with all federal, state and local building codes.

C. All work shall be performed in a manner consistent with current OSHA guidelines.

1.8 PREINSTALLATION MEETING

A. General: A pre-installation meeting is required.

B. Timing: The meeting shall take place prior to the start of the roofing installation.

C. Attendees: Meeting to be called for by manufacturer’s certified contractor. Meeting’s mandatory attendees shall include the certified contractor and the manufacturer’s representative. Non-mandatory attendees shall include the owner’s representative, architect or engineer’s representative, and the general contractor’s representative.

D. Topics: Certified contractor and manufacturer’s representative shall review all pertinent requirements for the project, including but not limited to, scheduling, weather considerations, project duration, and requirements for the specified warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Store all products in manufacturer's unopened, labeled packaging until they are ready for installation.

B. Store products in a covered, ventilated area, at temperature not more than 110 degrees F (43 degrees C); do not store near steam pipes, radiators, or in direct sunlight.

C. Store bundles on a flat surface. Maximum stacking height shall not exceed manufacturer’s recommendations. Store all rolls on end.

D. Store and dispose of solvent-based materials in accordance with all federal, state and local regulations.

1.10 WEATHER CONDITIONS

A. Proceed with work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturer’s recommendations.

1.11 WARRANTY

A. Provide to the owner the manufacturer’s warranty as follows:
   1. Provide to the owner a Warranty for:
      a. Roofs installed by manufacturer’s approved contractor only.

B. Manufacturer's Warranty
   1. Fiberglass/Asphalt Shingle Limited Warranty, 40 year term, non-prorated.
   2. Term: The period of time this Limited Warranty is Forty (40) years.
   3. Smart Choice Warranty: Provide GAF "Smart Choice warranty for a period of 10 (Ten) years, non-prorated.
   4. Twenty (25) year Algae Relief: Algae Relief - Algae Cleaning Limited Warranty to provide for cleaning of discoloration caused by certain algae growth.
   5. Wind Warranty Coverage is to include:

a. High Wind Application Coverage for winds up to 130 mph - shingles installed with six (6) fasteners in the locations specified for high wind and using GAF starter shingles at eaves and rakes. Installation shall be in accordance with current published Miami-Dade County “Notice Of Acceptance” and manufacturer's written instructions.

C. The Contractor shall provide a five (5) year performance agreement on labor and material in addition to the manufacturer’s warranty. This performance shall include an annual inspection and written report on a DPMC Inspection Form, or equal provided by the County, for each of the five (5) years.

D. The performance agreement shall include the stipulation that the Contractor shall perform all inspections and emergency repairs to all defects or leaks in the roofing system within four (4) hours of receipt of notice from the owner. Repairs shall include all labor, roofing materials, flashings, etc. When weather permits, all temporary repairs shall be redone and the roof restored to the standard of the original installation and at no cost to the State.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design Manufacturer: GAF Materials Corp., 1 Campus Drive, Parsippany, NJ 07054. Tel: 1-973-628-3000. Basis of Design Shingle shall be GAF "Slateline".

B. Acceptable manufacturer’s products complying with all specified requirements will be considered only as product substitutions under the terms and conditions of Specification Section 016000 "Product Requirements".

2.2 SHINGLES

A. Self-sealing, granule surfaced, laminated asphalt shingle made with fiberglass mat, blended shadow line, and Algae Stain-Guard warranty coverage. Architectural laminate styling with a 7 1/2 inch exposure. UL Listed for Class A Fire Resistance (UL 790/E108); UL Classified for Wind Resistance: ASTM D3161; Class F and ASTM D 7158, Class H; UL Classified in accordance with ASTM D 3462 and ICC-ESR Acceptance Criteria AC438; Florida Building Code Approved FL 10124-1212; UL Evaluation Reports ESR-1475 & ESR 3267.
1. Color: GAF "Weathered Slate".

2.3 HIP AND RIDGE SHINGLES

A. High profile self sealing hip and ridge cap shingle matching the color of selected roof shingle size 10".

2.4 STARTER STRIP

A. Self sealing starter shingle designed to match shingle.

2.5 LEAK BARRIER/ICE AND WATER SHIELD

A. Self-adhering, self-sealing, bituminous leak barrier surfaced with fine, skid-resistant granules. Approved by UL, Dade County, ICC, State of Florida and Texas Department of Insurance. Each roll contains approx. 150 sq ft (13.9 sq.m.), 36" X 50' (0.9m x 20.3m) or 200 sq ft (18.6 sq.m.), 36" X 66.7' (0.9m x 20.3m). WeatherWatch® Leak Barrier, by GAF®.

2.6 SHINGLE UNDERLAYMENT

A. Premium, water repellant, breather type non-asphaltic underlayment. UV stabilized polypropylene construction. Meets or exceeds ASTM D226 and D4869. Approved by Dade Country, Florida Building Code, and ICC. Each roll contains approximately 10 squares (1003 sq. ft.) of material and is 54 in. x 223 ft. Deck-Armor™ Premium Breathable Roof Deck Protection, by GAF®.

2.7 ROOFING CEMENT

A. Asphalt Plastic Roofing Cement meeting the requirements of ASTM D 4586, Type I or II.

2.8 ROOF ACCESSORIES

A. Exterior acrylic rust resistant aerosol roof accessory paint. Each 6 oz can is available in boxes of 6 and in a wide variety of colors to compliment the roof. Shingle-Match™ Roof Accessory Paint by GAF®.

2.9 ATTIC VENTILATION

A. Ridge Vents
1. Flexible rigid plastic ridge ventilator designed to allow the passage of hot air from attics, while resisting snow infiltration. For use in conjunction with eave/soffit ventilation products. Provides 12.5 sq inches Net Free Ventilation Area per lineal foot (26460 sq.mm/m). Each package contains 20 lineal feet (6.10m) of vent. Cobra® Ridge Runner™ Ridge Vent by GAF®.

2.10 NAILS

A. Standard round wire, zinc-coated steel or aluminum; 10 to 12 gauge, ring shank, with heads 3/8 inch (9mm) to 7/16 inch (11mm) in diameter. Length must be sufficient to penetrate into solid wood and roof sheathing at least 3/4 inch (19mm).

2.11 METAL FLASHING

A. 0.018" stainless steel sheet.

B. Aluminum sheet (thickness and finish as noted), complying with ASTM B 209.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not begin installation until the roof deck has been properly prepared.

B. If roof deck preparation is the responsibility of another installer, notify the architect or building owner of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Remove all existing roofing down to the roof deck.

B. Verify that the deck is dry, sound, clean and smooth. It shall be free of any depressions, waves, and projections. Cover with sheet metal, all holes over 1 inch (25mm) in diameter, cracks over 1/2 inch (12mm) in width, loose knots and excessively resinous areas.

C. Replace damaged deck with new materials.

D. Clean deck surfaces thoroughly prior to installation of nailable vented insulation substrate and underlayment.

3.3 PREPARATION

A. Clean deck surfaces thoroughly prior to installation of eaves protection membrane and underlayment.

B. At areas that receive eaves protection membrane, fill knotholes and cracks with latex filler.

C. Install crickets on the upslope side of all curbs and chimneys.

3.4 INSTALLATION OF UNDERLAYMENTS

A. General:
1. Install using methods recommended by manufacturer and contract details, in accordance with local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.

B. Roof Deck:
1. Install leak barrier where shown.
2. Install one layer of roof underlayment over the entire new and proposed roof surface. Install sheets horizontally so water sheds.

C. Penetrations:
1. Vent pipes: Install a 24 inch (610 mm) square piece of eaves protection membrane lapping over roof deck underlayment; seal tightly to pipe.

3.5 INSTALLATION OF STARTER SHINGLES

A. General:
1. Install in accordance with manufacturer's instructions, contract documents, and local building codes. Installation shall be in accordance with current published Miami-Dade County "Notice Of Acceptance". When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
2. Refer to application instructions for the selected starter strip shingles.

B. Placement and Nailing:
1. For maximum wind resistance along rakes & eaves, install starter strip and cement shingles to underlayment and each other in a 4" (102mm) width of asphalt plastic roof cement.
2. Place starter strip shingles 1/2" over eave and rake edges to provide drip edge.
3. Nail approximately 1-1/2" – 3" (38 – 76mm) above the butt edge of the shingle.
4. Rake starter course should overlap eave edge starter strip at least 3" (76mm).

3.6 INSTALLATION OF SHINGLES

A. General:
1. Install in accordance with manufacturer's instructions, contract documents, and local building codes. Installation shall be in accordance with current published Miami-Dade County "Notice Of Acceptance". When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
2. Minimize breakage of shingles by avoiding dropping bundles on edge, by separating shingles carefully (not by "breaking" over ridge or bundles), and by taking extra precautions in temperatures below 40 degrees F (4 degrees C).
3. Handle carefully in hot weather to avoid scuffing the surfacing, or damaging the shingle edges.

B. Placement and Nailing:
1. Secure with 6 nails per shingle per manufacturer's application instructions or local codes.
2. Placement of nails varies based on the type of shingle specified. Consult the application instructions for the specified shingle for details.
3. Nails must be driven flush with the shingle surface. Do not overdrive or under drive the nails.
4. Shingle offset varies based on the type of shingle specified. Consult the application instructions for the specified shingle for details.

C. Valleys
1. Install valleys using the "open valley" method:
   a. Snap diverging chalk lines on the metal flashing, starting at 3 inches (76mm) each side of top of valley, spreading at 1/8 inch per foot (9mm per meter) to the eaves.
   b. Run shingles to chalk line.
   c. Trim last shingle in each course to match the chalk line; do not trim shingles to less than 12 inches (305mm) wide.
   d. Apply a 2 inch (51mm) wide strip of plastic cement under ends of shingles, sealing them to the metal flashing.

D. Penetrations

1. All Penetrations are to be flashed according to manufacturer's, ARMA and NRCA application instructions and construction document details.

3.7 PROTECTION

A. Protect installed products from foot traffic until completion of the project.

B. Any roof areas that are not completed by the end of the workday are to be protected from moisture and contaminants.

END OF SECTION

SECTION 074113 - METAL ROOF PANELS

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. Standing-seam metal roof panels.
2. Coping, scuppers, downspouts, gutters and fascia used in conjunction with metal roof panels and asphalt shingle roofing.

B. Related Sections:

1. Division 07 Section "Sheet Metal Flashing and Trim" for field-formed flashings, roof drainage systems, and other sheet metal work not part of metal roof panel assemblies.
2. Division 07 Section "Joint Sealants" for field-applied sealants not otherwise specified in this Section.
3. Division 07 Section “Asphalt Shingles” for roofing adjacent to work of this section and integrated with work of this section.

1.3 DEFINITIONS

A. Metal Roof Panel Assembly: Metal roof panels, attachment system components, miscellaneous metal framing, thermal insulation, and accessories necessary for a complete weathertight roofing system.

1.4 QUALITY CRITERIA:

A. Applicable standards:

1. American Iron and Steel Institute (AISI):
   1986 Specification for the Design of Cold-Formed Steel Structural Members.

2. American Society for Testing and Materials (ASTM):
   A792-96 Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

B209-96	Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
A653-96	Specification for Steel Sheet Zinc-coated (galvanized) or Zinc-Iron Alloy-coated (Galvannealed) by the Hot-Dip process.
D1056-91	Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.
D3575-84	Test Methods for Flexible Cellular Materials made from Olefin Polymers.
E283-93	Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
E1680-95	Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
E1592-95	Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
E331-86	Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
E1646-95	Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.

3. Sheet Metal and Air Conditioning Contractors National Association (SMACNA): 1993 Architectural Sheet Metal Manual, 5th edition.

4. Underwriters' Laboratories (UL):
   Standard UL - 580 Tests for Wind-Uplift Resistance of Roof Assemblies.
   Standard UL - 263 Tests for Fire Resistance
   Standard UL - 790 Class A Fire Rating.

B. Applicable erection tolerances: Maximum variation from true planes or lines: 1/4" in 20'-0"; 3/8" in 40'-0" or more.

1.5 DESIGN & PERFORMANCE REQUIREMENTS

A. General Performance: Metal roof panels shall comply with performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.

B. Air Infiltration: Air leakage through metal roof panel assembly of not more than the following when tested according to ASTM E 1680:

Pressure	Area Leakage Rate	Seam Leakage rate
1.57 PSF	0.0012 cfm/sq.ft.	0.0012 cfm./ l.f.
6.24 PSF	0.0000 cfm/sq.ft.	0.0001 cfm./ l.f.
20.0 PSF	0.0011 cfm/sq.ft.	0.0011 cfm./ l.f.

C. Air Infiltration: Static pressure air infiltration of not more then the following:

Pressure	Leakage Rate
1.57 PSF	0.0007 cfm/sq.ft.
6.24 PSF	0.002 cfm/sq.ft.
20.0 PSF	0.0036 cfm/sq.ft.

D. Water Penetration: No water penetration when tested according to ASTM E 1646 at the following test-pressure:

1. Test-Pressure	Result
5 Gal/Hr Per S.F. and Static Pressure of 20.0 PSF for 15 minutes	No Leakage

E. Water penetration (dynamic pressure): No water penetration, other than condensation, when exposed to dynamic rain and 70 mph wind velocities for not less than five minutes duration, when tested in accord with principles of AAMA 501.1.

F. Static pressure water infiltration of not more than the following when tested in accordance with ASTM E331:

Pressure	Result
5 Gal/Hr Per S.F. and Static Pressure Of 20.0 Psf for 15 minutes	No Leakage

G. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E 2140.

H. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating: UL 90.

I. Structural Performance: Provide metal roof panel assemblies capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated, based on testing according to ASTM E 1592:

1. General:
   a. Basic Velocity Pressure = 1609.7(3): 25.600 psf.
   b. Velocity Pressure at elevation z (qz): 25.088 psf.
   c. Design Code: ASCE 7-98

2. Building and Site Data – Main Roof

Basic Wind Speed	120 mph
Exposure Category	B
Topography Factor	1.00
Building Type	Enclosed
Design Roof Height (z)	30 Feet
Importance Factor	1.15
Minimum Building Width	40 feet
Hurricane Prone	Yes

Parapet	No
Roof Angle	45 deg (12:12 pitch) (varies)
Structural Deck	Yes
Roof Type	Sloped
Extreme Thermal Range	200 deg F

3. Panel and Fastener Data

Panel Type	22 Gauge Steel (Galv)
Panel Width	10 1/8"
Panel/Cap Material	22 Gauge Steel
Substrate Material	Steel
Substrate Thickness	22 Gauge
Fastener Type	#14 Deck Screw Rawl
Fasteners per Clip	2
Fastener Safety Factor	1.875
Clip Pry Coefficient	1.65
Ultimate Fastener Pull-Out	505 lbs/screw
Allowable Clip Load	326 lbs/clip
Panel Safety Factor	1.875
Maximum Panel Thermal Length	10 feet

4. Capacity shall be determined using pleated airbag method in accordance with ASTM E 1592, testing of sheet metal roof panels as follows:
   a. Roof test specimens shall be either full length or representative of the main body of the roof, free from edge restraint or perimeter attachments, continuous over one or more supports, and containing at least five panel modules for standing seam roof.

   b. No attachments shall be permitted at sides or end perimeter other than those that occur uniformly throughout roof. Side and end seals shall be flexible and in no way restrain crosswise distortion of panels.

   c. Panels and accessories shall be production materials of same type and thickness proposed for use on project.

5. Installed roof system shall carry positive uniform design loads with a maximum system deflection of L/180 as measured at the rib (web) of the panel.

J. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Completed metal roofing and flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, producing excess stress on structure, anchors or fasteners, or reducing performance ability.
2. Interface between panel and clip shall provide for unlimited thermal movement in each direction along the longitudinal direction.
3. Location of metal roofing rigid connector shall be at roof ridge unless otherwise approved and designed per job conditions by specified manufacturer.

K. Solar Reflectance: Initial solar reflectance of not less than 0.25 when tested according to ASTM E 903, and maintained, under normal conditions, solar reflectance not less than 0.15 for 3 years after installation.

1.6 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of roof panel and accessory.

B. Shop Drawings: Show fabrication and installation layouts of metal roof and wall panels; details of edge conditions, side-seam and endlap joints, panel profiles, corners, anchorages, trim, flashings, closures, and accessories; and special details. Distinguish between factory- and field-assembled work.

1. Accessories: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches (1:10):

a. Flashing and trim.
b. Gutters.
c. Downspouts.
d. Roof curbs.
e. Snow guards.

C. Samples for Initial Selection: For each type of metal roof panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

D. Delegated-Design Submittal: For metal roof panel assembly indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Snow Retention System Calculations: Include calculation of number and location of snow guards based on snow load, roof slope, panel length and finish, and seam type and spacing.

E. Qualification Data: For qualified Installer and testing agency.

F. Material Certificates: For vapor retarders, from manufacturer.

G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.

H. Field quality-control reports.

I. Maintenance Data: For metal roof panels to include in maintenance manuals.

J. Warranties: Samples of special warranties.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer with the following qualifications

1. Engage an experienced metal roofing contractor (erector) to install standing seam system who has a minimum of three (3) years experience specializing in the installation of structural standing seam metal roof systems.
2. Contractor must be certified by manufacturer specified as supplier of structural standing seam system and obtain written certification from manufacturer that installer is approved for installation of specified system. If requested, contractor must supply owner with a copy of this certification.
3. Successful contractor is required to maintain a full-time supervisor/foreman who is on the job-site at all times during installation of new roof system. Foreman must have a minimum of five (5) years experience with the installation of system similar to that specified.
4. Successful contractor must obtain all components of roof system from a single manufacturer including any roll good materials if required. Any secondary products that are required which cannot be supplied by the specified manufacturer must be recommended and approved in writing by primary manufacturer prior to bidding.
5. If required, fabricator/installer shall submit work experience and evidence of adequate financial responsibility. The owners representative reserves the right to inspect fabrication facilities in determining qualifications.

B. Manufacturers Qualifications / Alternative Manufacturers:

1. The materials outlined in the Material and Method Specifications are the type of materials that should be used on this project. Bidder will not be allowed to supply panels formed at the job-site on portable rollformers; metal panels must be pre-manufactured and engineered for this project. Bidder will not be allowed to change materials after the bid opening date. If the bidder wishes to propose an alternate manufacturer and/or material than that specified, the following manufacturer criteria must be submitted with the bid.

    a. Submit certified test reports from a testing laboratory that bear the stamp of a registered P.E. to show compliance with specified performance criteria. Test reports must meet the specified negative uplift pressures as listed per this specification for the gauge, panel width and clip spacing specified as confirmed by manufacturers ASTM-E 1592 test results.
    b. Tests shall have been made for identical systems within the ranges of specified performance criteria.
    c. Empirical calculations for roof performance shall only be acceptable for positive loads.
    d. Indicate fastener types and spacings and provide fastener pullout values.
    e. Submit copy of manufacturer's Factory Mutual certification for specified system.
    f. Submit copy of UL 90 classification in accordance with UL 580 test procedure.

C. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

D. Source Limitations: Obtain each type of metal roof panels from single source from single manufacturer.

E. Surface-Burning Characteristics: Provide metal roof panels having insulation core material with the following 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.

F. Fire-Resistance Ratings: Where indicated, provide metal roof panels identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
2. Combustion Characteristics: ASTM E 136.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, sheets, metal roof panels, and other manufactured items so as not to be damaged or deformed. Package metal roof panels for protection during transportation and handling.

1. Inspect materials upon delivery. Reject and remove physically damaged or marred material from project site.

B. Unload, store, and erect metal roof panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal roof panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal roof panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Protect strippable protective covering on metal roof panels from exposure to sunlight and high humidity, except to extent necessary for period of metal roof panel installation.

E. Protect panels from wind-related damages.

1.9 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed according to manufacturer's written instructions and warranty requirements.

B. Field Measurements: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

C. Determine that work of other trades will not hamper or conflict with necessary fabrication and storage requirements for preformed metal roofing system.

D. Protection:

1. Provide protection or avoid traffic on completed roof surfaces.

2. Do not overload roof with stored materials.

3. Support no roof-mounted equipment directly on roofing system.

E. Ascertain that work of other trades which penetrates the roof or is to be made watertight by the roof is in place and approved prior to installation of roofing.

1.10 COORDINATION

A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

B. Coordinate metal roof panels with rain drainage work, flashing, trim, and construction of decks, trusses, parapets, walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace metal roof panel assemblies that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Period: Years from date of Substantial Completion, as noted below.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal roof panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

C. Owner shall receive ONE (1) WARRANTY from manufacturer of roof and wall panels covering all of the following criteria. Multiple warranties are not acceptable.

1. Manufacturer's 30 year limited watertight warranty.
2. 20 year coverage on finish including checking, crazing, peeling, chalking, fading and/or adhesion.
3. 20 year material coverage.

4. Warranty shall commence on date of substantial completion.
5. Installer shall provide manufacture with 2 year warranty covering wall and roofing system installation and water tightness.

PART 2 - PRODUCTS

2.1 PANEL MATERIALS

A. Metallic-Coated Steel Sheet: Restricted flatness steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
1. Panel material: 0.034" (22 gauge) galvalume coated steel, type AZ-55, grade 50 B smooth as per ASTM A792-96.
2. Surface: Smooth, flat finish.
3. Exposed Coil-Coated Finish:

a. 2-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

B. Panel Sealants:

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
2. Joint Sealant: ASTM C 920; elastomeric polyurethane, polysulfide, or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal roof panels and remain weathertight; and as recommended in writing by metal roof panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.2 UNDERLAYMENT MATERIALS

A. .040 High Temperature Underlayment.

B. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

2.3 MISCELLANEOUS MATERIALS

A. Panel Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide exposed fasteners with heads matching color of metal roof panels by means of plastic caps or factory-applied coating. Provide EPDM, PVC, or neoprene sealing washers.

B. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.4 STANDING-SEAM METAL ROOF PANELS

A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.

B. Vertical-Rib, Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels, and snapping panels together.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Merchant & Evans Traditional Rib, Series 306 Standing Seam Panel, or comparable product by one of the following:

   a. AEP-Span.
   b. Centria
   c. Imetco

2. Clips: two piece with provision for unlimited thermal movement in each direction along the longitudinal dimension..

   a. Material: 16 gauge nominal thickness, 40,000 psi zinc-coated (galvanized) steel sheet.

3. Material: Aluminum-zinc alloy-coated steel sheet, 0.034” (22 gauge) thickness.

   a. Exterior Finish: 2-coat fluoropolymer .
   b. Color: As selected by Architect from manufacturer’ standards, minimum 20 options..

4. Panel Coverage: 10 1/8 inches (406 mm).
5. Panel Height: 1 inch, minimum.

2.5 ACCESSORIES

A. Gutters: Formed from same material as roof panels, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- (2400-mm-) long sections, of size and metal thickness in accordance with manufacturer's recommendations. Furnish gutter supports spaced a maximum of 36 inches (914 mm) o.c., fabricated from same metal as gutters. Provide wire ball strainers of compatible metal at outlets. Finish gutters to match metal roof panels.

B. Downspouts: Formed from same material as roof panels. Fabricate in 10-foot- (3-m-) long sections, complete with formed elbows and offsets, of size and metal thickness in accordance with manufacturer's recommendations. Finish downspouts to match gutters.

C. Accessories: Provide components approved by roof panel manufacturer and as required for a complete metal roof panel assembly including trim, copings, fasciae, corner units, ridge closures, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.

1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal roof panels.
2. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
3. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.

D. Flashing and Trim: Formed from same material as roof panels, prepainted with coil coating, minimum 0.018 inch (0.45 mm) thickness as indicated in metal gauge and usage schedule at the end of this section. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal roof panels.

2.6 FABRICATION

A. Fabricate and finish metal roof panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes and as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Fabricate metal roof panel side laps with factory-installed captive gaskets or separator strips that provide a tight seal and prevent metal-to-metal contact, in a manner that will seal weathertight and minimize noise from movements within panel assembly.

D. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. End Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
3. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
5. Fabricate cleats and attachment devices of size and metal thickness recommended by SMACNA's "Architectural Sheet Metal Manual" or by metal roof panel manufacturer for application, but not less than thickness of metal being secured.

2.7 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal roof panel supports, and other conditions affecting performance of the Work.

1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.

B. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.

C. Examine roughing-in for components and systems penetrating metal roof panels to verify actual locations of penetrations relative to seam locations of metal roof panels before metal roof panel installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.

3.3 UNDERLAYMENT INSTALLATION

A. Underlayment: Apply at all substrates to receive metal roofing indicated below and on Drawings, in shingle fashion to shed water, and with lapped joints of not less than 2 inches (50 mm).

1. Apply over entire roof surface.

B. Apply slip sheet over underlayment before installing metal roof panels.

C. Install flashings to cover underlayment to comply with requirements specified in Division 07 Section "Sheet Metal Flashing and Trim."

3.4 METAL ROOF PANEL INSTALLATION

A. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended by manufacturer.

1. Install clips to supports with self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
4. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.

3.5 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal roof panel assembly including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.

B. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches (914 mm) o.c., using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

C. Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately 60 inches (1524 mm) o.c. in between.

1. Provide elbows at base of downspouts to direct water away from building.
2. Connect downspouts to underground drainage system indicated.

D. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

3.6 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect metal roof panel installation, including accessories. Report results in writing.

B. Remove and replace applications of metal roof panels where inspections indicate that they do not comply with specified requirements.

C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.7 CLEANING

A. Remove temporary protective coverings and strippable films, if any, as metal roof panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal roof panel installation, clean finished surfaces as recommended by metal roof panel manufacturer. Maintain in a clean condition during construction.

B. Replace metal roof panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074113

SECTION 074610 – CEMENTITIOUS WALL PANELS AND 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 - SECTION INCLUDES

A. Factory-finished fiber cement lap shingle panel, vertical panel, trim, fascia, moulding and accessories; James Hardie HZ5 Engineered for Climate Siding.

1.3 REFERENCES

A. ASTM C1186 - Standard Specification for Flat Fiber-Cement Sheets

B. ASTM D3359 - Standard Test Method for Measuring Adhesion by Tape Test, Tool and Tape.

C. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings: Provide detailed drawings of atypical non-standard applications of cementitious siding materials which are outside the scope of the standard details and specifications provided by the manufacturer.

D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two samples, minimum size 4 by 6 inches (100 by 150 mm), representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Minimum of 2 years experience with installation of similar products.

B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Finish areas designated by Architect.
2. Do not proceed with remaining work until workmanship, color, and sheen are

approved by Architect.

3. Refinish mock-up area as required to produce acceptable work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store siding on edge or lay flat on a smooth level surface. Protect edges and corners from chipping. Store sheets under cover and keep dry prior to installing.

C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

A. Product Warranty: Limited, non-pro-rated product warranty.
1. HardiePlank HZ5 lap siding for 30 years.
2. HardiPanel HZ5 vertical siding for 30 years.
3. HardieSoffit HZ5 panels for 30 years.
4. HardieShingle HZ5 siding for 30 years.
5. Artisan HZ5 lap siding for 30 years.

B. Product Warranty: Limited, product warranty.
1. HardieTrim HZ and HZ5 boards for 15 years.

C. Finish Warranty: Limited product warranty against manufacturing finish defects.
1. When used for its intended purpose, properly installed and maintained according to James Hardie's published installation instructions, James Hardie's ColorPlus finish with ColorPlus Technology, for a period of 15 years from the date of purchase: will not peel; will not crack; and will not chip. Finish warranty includes the coverage for labor and material.

D. Workmanship Warranty: Application limited warranty for 2 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: James Hardie Building Products, Inc

B. Requests for approval of equal substitutions will be considered in accordance with provisions of Division 1 sections.

2.2 SIDING

A. Fiber Cement Shingle Panel Siding: HardiePlank HZ5 Straight Edge Notched Panel.
1. Type: 48” wide x 18” high with 5” exposure.

C. Fiber Cement Vertical Panel Siding with battens: HZ5 Hardie Panel.

1. Type: Smooth 4’-0” x up to 12’-0”, 5/16” thick.

2. Trim: Batten trim, 3/4” thick

D. Miscellaneous Trim:
1. HardieTrim HZ5 boards and HardieTrim HZ boards as manufactured by James Hardie Building Products, Inc.
2. HardieTrim HZ5 Fascia boards as manufactured by James Hardie Building Products, Inc.
3. Thickness: Provide thickness as indicated on the drawings.
   a. 4/4 x height where indicated.
   b. 5/4 x height where indicated.

2.3 FASTENERS

A. Fasteners:
1. Use size, material and spacing as recommended by the manufacturer for specific location and materials connecting.
2. Use corrosion resistant fasteners where recommended by manufacturer for specific location and materials connectiong.

2.4 FINISHES

B. Factory Finish:.
1. Product: ColorPlus Technology by James Hardie.
2. Definition: Factory applied finish; defined as a finish applied in the same facility and company that manufactures the siding substrate.
3. Process:
   a. Factory applied finish by fiber cement manufacturer in a controlled environment within the fiber cement manufacturer's own facility utilizing a multi-coat, heat cured finish within one manufacturing process.
   b. Each finish color must have documented color match to delta E of 0.5 or better between product lines, manufacturing lots or production runs as measured by photospectrometer and verified by third party.
4. Protection: Factory applied finish protection such as plastic laminate that is removed once siding is installed
5. Accessories: Complete finishing system includes pre-packaged touch-up kit provided by fiber cement manufacturer. Provide quantities as recommended by manufacturer.

C. Factory Finish Color for Trim, Soffit and Siding Colors:
1. Allow for two colors for this project.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. Notify Architect of unsatisfactory preparation before proceeding.

C. Nominal 2 inch by 4 inch (51 m by 102 mm) wood framing selected for minimal shrinkage and complying with local building codes, including the use of water-resistive barriers or vapor barriers where required. Minimum 1-1/2 inches (38 mm) face and straight, true, of uniform dimensions and properly aligned.
   1. Install water-resistive barriers and claddings to dry surfaces.
   2. Repair any punctures or tears in the water-resistive barrier prior to the installation of the siding.
   3. Protect siding from other trades.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using methods recommended by manufacturer's written requirements.

C. Protect surrounding work areas and surface during installation.

D. Repair punctures or tears in weather barrier prior to installation of siding.

3.3 WEATHER BARRIER

A. See Section 07 25 00, Weather Barriers.

B. Ensure weather barrier is installed with penetration and junction flashing in accordance with manufacturer's written requirements and the Authorities Having Jurisdiction.

3.4 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Install a water-resistive barrier is required in accordance with local building code requirements.

D. The water-resistive barrier must be appropriately installed with penetration and junction flashing in accordance with local building code requirements.

3.5 INSTALLATION – GENERAL REQUIREMENTS

A. Install materials in strict accordance with manufacturer's installation instructions, including but not limited to James Hardie Building Products, Inc HZ5 “MULTI-FAMILY / COMMERCIAL INSTALLATION REQUIREMENTS.

B. Use fasteners as specified in the Manufacturers Tech Data sheet and in the Manufacturer’s Installation Instruction. Fastener type and spacing shall be in accordance with the manufacturer’s “Technical Data Sheet, latest date, for a Basic Wind Speed (3-Second Gust) of 100 mph.

3.6 INSTALLATION - GENERAL

A. Protect siding from Work of other trades.

B. Surfaces to be dry prior to installation of weather barriers and siding.

C. Reference trim details on Drawings.

D. Reference manufacturer's standard details, attached to this specification section.

1. Installation shall be in strict conformance with JamesHardie HardiePanel Vertical Siding, Shingle Panel and written literature and details, including fasteners, alignment, orientation, and trim locations.

2. Substrate, substrate preparation and substrate construction shall be in accordance with the contract documents.

a. Nailers: Provide nailers at interior and exterior corners, eaves, wall base and top of wall, as well as other locations as required to support cementitious siding panels and trim as required by the manufacturer and also as shown on the contract documents or manufacturer's written details.

E. Touch-up cut edges prior to installation.

F. Install materials in strict accordance with manufacturer's installation instructions.

G. Allow minimum vertical clearance between the edge of siding and any other material in strict accordance with the manufacturer's installation instructions.

H. Align vertical joints of the planks, panels and trim over framing members.

I. Maintain clearance between siding and adjacent finished grade.

J. Locate splices at least one stud cavity away from window and door openings.

K. Wind Resistance: Where a specified level of wind resistance is required Hardieplank lap siding is installed to framing members and secured with fasteners described in Table No. 2 in National Evaluation Service Report No. NER-405.

3.7 INSTALLATION – PROJECT SPECIFIC SEQUENCING

A. The contractor shall be required to submit all submittals and shop drawings. The Contractor shall determine the location of wood studs and furring, and shall reflect this on the shop drawings.

3.8 INSTALLATION - HARDIETRIM HZ5 BOARDS

A. Install materials in strict accordance with manufacturer's installation instructions. Install flashing around all wall openings.

B. Fasten through trim into structural framing or code complying sheathing. Fasteners must penetrate minimum 3/4 inch (19 mm) or full thickness of sheathing. Additional fasteners may be required to ensure adequate security.

C. Place fasteners no closer than 3/4 inch (19 mm) and no further than 2 inches (51 mm) from side edge of trim board and no closer than 1 inch (25 mm) from end. Fasten maximum 16 inches (406 mm) on center.

D. Maintain clearance between trim and adjacent finished grade.

E. Trim inside corner with a single board trim both side of corner.

F. Outside Corner Board Attach Trim on both sides of corner with 16 gage corrosion resistant finish nail 1/2 inch (13 mm) from edge spaced 16 inches (406 mm) apart, weather cut each end spaced minimum 12 inches (305 mm) apart.

G. Allow 1/8 inch gap between trim and siding.

H. Seal gap with high quality, paint-able caulk.

I. Shim frieze board as required to align with corner trim..

J. Fasten through overlapping boards. Do not nail between lap joints.

K. Overlay siding with single board of outside corner board then align second corner board to outside edge of first corner board. Do not fasten HardieTrim boards to HardieTrim boards.

L. Shim frieze board as required to align with corner trim.

M. Install HardieTrim Fascia boards to rafter tails or to sub fascia.

3.9 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 076000 – FLASHING AND SHEET METAL

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. Formed Products:
      a. Metal counter flashing, cap receivers, and base flashing.
      b. Exposed metal trim units (where not specified elsewhere).
      c. Miscellaneous sheet metal accessories.
   2. Manufactured Products:
      a. Manufactured through-wall flashing and counterflashing.
      b. Manufactured reglets and counterflashing.
      c. Downspout extenders for temporary use.

B. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Division 07 Section "Joint Sealants" for field-applied sealants not otherwise specified in this Section.
   2. Division 07 Section “Metal Roof Panels” for gutters and downspouts used in conjunction with roofing.
   3. Division 07 Section “Asphalt Shingles” for roofing adjacent to work of this section and integrated with work of this section.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data, Flashing, Sheet Metal, and Accessories:
   1. Manufacturer's technical product data, installation instructions and general recommendations for each specified sheet material and fabricated product.

C. Samples of the following flashing, sheet metal, and accessory items:
   1. 8-inch-square samples of specified sheet materials to be exposed as finished surfaces.

D. Shop drawings showing layout, profiles, methods of joining, and anchorages details. Provide layouts at 1/4-inch scale and details at 3-inch scale.

1.4 PROJECT CONDITIONS

A. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.

PART 2 - PRODUCTS

2.1 GENERAL:

A. Compatibility: Provide products and materials that are recommended to be fully compatible with indicated substrates, or provide separation materials as required to eliminate contact between incompatible materials.
   1. At no time shall petroleum base solvents, sealants, or other similar materials come into contact with the roof.

2.2 SHEET METAL FLASHING AND TRIM MATERIALS

A. Sheet Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated and with not less than the strength and durability of alloy and temper designated below:

B. Mill-Finish Aluminum Sheet: ASTM B 209 (ASTM B 209M), 3003-H14, with a minimum thickness of 0.040 inch (1.0 mm), unless otherwise indicated.

C. Anodized Aluminum Sheet: ASTM B 209 (ASTM B 209M), 5005-H14, with a minimum thickness of 0.050 inch (1.2 mm).

D. Extruded Aluminum: Manufacturer's standard extrusions of sizes and profiles indicated, 60063-T52, AA-C22A41 clear anodized finish; 0.080-inch minimum thickness for primary legs of extrusions.

E. Stainless Steel: AISI Type 302/304, complying with ASTM A 167, 2D annealed finish, soft, except where harder temper required for forming or performance; 0.025-inch thick (24 gage) except as otherwise indicated.

2.3 MISCELLANEOUS MATERIALS AND ACCESSORIES:

A. Solder: For use with steel provide 50 - 50 tin/lead solder (ASTM B 32), with rosin flux.

B. Fasteners: Same metal as flashing/sheet metal or other non- corrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.

C. Elastomeric Sealant: Generic type recommended by manufacturer of metal and fabricator of components being sealed and complying with requirements for joint sealants as specified in Division 7 Section "Joint Sealers."

D. Epoxy Seam Sealer: 2-part noncorrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior nonmoving joints including riveted joints.

E. Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of flashing sheet.

F. Paper Slip Sheet: 5-lb. rosin-sized building paper.

G. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gage required for performance.

H. Roofing Cement: ASTM D 2822, asphaltic.

2.4 MANUFACTURED SHEET METAL FLASHING AND TRIM

A. Reglets: Units of type, material, and profile indicated, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions with interlocking counterflashing on exterior face, of same metal as reglet.
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. Cheney Flashing Company.
   b. Fry Reglet Corporation.
   c. Hickman, W. P. Company.
   d. Hohmann & Barnard, Inc.; STF Sawtooth Flashing.
   e. Keystone Flashing Company, Inc.
   f. National Sheet Metal Systems, Inc.
2. Material: Stainless steel, 0.019 inch (0.48 mm) thick.
3. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
4. Accessories:
   a. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
   b. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.
5. Finish: Dark Bronze Anodized.

2.5 FABRICATED UNITS

A. General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown and with applicable requirements of SMACNA "Architectural Sheet Metal Manual", latest edition, and other recognized industry practices. Fabricate for waterproof and weather-resistant performance, with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.

B. Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams. For metal other than aluminum, tin edges to be seamed, form seams, and solder. Form aluminum seams with epoxy seam sealer; rivet joints for additional strength where required.

C. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

D. Sealant Joints: Where movable, nonexpansion type joints are required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.

E. Separations: Provide for separation of metal from noncompatible metal or corrosive substrates, including aluminum sheet to masonry substrates, by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

F. Aluminum Extrusion Units: Fabricate extruded aluminum running units with formed or extruded aluminum joint covers for installation behind main members where possible. Fabricate mitered and welded corner units.

2.6 ALUMINUM FINISHES:

A. General: Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations, except as otherwise indicated. For components which are assembled or welded in factory, apply finish after fabrication is completed.

B. Provide high performance finish as listed below for the following items:
1. Scuppers.

C. Two Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer’s written instructions.

D. Warranty: Provide manufacturer's twenty (20) year warranty covering the fluorocarbon coating against fading, chalking and loss of film integrity. Fluorocarbon finish shall not show a color change greater than 5 NBS color units as per ASTM D 2244 79 and shall not show chalking in excess of No. 8 per ASTM D 659 80. Finish color to match metal roofing.

E. Color: As selected by architect to match adjacent new work.

F. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester-backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil (0.013 mm).

PART 3 - EXECUTION

3.1 INSTALLATION REQUIREMENTS

A. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with SMACNA "Architectural Sheet Metal Manual." Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.

B. Underlayment: Where stainless steel or aluminum is to be installed directly on cementitious or wood substrates, install a slip sheet of red rosin paper and a course of polyethylene underlayment.
1. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.

C. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counter-flashing 4 inches (100 mm) over base flashing. Lap counterflashing joints minimum of 4 inches (100 mm). Secure in waterproof manner by means of interlocking folded seam or blind rivets and sealant unless otherwise indicated.

D. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

E. Parapet Scuppers: Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.

1. Anchor scupper closure trim flange to exterior wall and seal with elastomeric sealant to scupper.

F. Isolation: Where metal surfaces of units are installed in contact with dissimilar metal or corrosive substrates, including wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation as recommended by aluminum producer. At no time shall petroleum-based products be permitted to come into contact with the EPDM roofing membrane.
1. Install counterflashing in reglets, either by snap-in seal arrangement or by welding in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure.

3.2 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.

3.3 CLEANING AND PROTECTION

A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.

B. Protection: Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction to ensure that work will be without damage or deterioration other than natural weathering at time of Substantial Completion.

3.4 METAL GAUGE AND USAGE SCHEDULE

A. Use the following gauges/weights unless noted otherwise.

Metal	Gauge/Wt.	Use
Aluminum	0.040	Downspouts.
Aluminum	0.080	Scuppers, Conductor heads.
Aluminum	0.050	Counterflashing. Drip Edge. Fascias Gutter less than 26" girth. Exposed trim.
Stainless Steel	.025"	Rain collars, supplemental vent flashing. Base flashing, when not used in conjunction with metal roof and wall panels.

END OF SECTION 076000

SECTION 076510 – FLEXIBLE FLASHING AND SHEET METAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification Sections, apply to this Section.

1.2 GENERAL

A. This portion of the specification sets forth the general requirements and describes materials and workmanship for installing the flashings and sheet metal on the roofing systems specified.

B. All materials described herein shall be furnished and installed by the roofing contractor unless specifically noted otherwise.

C. This section is for work on roofs: Lumberton Campus Reroofing and Siding.

D. Any shop formed metal work shall be in accordance with Architectural Sheet Metal Manual, latest edition, as issued by Sheet Metal and Air Conditioning Contractors' National Association, Inc., (SMACNA).

PART 2 - PRODUCTS

2.1 MECHANICAL FASTENERS

A. Sheet Metal to Masonry
   1. Tapcon 1/4 inch diameter, Phillips flat head anchor with EPDM washer by Buildex Div. of ITW, Itasca, IL.
   2. Length: Sufficient to provide 1-1/4 inch embedment.

B. Sheet Metal to Curbs
   1. Fab-lok Fac 10-8 stainless steel screw, aluminum sleeve by Textron Fastening Systems, Providence, RI.

C. Stainless sheet steel to wood blocking:
   1. Roofing nails: galvanized steel wire, flat head, diamond point, round, barbed shank.
   2. Length: Sufficient to penetrate wood blocking 1-1/4 inches minimum.

D. Galvanized sheet steel to wood blocking:
   1. Roofing nails; galvanized steel wire, flat head, diamond point, round, barbed shank.
   2. Length: Sufficient to penetrate wood blocking 1-1/4 inches minimum.

E. Base Flashing to Masonry
   1. Masonry nail by Simplex Nail, Inc., Americus, GA.

2. King-Con Concrete & Masonry Wall Anchor with Plate by ITW Buildex, Itasca, IL.

2.2 METAL FLASHING

A. Plumbing vents:
1. Prefabricated plumbing vent flashings, 4 lb lead

B. Pitch pan and bonnets:
1. Aluminum: ASTM B209, .050 inch thick mill finish

C. Reglet sealant:

One Part Urethane Sealant

Test	Typical Value	Test Method
Rheological (sag in vertical displacement at 120°F (49°C)	No sag	ASTM C 639
Extrusion Rate	2 seconds	ASTM C 603
Hardness Properties (Shore A)	25 ± 5	ASTM D 2240
Movement Capability	± 25%	ASTM C 719
Weight Loss, After Heat Aging	9%	ASTM C 792
Cracking and Chalking, After Heat Loss	None	ASTM C 792
Stain and Color Change	Passes (no visible stain)	ASTM C 519
Tack-Free Time at 77°F (25°C), 50% R.H.	16 – 24 hours	Fed. Spec. TT-S-230c
Cure Time at 77°F (25°C), 50 R.H.	4 – 7 days	Observed
Tensile Strength at 77°F (25°C)	250 psi	ASTM D 412
% Elongation	500%	ASTM D 412
Accelerated Aging	No physical damage	ASTM C 793
Asbestos Content	0%	EPA 600/R-93/116

D. Wall Counterflashing Systems:
1. .050" Kynar 500 Coated Aluminum

E. Coping: Pre-manufactured metal components per SMACNA standards approved by the roofing manufacturer.
1. Refer To Section 07717 – Coping System

F. Expansion joint covers: Pre-manufactured metal components per SMACNA standards approved by the roofing manufacturer.
1. Refer To Section 07512 – Expansion Joint System

2.3 FLEXIBLE FLASHINGS:

A. Flashing base ply sheet:

IRO Ply HR FR, SR Products, Solon, OH

Test	Typical Value	Test Method
Thickness, mil (mm)	136 (3.4)	ASTM D 5147/6163
Tensile Strength at Maximum Load, 73.4 ± 3.6°F, lbf/in.	136 MD 130 XMD	ASTM D 5147/6163
Elongation at Maximum Load, 73.4 ±	12 MD	ASTM D 5147/6163

3.6°F, %	10 XMD	
Tensile Strength at Maximum Load, 0 ± 3.6°F (-18 ± 2°C), lbf/in.	200 MD 175 XMD	ASTM D 5147/6163
Elongation at Maximum Load, 0 ± 3.6°F , %	13.5 MD 10 XMD	ASTM D 5147/6163
Tear Strength, 73.4 ± 3.6°F, lbf.	130 MD 130 XMD	ASTM D 5147/6163
Low Temperature Flexibility, °F	-15	ASTM D 5147/6163
Dimensional Stability, %	<0.1	ASTM D 5147/6163
Compound Stability	230	ASTM D 5147/6163
Fire Resistance	Pass, Class A	ASTM E 108

B. Flashing Top Ply:

IRO Ply HS FR, SR Products, Solon, OH

Test	Typical Value	Test Method
Thickness, mils (mm)	120 (3.0)	ASTM D 5147 / D 6162
Maximum Load, 73.4 ± 3.6°F , lbf/in	555 MD 387 XMD	ASTM D 5147 / D 6162
Elongation at Maximum Load, 73.4 ± 3.6°F, %	20% MD 11% XMD	ASTM D 5147 / D 6162
Tear Strength at 73.4 ± 3.6°F , lbf	1,020 MD 706 XMD	ASTM D 5147 / D 6162
Tensile Strength at 0°F ± 3.6°F (-18 ± 2°C), lbf/in.	608 MD 585 XMD	ASTM D 5147 / D 6162
Low Temperature Elongation at Max. Load, 0°F ± 3.6°F, %	-13% MD 7% XMD	ASTM D 5147 / D 6162
Dimensional Stability, %	<0.5	ASTM D 5147 / D 6162
Compound Stability, °F	230	ASTM D 5147 / D 6162

C. Adhesives and coatings:

1. Flashing adhesive:
   a. Type III Asphalt, ASTM D 312
2. Protective coating:
   a. Base Coat:

Wite Brite Coating – Energy Star SR Products, Solon, OH

Test	Typical Value	Test Method
Tensile Strength	381 psi	ASTM D 412
Reflectance	9000 hrs	ASTM D 2824
Elongation	1002%	ASTM D 412
Low Temp. Flex.	17ºF	ASTM C 711
Solids/Weight	57%	ASTM D 1353
Water Vapor Transmission	Perms/in <.0103”	ASTM E 96
Solar Reflectance	.84	ASTM C 1549
Emissivity	.89	ASTM C 371

   b. Finish Coat:

Wite Brite Coating – Energy Star SR Products, Solon, OH

Test	Typical Value	Test Method
Tensile Strength	381 psi	ASTM D 412
Reflectance	9000 hrs	ASTM D 2824
Elongation	1002%	ASTM D 412

Low Temp. Flex.	17ºF	ASTM C 711
Solids/Weight	57%	ASTM D 1353
Water Vapor Transmission	Perms/in <.0103”	ASTM E 96
Solar Reflectance	.84	ASTM C 1549
Emissivity	.89	ASTM C 371
Fire Resistance	Pass, Class A	ASTM E 108

D. Accessories:

1. Reinforcing fabric:

SR Glass Mesh, SR Products, Solon, OH

Test	Typical Value	Test Method
Weight	9.0 lbs./ 100 sq. ft.	ASTM D 1668
Fabric Count	10 x 10	ASTM D 1668
Tensile (Warp and Fill Directions)	75 lbf/in., min.	ASTM D 1668
Moisture Absorption	None	ASTM D 1668

2. Asphalt Mastic:

SR Flashing Cement, SR Products, Solon, OH

Test	Typical Value	Test Method
Asbestos Content	0%	EPA 600/R-93/116
Non-Volatile Matter by Weight	76-82%	ASTM D 4586
Viscosity @ 77°F	450,000 - 950,000 cps	ASTM D 2196
Density @ 77°F	9.5 - 10.0 lb/gal.	ASTM D 1475
Resistance to Sag @ 140°F	1/8" maximum	ASTM D 4586
Adhesion to Wet Surfaces	55%	ASTM D 3409
Moisture by Weight	1.5%	ASTM D 4586
Mineral or Other Stabilizers by Weight	38%	ASTM D 4586
Asphalt by Weight	40%	ASTM D 4586
Uniformity & Workability	Acceptable as described	ASTM D 4586
Behavior @ 140°F	No blistering	ASTM D 4586
Pliability @ 32°F	No cracking/separation	ASTM D 4586

3. Pitch pan sealant:

a. Pitch Poxy Kit, SR Products, Solon, OH

4. Asphalt primer:

HK Rapid Dry Primer SP, SR Products, Solon, OH

Test	Typical Value	Test Method
Asbestos Content	0%	EPA 600/R-93/116
Viscosity	100-200 cps	ASTM D 2196
Density	7.2 lbs/gal.	ASTM D 1475
Solids by Weight	43%	ASTM D 4479
Flash Point	101ºF minimum	ASTM D 93

5. Flashing tape:

Tape Seal

Test	Typical Value	Test Method
Solids by Weight	100%	ASTM D 1353
Rubber Modifier	Polyisobutylene (Butyl Rubber)	Fourier Transform-Infrared Spectrosocpy
Hardness Shore ”A”	20 durometer @ 77°F	ASTM D 2240

6. Non-Shrink Grout: Quikrete FastSet™ Non-Shrink Grout:

Approximate water content per bag	1 ½ gal (5.7 L)

Flow, ASTM C 939	-	ASTM C 939
Flow, at 5 drops	125 – 145	ASTM C 827
Working Time	about 15 min.	
Setting Time		ASTM C 191
Final	20-45 min.	
Compressive Strength		ASTM C 109
3 Hours after set	2500 psi (17.2 MPa)	
24 Hours	4500 psi (31 MPa)	
7 Days	5500 psi (37.9 MPa)	
28 Days	7500 psi (51.7 MPa)	
Slant Shear Bond Strength		ASTM C 928
1 Day	1000 psi (6.9 MPa)	
7 Days	1500 psi (10.3 MPa)	

PART 3 - EXECUTION

3.1 BASE FLASHINGS

A. Preparation:
1. Remove existing flashing materials to substrate. Replace damaged material in like kind.
2. Prime vertical substrate with asphalt primer at approximate rate of one gallon per 125 - 150 sq. ft.
3. Install new roofing two inches beyond top edge of cant.

B. Base ply(s):
1. Fully adhere one (1) ply of specified base flashing completely to flashing substrate, cant, and roofing. Flashing should extend a minimum of 8" and maximum of 14” above finished roof membrane.

C. Cap ply:
1. Fully adhere a flashing top ply over base ply(s).
2. Mechanically fasten top of flashing to substrate; fasten minimum of 8 inches on center.
3. Seal top edge with a 4 inch wide stripping membrane embedded in alternating courses of specified Asphalt Mastic.
4. Strip in bottom edge of flashing with 4 inch wide stripping membrane and specified flashing adhesive.
5. Surface flashing with specified protective coating (if specified).
6. Install specified counterflashing system as per detail drawings.

3.2 AT SINGLE AND MULTIPLE PENETRATIONS-SMALL PIPES & CONDUITS

A. Remove existing pitch pans.

B. Install new insulation and roofing membrane system.

C. Apply 1/16 inch uniformly thick layer of asphalt mastic to surface receiving metal flange.

D. Install specified pitch pan(s) around penetration(s).

E. Prime metal flange, projection, and pitch pan interior with asphalt primer. Do not prime pan interior or projection if urethane pitch pocket sealant is used.

F. Seal flange with two strips of polyester roofing ply embedded between alternate spreads of membrane adhesive. Extend first ply two inches beyond flange, second ply two inches beyond first ply.

G. Fill to pitch pan 3/4" from top with non shrink grout, allow to set up.

H. Seal top with specified pitch pan sealant.

I. All penetrations will receive a bonnet or watershed as shown in detail drawings.

3.3 AT PLUMBING VENTS

A. Remove existing stack flashing.

B. Wedge plumbing vent tight against deck.

C. Fabricate and install plumbing vent flashing from specified lead.
1. Flange, six inches wide minimum, extend completely around periphery of vent flashing. Set flange into asphalt mastic. Neatly dress flange with wood block.
2. Pipe outside diameters greater than two inches: Bend lead inside pipe one inch minimum with rubber/plastic mallet. Replace cracked lead.
3. Pipe outside diameters two inches or less: Cut lead at vent top. Fabricate and install integral lead cap.
4. Prime metal flange with asphalt primer and allow to dry.
5. Apply flashing adhesive on metal flange and onto roof.
6. Flash with three targets of flashing base ply felt, four, eight, and twelve inches larger than lead flange.

3.4 EQUIPMENT STANDS - "I" BEAMS AND ANGLE IRONS

A. Remove existing flashing. Weld 1/4 inch plate steel (where required) to open portion of beam. Slope to shed water away from I-beam. Fill beam interior below sloped plate to roof deck with batt insulation. Install vertical and horizontal sections of wood blocking around column. Blocking height to be a minimum of 8 inches above final insulation surface. Provide tapered edge strip and cant around stand. Mechanically attach to deck; miter corners.

B. Install new roofing two inches beyond top edge of cant. Adhere base ply(s) of specified flashing membrane. Overlap section four inches. Extend flashing ply four inches beyond toe of cant.

C. Install top ply of specified flashing membrane over the base ply, extend six inches beyond base flashing ply. Mechanically fasten top of flashing to substrate with one inch cap nails eight inches o.c. Adhere flashing tape, to vertical flange of welded plate and around entire column. Surface flashing with specified reflective coating (if specified).

D. Fabricate and install new aluminum counterflashing. Mechanically fasten counterflashing to structural beam with compatible bar/fasteners. Extend counterflashing two inches below top of base flashing. Wipe clean top surface of counterflashing with metal cleaner. Caulk top of counterflashing, provide watershed, and tool neatly. Paint exposed installed steel with specified reflective coating.

3.5 AT SCUPPERS

A. Remove existing scupper liners and membrane to wood blocking.

B. Replace rotted and untreated blocking as needed and approved by owner's representative with new, treated wood blocking.

C. Install base membrane over wood blocking, into the port and out onto the roof 2 feet in all directions, set in a bed of asphalt mastic.

D. Install pre-manufactured scupper.

E. Install scupper head below outside of port and new downspouts.

F. Prime metal surfaces to receive membrane plies and allow to dry.

G. Solidly adhere roof membrane plies completely to stripping plies, scupper flanges, cant, and port, progressing plies 1-2" further than previous applied ply.

H. Wall flashings shall extend over flanges and roof membrane out 6" past cant.

3.6 REFLECTIVE SURFACING INSTALLATION:

A. After all preparatory work has been completed, all work must be inspected jointly by the contractor, and the owner's representative, and the material supplier's representative prior to coating application. NO further work may proceed until all preparatory work is jointly inspected and written notice to proceed has been received by the contractor from the building owner.

B. When temperatures are a minimum of 50 degrees F and rising with no rain imminent.

C. Allow specified hot adhesive to cure 60 days prior to applying reflective coating.

D. Apply specified base coating at a rate of 1 ½ gallons per 100 s.f. with a roller or an airless sprayer.

E. Apply specified reflective coating perpendicular to base coat at a rate of 1 ½ gallons per 100 s.f. with a roller or an airless sprayer.

F. Materials must be thoroughly mixed and kept homogenous all during application.

G. All surfaces must be uniformly coated and free from voids, pin holes and blisters.

END OF SECTION 076510

SECTION 078413 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes through-penetration firestop systems for penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items.

1.3 PERFORMANCE REQUIREMENTS

A. General: For penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.

1. Fire-resistance-rated walls including fire walls fire partitions fire barriers and smoke barriers .

B. Rated Systems: Provide through-penetration firestop systems with the following ratings determined per ASTM E 814 or UL 1479 :

1. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.
2. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:

    a. Penetrations located outside wall cavities.
    b. Penetrations located outside fire-resistance-rated shaft enclosures.

C. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.

1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.

2. For floor penetrations with annular spaces exceeding 4 inches (100 mm) in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved, either by installing floor plates or by other means.
3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

D. For through-penetration firestop systems exposed to view, provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For each through-penetration firestop system, show each type of construction condition penetrated, relationships to adjoining construction, and type of penetrating item. Include firestop design designation of qualified testing and inspecting agency that evidences compliance with requirements for each condition indicated.

1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop system configuration for construction and penetrating items.
2. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular through-penetration firestop condition, submit illustration, with modifications marked, approved by through-penetration firestop system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

C. Through-Penetration Firestop System Schedule: Indicate locations of each through-penetration firestop system, along with the following information:

1. Types of penetrating items.
2. Types of constructions penetrated, including fire-resistance ratings and, where applicable, thicknesses of construction penetrated.
3. Through-penetration firestop systems for each location identified by firestop design designation of qualified testing and inspecting agency.

D. Qualification Data: For Installer.

E. Product Certificates: For through-penetration firestop system products, signed by product manufacturer.

F. Product Test Reports: From a qualified testing agency indicating through-penetration firestop system complies with requirements, based on comprehensive testing of current products.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A firm that has been approved by FMG according to FMG 4991, "Approval of Firestop Contractors."

B. Installation Responsibility: Assign installation of through-penetration firestop systems in Project to a single qualified installer.

C. Source Limitations: Obtain through-penetration firestop systems, for each kind of penetration and construction condition indicated, through one source from a single manufacturer.

D. Fire-Test-Response Characteristics: Provide through-penetration firestop systems that comply with the following requirements and those specified in Part 1 "Performance Requirements" Article:

1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, or another agency performing testing and follow-up inspection services for firestop systems acceptable to authorities having jurisdiction.
2. Through-penetration firestop systems are identical to those tested per testing standard referenced in "Part 1 Performance Requirements" Article. Provide rated systems complying with the following requirements:

a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.
b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by the following:

1) UL in its "Fire Resistance Directory."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture, lot number, shelf life if applicable, qualified testing and inspecting agency's classification marking applicable to Project, curing time, and mixing instructions for multicomponent materials.

B. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limits permitted by through-penetration firestop system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilate through-penetration firestop systems per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.

1.8 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.

C. Notify Owner's inspecting agency at least seven days in advance of through-penetration firestop system installations; confirm dates and times on days preceding each series of installations.

D. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until each installation has been examined by Owner's inspecting agency and building inspector, if required by authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the through-penetration firestop systems indicated for each application that are produced by one of the following manufacturers:

1. Grace, W. R. & Co. - Conn.
2. Hilti, Inc.
3. Johns Manville.
4. Nelson Firestop Products.
5. 3M; Fire Protection Products Division.
6. Tremco; Sealant/Weatherproofing Division.
7. USG Corporation.

2.2 FIRESTOPPING, GENERAL

A. Compatibility: Provide through-penetration firestop systems that are compatible with one another; with the substrates forming openings; and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.

B. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by qualified testing and inspecting agency for firestop systems indicated. Accessories include, but are not limited to, the following items:

1. Permanent forming/damming/backing materials, including the following:

a. Slag-/rock-wool-fiber insulation.

b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
c. Fire-rated form board.
d. Fillers for sealants.

2. Temporary forming materials.
3. Substrate primers.
4. Collars.
5. Steel sleeves.

2.3 FILL MATERIALS

A. General: Provide through-penetration firestop systems containing the types of fill materials indicated in the Through-Penetration Firestop System Schedule at the end of Part 3 by referencing the types of materials described in this Article. Fill materials are those referred to in directories of referenced testing and inspecting agencies as "fill," "void," or "cavity" materials.

B. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer metallic sleeve lined with an intumescent strip, a radial extended flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.

C. Latex Sealants: Single-component latex formulations that after cure do not re-emulsify during exposure to moisture.

D. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.

E. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized steel sheet.

F. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.

G. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.

H. 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.

I. 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.

J. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

K. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:

1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping, gunnable sealant, unless indicated firestop system limits use to nonsag grade for both opening conditions.

2.4 MIXING

A. For those products requiring mixing before application, comply with through-penetration firestop 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 work.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean out openings immediately before installing through-penetration firestop systems to comply with firestop system 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 through-penetration firestop systems.
2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with through-penetration firestop systems. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by through-penetration firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent through-penetration firestop systems from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestop system materials. Remove tape as soon as possible without disturbing firestop system's seal with substrates.

3.3 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

A. General: Install through-penetration firestop systems to comply with Part 1 "Performance Requirements" Article and with firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.

C. Install fill materials for firestop systems by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

A. Identify through-penetration firestop systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of edge of the firestop systems so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use mechanical fasteners for metal labels. For plastic labels, use self-adhering type with adhesives capable of permanently bonding labels to surfaces on which labels are placed and, in combination with label material, will result in partial destruction of label if removal is attempted. Include the following information on labels:

1. The words "Warning - Through-Penetration Firestop System - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Through-penetration firestop system designation of applicable testing and inspecting agency.
4. Date of installation.
5. Through-penetration firestop system manufacturer's name.
6. Installer's name.

3.5 FIELD QUALITY CONTROL

A. Inspecting Agency: Owner will engage a qualified, independent inspecting agency to inspect through-penetration firestops. Independent inspecting agency shall comply with ASTM E 2174 requirements including those related to qualifications, conducting inspections, and preparing test reports.

B. Where deficiencies are found, repair or replace through-penetration firestop systems so they comply with requirements.

C. Proceed with enclosing through-penetration firestop systems with other construction only after inspection reports are issued and firestop installations comply with requirements.

3.6 CLEANING AND PROTECTING

A. Clean off excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by through-penetration firestop 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 through-penetration firestop systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce systems complying with specified requirements.

3.7 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE

A. Where UL-classified systems are indicated, they refer to alpha-alpha-numeric designations listed in UL's "Fire Resistance Directory" under product Category XHEZ.

B. Firestop Systems with No Penetrating Items:

1. UL-Classified Systems: C-AJ- C-BJ- F-A- W-J- W-L- 0001-0999.
2. Type of Fill Materials: One or more of the following:

    a. Latex sealant.
    b. Silicone sealant.
    c. Intumescent putty.
    d. Mortar.

C. Firestop Systems for Metallic Pipes, Conduit, or Tubing:

1. UL-Classified Systems: C-AJ- C-BJ- C-BK- F-A- F-B- F-C- W-J- W-K- W-L- 1001-1999 .
2. Type of Fill Materials: One or more of the following:

    a. Latex sealant.
    b. Silicone sealant.
    c. Intumescent putty.
    d. Mortar.

D. Firestop Systems for Insulated Pipes :

1. UL-Classified Systems: C-AJ- C-BJ- F-A- F-C- W-J- W-L- 5001-5999 .
2. Type of Fill Materials: One or more of the following:

a. Latex sealant.
b. Intumescent putty.
c. Silicone foam.
d. Intumescent wrap strips.

E. Firestop Systems for Miscellaneous Electrical Penetrants:

1. UL-Classified Systems: C-AJ- F-A- W-L- 6001-6999 .
2. Type of Fill Materials: One or more of the following:

a. Latex sealant.
b. Intumescent putty.
c. Mortar.

F. Firestop Systems for Miscellaneous Mechanical Penetrants

1. UL-Classified Systems: C-AJ- F-C- W-J- W-L- 7001-7999 .
2. Type of Fill Materials: One or both of the following:

a. Latex sealant.
b. Mortar.

G. Firestop Systems for Groupings of Penetrants :

1. UL-Classified Systems: C-AJ- C-BJ- F-A- F-C- W-J- W-L- 8001-8999 .
2. Type of Fill Materials: One or more of the following:

a. Latex sealant.
b. Mortar.
c. Intumescent wrap strips.
d. Firestop device.
e. Intumescent composite sheet.

END OF SECTION 078413

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification Sections, apply to this Section..

1.2 SUMMARY

A. This Section includes joint sealants for the following applications, including those specified by reference to this Section:

1. Exterior and interior joints in the following vertical surfaces and horizontal nontraffic surfaces:
   a. Control and expansion joints in unit masonry.
   b. Joints between hollow metal and aluminum frames and other materials.
   c. Windows and door frame joints.
   d. Joints in siding.
   e. Joints between different materials listed above.
   f. Perimeter joints between materials listed above and frames of doors windows and louvers.
   g. Other joints as indicated.

1.3 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

1.4 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

B. Qualification Data: For Installer .

C. LEED Submittals:

1. Product Data for Credit IEQ 4.1: For sealants and sealant primers used inside the weatherproofing system, documentation including printed statement of VOC content.
2. Laboratory Test Reports for Credit IEQ 4.1: For sealants and sealant primers used inside the weatherproofing system, documentation indicating that products comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," latest edition.

D. 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.

E. 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.

F. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency.

C. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

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 or are below 40 deg F (5 deg C) .
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric 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 warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:

1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
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.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.2 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 sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Provide interior sealants and sealant primers that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.

C. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range .

2.3 URETHANE JOINT SEALANTS

A. Urethane, Immersible, M, NS, 50, T, NT, I: Immersible, multicomponent, nonsag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade NS, Class 25, Uses T, NT, and I.

1. Products: Subject to compliance with requirements provide one of the following:

a. Tremco, Dymeric, 240
b. Sika Corporation U.S.; Sikaflex 2c NS.
c. Sonneborn, Division of ChemRex Inc.; Masterseal NP 2.

d. Or approved equal.

2.4 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.

1. Products: Subject to compliance with requirements provide one of the following:

a. Xtrabond 100; Premier Building Solutions
b. Tremco Tremflex 834.
c. Or approved equal.

2.5 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; 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, Type C (closed-cell material with a surface skin) O (open-cell material) B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated , and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F (minus 32 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.

D. 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 where such adhesion would result in sealant failure. 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: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting 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, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Concrete.
    b. Masonry.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. As previously noted in "Miscellaneous Materials" Article, purpose of primers is to improve adhesion of sealant to substrate.

B. Joint Priming: Prime joint substrates , where recommended in writing by joint-sealant manufacturer. 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 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 type 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 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 configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
4. Provide flush joint configuration where indicated per Figure 5B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 5C in ASTM C 1193.

    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 FIELD QUALITY CONTROL

1. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements. Record results in a field-adhesion-test log.
2. Inspect tested joints and report on the following:

    a. 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 type of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
    b. Whether sealants filled joint cavities and are free of voids.

c. Whether sealant dimensions and configurations comply with specified requirements.

3. 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.
4. 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 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.

END OF SECTION 079200

SECTION 081120 - FLUSH FIBERGLASS REINFORCED FACED DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification sections, apply to work of this section.

1.2 SUMMARY:

A. Extent and location of each type of flush fiberglass reinforced faced door is indicated on drawings and in schedules.

B. Types of doors required include the following:

1. Flush Fiberglass Reinforced Faced Doors with Foamed-in-Place Urethane Core.

2. Factory-prefitting to frames and factory-premachining for hardware for fiberglass reinforced faced doors is included in this section.

C. Related Sections: The following Sections contain requirements that relate to this Section.

1. Hollow metal door frames for flush fiberglass reinforced faced doors are specified in another Division-8 section.

2. Glazing for flush fiberglass reinforced faced doors are specified in another Division-8 section.

1.3 SUBMITTALS:

A. Product Data: Door manufacturer's technical data for each type of door, including details of core and edge construction, trim for openings and louvers, and factory-finishing specifications.

B. Shop Drawings: Submit shop drawings indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, and other pertinent data.

C. For factory-premachined doors, indicate dimensions and locations of cutouts for locksets and other cutouts adjacent to light openings.

D. Samples: Submit samples, 1-0" square of the door material specified.

1.4 QUALITY ASSURANCE:

A. Manufacturer Qualifications: Provide each Fiberglass reinforced faced Flush Door as a complete unit produced by a single manufacturer, including frames, sections, brackets, guides, tracks, counterbalance mechanisms, hardware, operators, and installation accessories.

B. Inserts and Anchorages: Furnish inserts and anchoring devices that must be set in concrete or built into masonry for unit installation. Provide setting drawings, templates, and directions for installation of anchorage devices. Coordinate delivery with other work to avoid delay.

1. See concrete and masonry Sections for instruction on installing inserts and anchorage devices.

C. Wind Loading: Design and reinforce sectional overhead doors to withstand a 30-psf wind-loading pressure.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Protect doors during transit, storage and handling to prevent damage, soiling and deterioration.

B. Package doors at factory prior to shipping using manufacturer's standard method.

C. Identify each door with individual opening numbers which correlate with designation system used on shop drawings for door, frames, and hardware, using temporary, removable or concealed markings.

1.6 WARRANTY:

A. General: Warranties shall be in addition to, and not a limitation of, other rights the Owner may have under the Contract Documents.

B. Door Manufacturer's Warranty: Submit written agreement on door manufacturer's standard form signed by Manufacturer, Installer and Contractor, agreeing to repair or replace defective doors which have warped (bow, cup or twist) or that show telegraphing of core construction in face veneers, or do not conform to tolerance limitations of referenced quality standards.

1. Warranty shall be in effect during following period of time after date of Substantial Completion.

2. 10 year warranty.

C. Contractor's Responsibilities: Replace doors where Contractor's work contributed to rejection or to voiding of manufacturer's warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:

1. Fiberglass Reinforced Faced Doors:
   a. Specialite, Inc., Decatur, Michigan
   b. Commercial Door Systems.

2.2 FLUSH FIBERGLASS REINFORCED FACED DOORS:

A. Fiberglass Reinforced Faced Doors: Comply with the following requirements:

1. Faces: SL-17 FRP Flush Door. Faces shall be .120" thick fiberglass reinforced polyester, with pebbled finish over .032" inch thick aluminum face backing.

2. Color: As selected by Architect from a full range of the manufacturer's standard and custom colors.

3. Construction: Rails and stiles shall be extruded 6063 T5 aluminum alloy. All exposed members shall be .125" thick. Stiles shall be tubular to accept hardware. Top and bottom rails to be extruded with legs for interlocking rigidity weather bar. Face sheets to be locked in by extruded interlocking edges which are to be an integral part of the rails and stiles. Core shall be foamed in place urethane of 5 lbs per cubic foot density, completely free of CFC AND HCFC.

4. Thickness: 1 3/4" unless noted otherwise.

5. Astragal: Provide manufacturer’s aluminum flat metal astragal on exterior of active leaf.

2.3 FABRICATION:

A. Fabricate flush fiberglass reinforced faced doors to produce doors complying with following requirements:

B. Factory-prefit and premachine doors to fit frame opening sizes indicated with the following uniform clearances and bevels:

1. Comply with final hardware schedules and door frame shop drawings and with hardware templates.

2. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with factory premachining.

C. Openings: Cut and trim openings through doors to comply with applicable

requirements of referenced standards for kind(s) of doors required.

D. Light Openings: Trim openings with moldings of material and profile indicated.

2.4 FINISHES

A. Door
1. Aluminum: Anodize, Class 1 , minimum 0.7 mils thick.
2. FRP Face Sheets: Through color.

2.5 ACCESSORIES
A. Vision Lites: Factory Glazed, Rectangular Lites.
1. Size, as indicated on drawings.
B. Astragal.
1. Pultruded Fiberglass T-Astragal by Special-Lite, as required for specified application

2.6 HARDWARE

A. Pre-machine doors in accordance with templates from specified hardware manufacturer's and hardware schedule.
B. Factory install hardware.
C. See hardware schedule in a separate specification section.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. Examine installed door frames prior to hanging door:

1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.

2. Reject doors with defects.

3. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION:

B. Hardware: For installation see Division-8 "Finish Hardware" section of these specifications.

C. Manufacturer's Instructions: Install fiberglass reinforced faced doors to comply with manufacturer's instructions.

3.3 ADJUSTING AND PROTECTION:

A. Operation: Rehang or replace doors which do not swing or operate freely.

B. Finished Doors: Replace doors damaged during installation

C. Protect doors as recommended by door manufacturer to assure that fiberglass reinforced faced doors will be without damage or deterioration at time of Substantial Completion.

3.4 PREPARATION:

A. Ensure openings to receive frames are plumb, level, square, and in tolerance.

3.5 ERECTION:

A. Install doors in accordance with manufacturer's instructions.
B. Install doors plumb, level, square, true to line, and without warp or rack.
C. Anchor frames securely in place.
D. Separate aluminum from other metal surfaces with bituminous coatings or other means approved by architect.
E. Set thresholds in bed of mastic and back seal.
F. Install exterior doors to be weathertight in closed position.
G. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by architect.
H. Remove and replace damaged components that cannot be successfully repaired as determined by architect.

3.6 FIELD QUALITY CONTROL:

A. Manufacture's Field Services:

1. Manufacturer's representative shall provide technical assistance and guidance for installation of doors.

3.7 ADJUSTING:

A. Adjust doors, hinges, and locksets for smooth operation without binding.

3.8 CLEANING:

A. Clean doors promptly after installation in accordance with manufacturer's instructions.
B. Do not use harsh cleaning materials or methods that would damage finish.

3.9 PROTECTION:

A. Protect installed doors to ensure that, except for normal weathering, doors will be without damage or deterioration at time of substantial completion.

SECTION 083344 – APPLIED IMPACT PROTECTION FILM SYSTEMS

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. Proprietary film systems applied to interior surfaces of glazing in door, window and storefront systems.

B. Related Requirements:

1. Div. 8 Sections for fire rated and non-fire rated glazing.

1.3 ACTION SUBMITTALS

A. Product Data: For each type and size of coiling counter door and accessory.

1. Include construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes.

B. Samples for Initial Selection: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.

1. Include similar Samples of accessories involving color selection.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of federal, state and municipal authorities having jurisdiction.

1.7 DELIVERY, STORAGE AND HANDLING

A. General: Deliver and store materials in manufacturer's original packaging, labeled to show name, brand and type. Store materials in a protected dry location off the ground in accordance with manufacturer's instructions.

1.8 WARRANTY

A. Film Systems Warranty: Furnish five (5) year written warranty signed by the manufacturer and installer agreeing to repair or replace work which has failed as a result of defects in materials or workmanship. Upon notification within the warranty period, such defects shall be repaired at no cost to the owner.

PART 2 - PRODUCTS

2.1 APPLIED SECURITY FILM SYSTEMS

A. Basis-of-Design Product: Subject to compliance with requirements, provide 3M Impact Protection System Safety and Security Window Film and impact protection adhesive attachment system as manufacturer by The 3M Company or comparable product an approved manufacturer.

B. Use for the following locations. Film to be applied on interior of each glazing pane.
   1. Doors, transoms and sidelights at interior walls:
      a. 3M Ultra S800 8 Mil film at the interior side of the glazing.

2.2 MATERIALS

A. Film: Proprietary micro-layer safety film.

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine substrates areas and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.

B. Thoroughly clean glazing and frame systems of contaminants such as adhesives, grease, oil dust, water surface dirt, old sealant or glazing compounds. Use manufacturer’s 3M Citrus Base Cleaner, alcohol or commercial cleaning solution. Remove any and all existing graphics and/or decals from surface to receive security film.
   1. Spray glazing bead, glass and frame surface with an appropriate cleaning product and remove with lint free cloth. Repeat if necessary to remove all foreign materials from the glass and inside window frame surfaces.
   2. If needed, light scrub with 3M 0000 Super Fine Synthetic Steel Wool pad.

C. Spray the glass with 3M Foaming Glass Cleaner or a soap and water solution. Flush the glazing bead to glass area starting at the top and working down to drain or remove any remaining contaminant from the area. Scrape the glass with a rzor to remove al foreign matter.

D. Thoroughly clean the glass a final time with soapy water and a window cleaning squeegee. Wipe around the glazing bead and frame area on final time to remove all of the soap and water solution.

3.2 FILM INSTALLATION

A. Apply 3M Ultra Safety and Security Window film to the interior and exterior surfaces of the glass, making sure that the film is installed as far into the glazing channel as possible.

B. Cut film around the remaining glazing bead.. Leave enough spacing between film and glazing bead to facilitate the removal of the slip solution.

C. Squeegee the film to the glass by pressing firmly to remove as much of the slip solution as possible, especially at the edges of the film.

D. Provide either edge drying method as follows:

1. Option A: Allow the panels to dry in place for two weeks prior to Impact Protection Profile attachment system is installed.
2. Option B: Using a hair dryer, gently heat and bump the edges of the film to hasten the removal and drying of the water from the edges. Confirm that all the soap and water solution has been removed from the film, glass, and glazing channel before applying the Impact Protection Profile attachment system

3.3 PROFILE INSTALLATION

A. Measure and cut manufacturer’s attachment profile, remove liners and discard.

B. Utilize manufacturer’s special tool to install profile in accordance with manufacturer’s written installation instructions, repeating for each side of the window, in order as directed by installation instructions.

3.4 PROTECTION AND CLEANING

A. Protect installed work using adequate and suitable means during and after installation until accepted by owner.

B. Remove, repair or replace materials which have been damaged in any way.

C. Clean surfaces of grime and dirt using acceptable and recommended means and methods.

END OF SECTION 083344

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Aluminum-framed entrance and storefront systems.

B. Related Requirements:

1. Sealants: Refer to Division 7 Joint Treatment Section for sealant requirements.
2. Glass and Glazing: Refer to Division 8 Glass and Glazing Section for glass and glazing requirements.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Aluminum-framed entrance and storefront systems.

B. Product Data Submittals: For each product.

1. Construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Operating characteristics, electrical characteristics, and furnished accessories.

C. Shop Drawings:

1. Plans, elevations, sections, full-size details, and attachments to other work.
2. Details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
3. Full-size isometric details of each type of vertical-to-horizontal intersection of aluminum-framed entrance and storefront systems, showing the following:

    a. Joinery, including concealed welds.
    b. Anchorage.
    c. Expansion provisions.
    d. Glazing.
    e. Flashing and drainage.

4. Connection to and continuity with adjacent thermal, weather, air, and vapor barriers.

D. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of exposed finish.

E. Samples for Verification: Actual sample of finished products for each type of exposed finish.

1. Size: Manufacturers' standard size.

1.3 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For aluminum-framed entrance and storefront systems, for tests performed by a qualified testing agency.

B. Source Quality-Control Reports: For aluminum-framed entrance and storefront systems.

C. Sample Warranties: For aluminum-framed entrance and storefront systems.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For aluminum-framed entrance and storefront systems.

B. Maintenance Data for Structural Sealant: For structural-sealant-glazed storefront. Include ASTM C1401 recommendations for post-installation-phase quality-control program.

1.5 QUALITY ASSURANCE

A. Qualifications:
1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project. If requested by Owner, submit reference list of completed projects.
2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction process.
3. Entity that is certified under the North American Contractor Certification Program (NACC) and that employs installers and supervisors who are trained and approved by manufacturer.

B. Mock-Ups (Field Constructed): Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Architect's acceptance of finish color, and workmanship standard.
1. Mock-Up Size:
2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.

C. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.6 PROJECT CONDITIONS / SITE CONDITIONS

A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

1.7 WARRANTY

A. Special Warranty: Manufacturer and Installer agree to repair or replace components of aluminum-framed entrance and storefront systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Five years from date of Substantial Completion.

B. Special Finish Warranty, Factory-Applied Finishes: 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.

1. Deterioration includes, but is not limited to, the following:

   a. Color fading more than 5 Delta E units when tested in accordance with ASTM 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. Warranty Period: Five years from date of Substantial Completion.

C. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

   a. Color fading more than 5 Delta E units when tested in accordance with ASTM D 2244.
   b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D 4214.
   c. Cracking, peeling, or chipping.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain all components of aluminum-framed entrance and storefront system, including framing, doors and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Performance Requirements: Provide aluminum storefront systems that comply with performance requirements indicated, as demonstrated by testing manufacturer's assemblies in accordance with test method indicated.
   1. Air Infiltration: Completed storefront systems shall have 0.06 CFM/FT² (1.10 m³/h•m²) maximum allowable infiltration when tested in accordance with ASTM E 283 at differential static pressure of 6.24 PSF (299 Pa).
   2. Water Infiltration: No uncontrolled water when tested in accordance with ASTM E 331, or when required, field tested in accordance with AAMA 503 at a test pressure differential of:
      a. Screw Spline Assembly: Standard water resistance performance is 12 PSF (575 Pa).
      b. CAN Assembly: Standard water resistance performance is 8 PSF (383 Pa). Performance up to 10 PSF (494 Pa) is achieved when additional sealant requirements are followed. Note: for 10 PSF performance, refer to CAN Assembly Installation Instructions. Additionally, fastener heads must be seated and sealed against sill flashing on any fasteners that penetrate through the sill flashing.
   3. Wind Loads: Completed storefront system shall withstand wind pressure loads normal to wall plane indicated:
      a. Exterior Walls:
         1) Positive Pressure: As indicated on drawings.
         2) Negative Pressure: As indicated on drawings.
      b. Interior Walls (Pressure Acting in Either Direction).
   4. Deflection: Maximum allowable deflection in any member when tested in accordance with ASTM E 330 with allowable stress in accordance with AA Specifications for Aluminum Structures.
      a. Without Horizontals: L/175 or 3/4" (19.1mm) maximum.
      b. With Horizontals: L/175 or L/240 + 1/4" (6.4mm) for spans greater than 13'-6" (4.1m) but less than 40'-0" (12.2m).
   5. Thermal Movement: Provide for thermal movement caused by 180 degrees F. (82.2 degrees C.) surface temperature, without causing buckling stresses on glass, joint seal failure, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or detrimental effects.
   6. Thermal Performance: When tested in accordance with AAMA 507, AAMA 1503 and NFRC 100:
      a. Condensation Resistance Factor (CRF_f): A minimum of 68.
      b. Thermal Transmittance U Value: 0.40 BTU/HR/FT²/°F or less.

NOTE: Thermal Performance for the glazed system as a whole will be affected by the characteristics of the glass specified

   7. Acoustical Performance: When tested in accordance with ASTM E 90, AAMA 1801:

a. Sound Transmission Class (STC) shall not be less than: 32 Annealed, 36 laminated.
b. Outdoor–Indoor Transmission Class (OITC) shall not be less than: 1" IGU; 27, 1" laminated; 30.

2.3 ALUMINUM-FRAMED ENTRANCE AND STOREFRONT SYSTEMS

A. Basis of Bid:
1. YKK AP Series Yes 45 TU Front Set Storefront System, or equal by:
a. Kawneer Company
b. EFCO Corporation

B. Storefront Framing System:
1. Description: Front set, exterior flush glazed; jambs and vertical mullions continuous; head sill, intermediate horizontal attached by screw spline joinery attachment.
2. Components: Manufacturer's standard extruded aluminum mullions, 90 degree corner posts, entrance door framing and indicated shapes.
3. Thermal Barrier: Provide continuous thermal barrier by means of a poured and debridged pocket consisting of a two-part, chemically curing high density polyurethane which is bonded to the aluminum by YKK ThermaBond Plus®. Systems employing non-structural thermal barriers are not acceptable.

2.4 MATERIALS

A. Extrusions: ASTM B 221 (ASTM B 221M), 6063-T5 Aluminum Alloy.

B. Aluminum Sheet:
1. Anodized Finish: ASTM B 209 (ASTM B 209M), 5005-H14 Aluminum Alloy, 0.050" (1.27 mm) minimum thickness.
2. Painted Finish: ASTM B 209 (ASTM B 209M), 3003-H14 Aluminum Alloy, 0.080" (1.95 mm) minimum thickness.

2.5 ACCESSORIES

A. Manufacturer's Standard Accessories
1. Fasteners: Zinc plated steel concealed fasteners; Hardened aluminum alloys or AISI 300 series stainless steel exposed fasteners.
2. Glazing: Setting blocks, edge blocks, and spacers in accordance with ASTM C 864, shore durometer hardness as recommended by manufacturer; Glazing gaskets in accordance with ASTM C 864.
3. 0.050 Aluminum Sill Flashing End Dams must have 3 point attachment.

2.6 RELATED MATERIALS (Specified In Other Sections)

A. Glass: Refer to Division 8 Glass and Glazing Section for glass materials.

2.7 FABRICATION

A. Shop Assembly: Fabricate and assemble units with joints only at intersection of aluminum members with uniform hairline joints; rigidly secure, and sealed in accordance with manufacturer's recommendations.
   1. Hardware: Drill and cut to template for hardware. Reinforce frames and door stiles to receive hardware in accordance with manufacturer’s recommendations.
   2. Welding: Conceal welds on aluminum members in accordance with AWS recommendations or methods recommended by manufacturer. Members showing welding bloom or discoloration on finish or material distortion will be rejected.

B. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.

   1. Door Construction: 1-3/4-inch (44.5-mm) overall thickness, with minimum 0.125-inch-(3.2-mm-) thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.

      a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.
   2. Door Design: Medium stile; 3-1/2-inch (88.9-mm) nominal width
   3. Glazing Stops and Gaskets: Beveled, snap-on, extruded-aluminum stops and preformed gaskets.

      a. Provide nonremovable glazing stops on outside of door.
   4. Finish: Match adjacent storefront framing finish.

2.8 ENTRANCE DOOR HARDWARE

A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware."

B. General: Provide entrance door hardware and entrance door hardware sets indicated in door and frame schedule for each entrance door, to comply with requirements in this Section.

   1. Entrance Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and products equivalent in function and comparable in quality to named products.
   2. Opening-Force Requirements:

      a. Egress Doors: Not more than 15 lbf (67 N) to release the latch and not more than 30 lbf (133 N) to set the door in motion[and not more than 15 lbf (67 N) to open the door to its minimum required width].

C. Designations: Requirements for design, grade, function, finish, quantity, size, and other distinctive qualities of each type of entrance door hardware are indicated in "Entrance Door Hardware Sets" Article. Products are identified by using entrance door hardware designations as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in "Entrance Door Hardware Sets" Article.
2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.

D. Butt Hinges: BHMA A156.1, Grade 1, radius corner.

1. Nonremovable Pins: Provide setscrew in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while entrance door is closed.
2. Exterior Hinges: Stainless steel, with stainless steel pin.
3. Quantities:

    a. Provide three hinges per leaf.

E. Mortise Auxiliary Locks: BHMA A156.5, Grade 1.

F. Manual Flush Bolts: BHMA A156.16, Grade 1.

G. Panic Exit Devices: BHMA A156.3, Grade 1, listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing in accordance with UL 305.

H. Strikes: Provide strike with black-plastic dust box for each latch or lock bolt; fabricated for aluminum framing.

I. Operating Trim: BHMA A156.6.

1. have been tested with exit devices to be used.

J. Closers: BHMA A156.4, Grade 1, with accessories required for a complete installation, sized as required by door size, exposure to weather, and anticipated frequency of use; adjustable to comply with field conditions and requirements for opening force.

K. Concealed Overhead Holders and Stops: BHMA A156.8, Grade 1.

L. Weather Stripping: Manufacturer's standard replaceable components.

1. Compression Type: Made of ASTM D2000 molded neoprene or ASTM D2287 molded PVC.
2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

M. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

N. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch (12.7 mm).

2.9 GLAZING

A. Glazing: Comply with Section 088000 "Glazing."

B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.

C. Glazing Sealants: As recommended by manufacturer.

2.10 MATERIALS

A. Sheet and Plate: ASTM B209 (ASTM B209M).

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221 (ASTM B221M).

C. Structural Profiles: ASTM B308/B308M.

D. Steel Reinforcement:

1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.

E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods in accordance with recommendations in SSPC-SP COM, and prepare surfaces in accordance with applicable SSPC standard.

2.11 ACCESSORIES

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch (25.4 mm) that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A123/A123M or ASTM A153/A153M requirements.

C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials, Dead-soft, 0.018-inch- (0.457-mm-) thick stainless steel, complying with ASTM A240/A240M, of type recommended by manufacturer.

D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

E. Rigid PVC filler.

2.12 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from exterior.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Storefront Framing: Fabricate components for assembly using screw-spline system

F. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. At interior and exterior doors, provide compression weather stripping at fixed stops.

G. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
1. At exterior doors, provide weather sweeps applied to door bottoms.

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 in accordance with Shop Drawings.

2.13 ALUMINUM FINISHES

A. Color Anodic Finish: AAMA 612, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.

1. Color: As selected by Architect from full range of industry colors and color densities.

B. Anodized Finishing: Prepare aluminum surfaces for specified finish; apply shop finish in accordance with the following:
   1. Anodic Coating: Electrolytic color coating followed by an organic seal applied in accordance with the requirements of AAMA 612. Aluminum extrusions shall be produced from quality controlled billets meeting AA-6063-T5.
      a. Exposed Surfaces shall be free of scratches and other serious blemishes.
      b. Extrusions shall be given a caustic etch followed by an anodic oxide treatment and then sealed with an organic coating applied with an electrodeposition process.
      c. The anodized coating shall comply with all of the requirements of AAMA 612; Voluntary Specifications, Performance Requirements and Test Procedures for Combined Coatings of Anodic Oxide and Transparent Organic Coatings on Architectural Aluminum. Testing shall demonstrate the ability of the finish to resist damage from mortar, salt spray, and chemicals commonly found on construction sites, and to resist the loss of color and gloss.
      d. Overall coating thickness for finishes shall be a minimum of 0.7 mils.
   2. CASS Corrosion Resistance Test, CASS 240/ASTM B368 Test Method.
   3. Other AAMA 2605 Performance Tests specified in these specifications, such as: 7.3 Dry Film Hardness; 7.8.2 Salt Spray Resistance; 7.9.1.2 Color Retention, South Florida; 7.9.1.4 Gloss Retention, South Florida.

2.14 SOURCE QUALITY CONTROL

A. Structural Sealant: Perform quality-control procedures complying with ASTM C1401 recommendations, including, but not limited to, assembly material qualification procedures, sealant testing, and assembly fabrication reviews and checks.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE AND STOREFRONT SYSTEMS

A. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

F. Seal perimeter and other joints watertight unless otherwise indicated.

G. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

H. Set continuous sill members and flashing in full sealant bed, as specified in Section 079200 "Joint Sealants," to produce weathertight installation.

I. Install joint filler behind sealant as recommended by sealant manufacturer.

J. Install components plumb and true in alignment with established lines and grades.

K. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

L. Install entrance doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware in accordance with entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

M. Install glazing as specified in Section 088000 "Glazing."

3.3 ERECTION TOLERANCES

A. Install aluminum-framed entrance and storefront systems to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet (3.2 mm in 3 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
2. Level: 1/8 inch in 20 feet (3.2 mm in 6 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
3. Alignment:

a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch (12.7 mm) wide, limit offset from true alignment to 1/16 inch (1.6 mm).
b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch (12.7 to 25.4 mm) wide, limit offset from true alignment to 1/8 inch (3.2 mm).
c. Where surfaces are separated by reveal or protruding element of 1 inch (25.4 mm) wide or more, limit offset from true alignment to 1/4 inch (6 mm).

4. Location: Limit variation from plane to 1/8 inch in 12 feet (3.2 mm in 3.6 m); 1/2 inch (12.7 mm) over total length.

END OF SECTION 084113

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Mechanical and electrified door hardware
2. Electronic access control system components

B. Section excludes:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 01 "General Requirements" sections for Allowances, Alternates, Owner Furnished Contractor Installed, Project Management and Coordination.
2. Division 06 Section "Rough Carpentry"
3. Division 06 Section "Finish Carpentry"
4. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
5. Division 08 Sections:
   a. "Metal Doors and Frames"
   b. "Flush Wood Doors"
   c. "Stile and Rail Wood Doors"
   d. "Interior Aluminum Doors and Frames"
   e. "Aluminum-Framed Entrances and Storefronts"
   f. "Stainless Steel Doors and Frames"
   g. "Special Function Doors"
   h. "Entrances"
6. Division 26 "Electrical" sections for connections to electrical power system and for low-voltage wiring.
7. Division 28 "Electronic Safety and Security" sections for coordination with other components of electronic access control system and fire alarm system.

1.02 REFERENCES

A. UL LLC

1. UL 10B - Fire Test of Door Assemblies
2. UL 10C - Positive Pressure Test of Fire Door Assemblies
3. UL 1784 - Air Leakage Tests of Door Assemblies

4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule
2. Recommended Locations for Builders Hardware
3. Keying Systems and Nomenclature
4. Installation Guide for Doors and Hardware

C. NFPA – National Fire Protection Association

1. NFPA 70 – National Electric Code
2. NFPA 80 – 2016 Edition – Standard for Fire Doors and Other Opening Protectives
3. NFPA 101 – Life Safety Code
4. NFPA 105 – Smoke and Draft Control Door Assemblies
5. NFPA 252 – Fire Tests of Door Assemblies

D. ANSI - American National Standards Institute

1. ANSI A117.1 – 2017 Edition – Accessible and Usable Buildings and Facilities
2. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
3. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems
4. ANSI/WDMA I.S. 1A - Interior Architectural Wood Flush Doors
5. ANSI/SDI A250.8 - Standard Steel Doors and Frames

1.03 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
2. Prior to forwarding submittal:
   a. Review drawings and Sections from related trades to verify compatibility with specified hardware.
   b. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:

1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:
   a. Wiring Diagrams: For power, signal, and control wiring and including:
      1) Details of interface of electrified door hardware and building safety and security systems.
      2) Schematic diagram of systems that interface with electrified door hardware.
      3) Point-to-point wiring.
      4) Risers.

3. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.
   a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.

4. Door Hardware Schedule:
   a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
   b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
   c. Indicate complete designations of each item required for each opening, include:
      1) Door Index: door number, heading number, and Architect's hardware set number.
      2) Quantity, type, style, function, size, and finish of each hardware item.
      3) Name and manufacturer of each item.
      4) Fastenings and other pertinent information.
      5) Location of each hardware set cross-referenced to indications on Drawings.
      6) Explanation of all abbreviations, symbols, and codes contained in schedule.
      7) Mounting locations for hardware.
      8) Door and frame sizes and materials.
      9) Degree of door swing and handing.
      10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.

5. Key Schedule:
   a. After Keying Conference, provide keying schedule that includes levels of keying, explanations 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. 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.

C. Informational Submittals:

1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
2. Provide Product Data:

a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
b. Include warranties for specified door hardware.

D. Closeout Submittals:

1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:
   a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
   b. Catalog pages for each product.
   c. Final approved hardware schedule edited to reflect conditions as installed.
   d. Final keying schedule
   e. Copy of warranties including appropriate reference numbers for manufacturers to identify project.
   f. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.

E. Inspection and Testing:

1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:
   a. Fire door assemblies, in compliance with NFPA 80.
   b. Required egress door assemblies, in compliance with NFPA 101.

1.04 QUALITY ASSURANCE

A. Qualifications and Responsibilities:

1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:
   a. For door hardware: DHI certified AHC or DHC.
   b. Can provide installation and technical data to Architect and other related subcontractors.
   c. Can inspect and verify components are in working order upon completion of installation.
   d. Capable of producing wiring diagram and coordinating installation of electrified hardware with Architect and electrical engineers.

4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

B. Certifications:

1. Fire-Rated Door Openings:
   a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
   b. Provide only items of door hardware that are listed products tested by UL LLC, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

2. Smoke and Draft Control Door Assemblies:
   a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105
   b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.

3. Electrified Door Hardware
   a. Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.

4. Accessibility Requirements:
   a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.

C. Pre-Installation Meetings

1. Keying Conference
   a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
      1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
      2) Preliminary key system schematic diagram.
      3) Requirements for key control system.
      4) Requirements for access control.
      5) Address for delivery of keys.

2. Pre-installation Conference
   a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   b. Inspect and discuss preparatory work performed by other trades.
   c. Inspect and discuss electrical roughing-in for electrified door hardware.
   d. Review sequence of operation for each type of electrified door hardware.
   e. Review required testing, inspecting, and certifying procedures.
   f. Review questions or concerns related to proper installation and adjustment of door hardware.

3. Electrified Hardware Coordination Conference:
   a. Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.

C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.

D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.06 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

1.07 WARRANTY

A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.

   1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.

2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.
    a. Mechanical Warranty
        1) Exit Devices
            a) Von Duprin: 10 years
        2) Closers
            a) LCN 4000 Series: 30 years
    b. Electrical Warranty
        1) Exit Devices
            a) Von Duprin: 3 years

1.08 MAINTENANCE

A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

B. Turn over unused materials to Owner for maintenance purposes.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. The Owner requires use of certain products for their unique characteristics and project suitability to ensure 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 alternate manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category are only to be considered by official substitution request in accordance with section 01 25 00.

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. Fabrication

1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer's recognized installation standards for application intended.
2. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
3. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with "Metal Doors and Frames", "Flush Wood Doors", "Stile and Rail Wood Doors" to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.

B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.

1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

C. Cable and Connectors:

1. Where scheduled in the hardware sets, provide each item of electrified hardware and wire harnesses with number and gage of wires enough to accommodate electric function of specified hardware.
2. Provide Molex connectors that plug directly into connectors from harnesses, electric locking and power transfer devices.
3. Provide through-door wire harness for each electrified locking device installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.

2.03 CONTINUOUS HINGES

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Ives

2. Acceptable Manufacturers:
   a. Select
   b. ABH

B. Requirements:

1. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
2. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
3. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.

4. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
5. On fire-rated doors, provide aluminum geared continuous hinges classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
6. Provide aluminum geared continuous hinges with electrified option scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
7. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.04 ELECTRIC POWER TRANSFER

A. Manufacturers:

1. Scheduled Manufacturer and Product:
   a. Von Duprin EPT-10

2. Acceptable Manufacturers and Products:
   a. ABH PT1000
   b. Security Door Controls PTM

B. Requirements:

1. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
2. Locate electric power transfer per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.

2.05 EXIT DEVICES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
   a. Von Duprin 35A series

2. Acceptable Manufacturers and Products:
   a. No Substitute

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 smooth touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.

5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
6. Provide exit devices with weather resistant components that can withstand harsh conditions of various climates and corrosive cleaners used in outdoor pool environments.
7. Provide flush end caps for exit devices.
8. Provide exit devices with manufacturer's approved strikes.
9. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
10. Mount mechanism case flush on face of doors or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
11. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
12. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
13. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
14. Provide electrified options as scheduled.
15. Top latch mounting: double- or single-tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
16. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

2.06 CYLINDERS

A. Manufacturers:

1. Scheduled Manufacturer and Product:
   a. Best - DormaKaba Group

2. Acceptable Manufacturers and Products:
   a. No Substitute

B. Requirements:

1. Provide cylinders/cores to match Owner’s existing key system, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer’s series as indicated. Refer to “KEYING” article, herein.

2.07 KEYING

A. Scheduled System:

1. Existing 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).
      3) Geographically Exclusive: Where High Security or Security cylinders/cores are indicated, provide nationwide, geographically exclusive key system complying with the following restrictions.
   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) Permanent Control Keys: 3.
      2) Master Keys: 6.
      3) Change (Day) Keys: 3 per cylinder/core that is keyed differently
      4) Key Blanks: Quantity as determined in the keying meeting.

2.08 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
   a. LCN 4110 series

2. Acceptable Manufacturers and Products:
   a. No Substitute

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.

2.09 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Ives

2. Acceptable Manufacturers:
   a. Burns
   b. Trimco

B. Requirements:

1. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.

2.10 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Ives

2. Acceptable Manufacturers:
   a. Burns
   b. Trimco

B. Requirements:

1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
2. Sizes plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.11 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

B. Scheduled Manufacturer:

1. Zero International

C. Acceptable Manufacturers:

1. National Guard
2. Reese

D. Seals and Gasketing: Provide continuous gasketing on exterior openings, to the head and jambs, forming a continuous seal between the door and the frame. Provide smoke, light, or sound gasketing on interior doors where indicated.

1. Provide self-tapping fasteners for aluminum extruded gasketing being applied to hollow metal frames.
   a. Provide non-corrosive fasteners for all exterior applications.
   b. Provide security fasteners where indicated.

2. Provide neoprene, EPDM, silicone, or nylon brush inserts as specified in hardware sets. Provide non brush inserts of solid or sponge cell, as specified in hardware sets. Vinyl inserts are not allowed except where specified in hardware sets.

E. Smoke Labeled Gasketing: At all smoke labeled openings, provide smoke listed perimeter gasketing assemblies complying with NFPA 105 listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for smoke control ratings indicated based on testing according to UL 1784.

F. Fire Listed Gasketing: Assemblies complying with NFPA 80 that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction for fire ratings indicated based on testing according to UL-10C.

1. Where frame-applied intumescent seals are required by the manufacturer, provide gaskets that comply with UL10C Standard for Positive Pressure Fire Tests of Door Assemblies and UBC 7-2, Fire Tests of Door Assemblies.

G. Door Sweeps or Shoes: Apply to the bottom of the door to close the gap between the door bottom and finished floor or saddle threshold.

1. Provide solid neoprene, EPDM, silicone, or nylon brush type of seal as specified in hardware sets. Vinyl inserts are not allowed except where specified in hardware sets.

H. Rain Drips:

1. Provide overhead rain drips for out-swinging hollow metal doors that are not covered against 45 degree blowing rain. Aluminum extrusion to be a minimum of .088 inches thick and extend 2.50 inches from the face of the frame, in anodized finish to match door.
2. Door sweeps or shoes with integral rain drip must meet ADA requirements

I. Thresholds: Provide threshold units not less than 4 inches wide, formed to accommodate change in floor elevation where indicated, and fabricated to accommodate door hardware and fit door frames.

1. Threshold extrusion to be a minimum thickness as specified in hardware sets.

2.12 DOOR POSITION SWITCHES

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Schlage

2. Acceptable Manufacturers:
   a. GE-Interlogix
   b. Sargent

B. Requirements:

1. Provide recessed or surface mounted type door position switches as specified.
2. Coordinate door and frame preparations with door and frame suppliers. If switches are being used with magnetic locking device, provide minimum of 4 inches (102 mm) between switch and magnetic locking device.

2.13 FINISHES

A. FINISH: BHMA 626/652 (US26D); EXCEPT:

1. Hinges at Exterior Doors: BHMA 630 (US32D)
2. Aluminum Geared 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. Latch Protectors: BHMA 630 (US32D)
9. Weatherstripping: Clear Anodized Aluminum
10. Thresholds: Mill Finish Aluminum

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
4. Installation Guide for Doors and Hardware: DHI TDH-007-20

B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.

C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.

I. Lock Cylinders:

1. Install construction cores to secure building and areas during construction period.
2. Replace construction cores with permanent cores as indicated in keying section.
3. Furnish permanent cores to Owner for installation.

J. Wiring: Coordinate with Division 26, ELECTRICAL and Division 28 ELECTRONIC SAFETY AND SECURITY sections for:

1. Conduit, junction boxes and wire pulls.
2. Connections to and from power supplies to electrified hardware.
3. Connections to fire/smoke alarm system and smoke evacuation system.
4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
5. Connections to panel interface modules, controllers, and gateways.
6. Testing and labeling wires with Architect's opening number.

K. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

L. Continuous Hinges: Re-locate the door and frame fire rating labels where they will remain visible so that the hinge does not cover the label once installed.

M. Door Closers & Auto Operators: Mount closers/operators on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers/operators so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

N. Overhead Stops/Holders: Mount overhead stops/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

O. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.

P. Thresholds:

1. Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."
2. Aluminum thresholds to be cut-in, and scribed around mullions, frame members, and stops. Do not butt to thresholds. Provide a continuous surface across full width of opening from jamb to jamb.
3. Where aluminum panic-type (rabbeted) thresholds with neoprene inserts are specified, undercut doors as required to properly mate with seal in threshold.

Q. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

R. Perimeter Gasketing:

1. Apply to head and jamb, forming seal between door and frame.
2. Install gasketing in a manner eliminating need to cut any seal to install surface mounted hardware. Install compatible mounting bracket for surface mounted hardware unless minimum 1/4 inch thick solid aluminum seals are provided for mounting of surface applied hardware.

S. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

T. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.03 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Spring Hinges: Adjust to achieve positive latching when door can close freely from an open position of 30 degrees.
2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
3. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.04 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items per manufacturer's instructions to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.05 DOOR HARDWARE SCHEDULE

A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.

C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.

D. Hardware Sets:

Abbreviation	Name
BES	Best Locking Systems
IVE	H.B. Ives
LCN	LCN Commercial Division
SCE	Schlage Electronic Security
TBD	Manufacturer To Be Determined
VON	Von Duprin
ZER	Zero International Inc

145477 OPT0466104 Version 1

Legend:
Link to catalog cut sheet
Electrified Opening

HARDWARE GROUP NO. 01

For use on Door #(s):
32-A-01 4-01 A-01

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONTINUOUS HINGE W/ EPT PREP	224HD EPT		628	IVE
1	EA	POWER TRANSFER	EPT10 CON		689	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-35A-NL-OP-388-CON 24 VDC		626	VON
1	EA	RIM CYLINDER	12E-7-2-S2-RP		626	BES
1	EA	PERMANENT CORE	BEST 7 PIN SFIC CORE		626	BES
1	EA	90 DEG OFFSET PULL	8190HD 10" STD		630	IVE
1	EA	SURFACE CLOSER SPRING CUSH	4111 SCUSH		689	LCN
1	EA	CUSH SHOE SUPPORT	4110-30 SRT		693	LCN
1	EA	BLADE STOP SPACER	4110-61 SRT		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	SET	GASKETING	328BK-S		BK	ZER
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	MOUNTING BRACKET	328SPB			ZER
1	EA	WIRE HARNESS TO POWER SUPPLY	CON-XX LENGTH AS REQ			VON
1	EA	LOCK TO HINGE CONNECTOR	CON-XX LENGTH AS REQ			VON
1	EA	DOOR CONTACT	679-05HM		BLK	SCE
1	EA	AS-INSTALLED WIRING DIAGRAMS CONNECTED TO POWER	BY HARDWARE DISTRIBUTOR			TBD
1	EA	INTERFACE, CARD READERS, POWER SUPPLIES BY DIV 28 13 00	BY SECURITY INTEGRATOR		TBD	TBD

OPERATIONS:
DOOR NORMALLY CLOSED AND LOCKED.
ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT LOCK.
REQUEST TO EXIT SWITCH / SENSOR SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.
KEY OVER-RIDE WILL CAUSE DOOR FORCED ALARM IN ACCESS CONTROL SYSTEM
FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO. 02

For use on Door #(s):
30-01

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	224HD	628	IVE
1	EA	MORTISE CYLINDER	1E74	626	BES
1	EA	PANIC HARDWARE	CD-99-NL-OP-110MD	626	VON
1	EA	RIM CYLINDER	12E-7-2-S2-RP	626	BES
2	EA	CONSTRUCTION CORE	BEST 7 PIN SFIC CORE	626	BES
1	EA	90 DEG OFFSET PULL	8190HD 10" STD	630	IVE
1	EA	SURFACE CLOSER SPRING CUSH	4111 SCUSH	689	LCN
1	EA	CUSH SHOE SUPPORT	4110-30 SRT	693	LCN
1	EA	BLADE STOP SPACER	4110-61 SRT	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142A	AL	ZER
1	SET	GASKETING	328BK-S	BK	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	65A-223	A	ZER
1	EA	MOUNTING BRACKET	328SPB		ZER
1	EA	DOOR CONTACT	679-05HM	BLK	SCE

HARDWARE GROUP NO. 03

For use on Door #(s):
32-02

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	224HD	628	IVE
1	EA	PANIC HARDWARE	LD-99-EO	626	VON
1	EA	SURFACE CLOSER SPRING CUSH	4111 SCUSH	689	LCN
1	EA	CUSH SHOE SUPPORT	4110-30 SRT	693	LCN
1	EA	BLADE STOP SPACER	4110-61 SRT	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142A	AL	ZER
1	SET	GASKETING	328BK-S	BK	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	65A-223	A	ZER
1	EA	MOUNTING BRACKET	328SPB		ZER
1	EA	DOOR CONTACT	679-05HM	BLK	SCE

HARDWARE GROUP NO. 04

For use on Door #(s):
26-01

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	224HD		628	IVE
2	EA	MANUAL FLUSH BOLT	FB458 12"		626	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQUIRED		626	IVE
1	EA	EXIT LOCK	L9025 06 626 A		626	SCH
1	EA	LOCK GUARD	LG1		630	IVE
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER SPRING CUSH	4111 SCUSH		689	LCN
1	EA	CUSH SHOE SUPPORT	4110-30 SRT		693	LCN
1	EA	BLADE STOP SPACER	4110-61 SRT		689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	RAIN DRIP	142A		AL	ZER
1	SET	GASKETING	328BK-S		BK	ZER
2	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	65A-223		A	ZER
1	EA	MOUNTING BRACKET	328SPB			ZER
2	EA	DOOR CONTACT	679-05HM	✓	BLK	SCE
1	EA	NOTE	OVERLAPPING ASTRAGAL FURNISHED BY DOOR MANUF			

END OF SECTION

SECTION 088000 - GLAZING

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 SUMMARY

A. This 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.

2. Doors.

B. Related Sections:

1. Division 2 Section "Selective Demolition".
2. Division 8 Section “Aluminum-Framed Entrances and Storefronts”

C. Manufacturers of Glass Products: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

D. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

E. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: inclusions of any type, defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Thermal Movements: Provide glazing that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures acting on glass framing members and glazing components. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 0-120 deg F (67 deg C), ambient; 0-180 deg F (100 deg C), material surfaces.

C. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to 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. Center-of-Glass Values: Based on using LBL-44789 WINDOW 5.0 computer program for the following methodologies:

a. U-Factors: NFRC 100 expressed as Btu/ sq. ft. x h x deg F (W/sq. m x K).
b. Solar Heat Gain Coefficient: NFRC 200.
c. Solar Optical Properties: NFRC 300.

1.4 SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. Samples: For the following products, in the form of 12-inch- (300-mm-) square Samples for glass.
1. Insulating glass for each designation indicated.

C. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.

1. For solar-control low-e-coated glass, provide documentation demonstrating that manufacturer of coated glass is certified by coating manufacturer.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who have a minimum of five (5) years experience installing similar projects.

B. Source Limitations for Glass: Obtain the following through one source from a single manufacturer for each glass type: coated float glass, laminated glass, and insulating glass.

C. Source Limitations for Glazing Accessories: Obtain glazing accessories through one source from a single manufacturer for each product and installation method indicated.

D. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the following testing and inspecting agency:

1. Insulating Glass Certification Council.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. For insulating-glass units that will be exposed to substantial altitude changes, comply with insulating-glass manufacturer's written recommendations for venting and sealing to avoid hermetic seal ruptures or glass non-flatness due to unequalized pressure within the airspace in relation to ambient pressure.

1.7 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.

1.8 WARRANTY

A. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form, made out to Owner and signed by insulating-glass manufacturer agreeing to replace insulating-glass units that deteriorate as defined in "Definitions" Article, including material, labor, tools and equipment, within specified warranty period indicated below.

1. Warranty Period: 10 years from date of Substantial Completion.
2. Deterioration of Coated Glass: Defects include visually perceptible irregularities, peeling, cracking, and other indications of deterioration in metallic coating.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
2. Products: Subject to compliance with requirements, provide one of the products specified.
3. Product: Subject to compliance with requirements, provide product specified.
4. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
5. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

6. Basis-of-Design Product: The design for each glazing product 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 GLASS PRODUCTS

A. Heat-Treated Float Glass: ASTM C 1048; Type I (transparent flat glass); Quality-Q3; of class, 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.
2. For uncoated glass, comply with requirements for Condition A.
3. For coated vision glass, comply with requirements for Condition C (other uncoated glass).
4. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

B. Insulating-Glass Units, General: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, and complying with ASTM E 774 for Class CBA units and with requirements specified in this Article and in Part 2 "Insulating-Glass Units" Article.
1. Provide Kind FT (fully tempered) glass lites where safety glass is indicated.
2. Overall Unit Thickness and Thickness of Each Lite: Dimensions indicated for insulating-glass units are nominal and the overall thicknesses of units are measured perpendicularly from outer surfaces of glass lites at unit's edge.
3. Sealing System: Dual seal, with primary and secondary sealants as follows:

a. Primary seal: Black, P.I.B (polyisobutylene).

b. Secondary seal: Silicone.

4. Spacer Specifications:
a. Material: Stainless steel or aluminum
b. Finish: Silver/aluminum in color.
c. Configuration: Provide spacers filled on all four sides with dessicant.

2.3 GLAZING GASKETS

A. General: Contractor shall provide all new glazing gaskets in all locations.
1. Contractor shall be responsible for determining required type, material and sizing, including selection which shall be compatible with existing aluminum framing system.

B. Dense Compression Gaskets: Molded or extruded gaskets of material indicated below, complying with standards referenced with name of elastomer indicated below, and of profile and hardness required to maintain watertight seal:

1. EPDM, ASTM C 864.
2. Silicone, ASTM C 1115.

3. Any material indicated above.

C. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned gaskets of material indicated below; complying with ASTM C 509, Type II, black; and of profile and hardness required to maintain watertight seal:

1. Neoprene.
2. EPDM.
3. Silicone.
4. Any material indicated above.

2.4 GLAZING SEALANTS

A. General: Provide products of type indicated, complying with the following requirements:

1. Compatibility: Select 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 selected by Architect from manufacturer's full range.

B. Elastomeric Glazing Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

1. Single-Component Neutral- and Basic-Curing Silicone Glazing Sealants:

a. Products: Provide DowSill #795 silicone as basis of design for structural and other use sealants. Subject to compliance with requirements, manufacturers with products that may comply include:
1) GE Silicones;
2) Tremco;

b. Type and Grade: S (single component) and NS (nonsag).
c. Use Related to Exposure: NT (nontraffic).
d. Uses Related to Glazing Substrates: M, G, A, and, as applicable to glazing substrates indicated, O.

C. Weatherseal Sealants: ASTM 920 for Type S; Grade NS; Class 25: Uses NT, G, A, and O; chemically curing silicone formulation that is compatible with structural sealant and other weatherseal-sealant, and structural-sealant-glazed curtain-wall manufacturers for this use.
1. Color: As selected by Architect from manufacturer’s full range of colors.

D. Glazing Sealants for Fire-Resistive Glazing Products: Identical to products used in test assemblies to obtain fire-protection rating.

2.5 GLAZING TAPES

A. Expanded Cellular Glazing Tapes: Closed-cell, PVC or neoprene foam tapes; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive; and complying with AAMA 800 for the following types:

1. Type 1, for glazing applications in which tape acts as the primary sealant.
2. Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.
3. Structural glazing tape at structural locations.

2.6 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to glaze 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 in a manner that produces square edges with slight chamfers at junctions with outdoor and indoor faces.

C. Grind smooth and polish exposed glass edges and corners.

2.7 MONOLITHIC FLOAT-GLASS UNITS

A. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.

B. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

2. Residual surface compression shall not exceed 14,000psi.

C. Low-E-Coated Vision Glass: ASTM C1376.

2.8 MONOLITHIC FLOAT-GLASS UNITS

A. Uncoated Clear Float-Glass Units: Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Thickness: 6.0 mm.

2. Fully tempered.

2.9 INSULATING-GLASS UNITS

A. Manufacturers:

1. Cardinal Glass
2. Vitro Industries.
3. Monsanto.
4. AFG Industries, Inc.
5. Guardian Industries Corp.

B. Passive Solar Low-E Insulating-Glass Units **G-A and G-B**:

1. Products:

a. Vitro (PPG) Solarban 70XL, Solar Control Low-E
b. Or approved equal

2. Overall Unit Thickness and Thickness of Each Lite: 1” total thickenss, ¼” ea. Lite, (25 and 6.0 mm).
3. Interspace Content: Air.
4. Outdoor Lite: Class 1 (clear).
   a. Kind FT (fully tempered).

5. Indoor Lite: Class 1 (clear) float glass.
   a. Kind FT (fully tempered).

6. Low-E Coating: Pyrolytic on second surface.

7. Visible Light Transmittance: 0.64 percent minimum.

8. SHGC: 0.27

9. VT/SHGC: 1.48

10. Light to Solar Gain Ratio: 2.37 maximum.

11. Provide 3M applied impact protection film on G-A only.

PART 3 - EXECUTION

3.1 EXAMINATION

A. General: Contractor shall field verify all existing conditions and has all responsibility for field measurement and proper fit of all glazing in existing openings.

B. Examine and field verify all dimensions of glazing and glazing frames, with Installer present, for compliance with the following:

1. Field verify existing dimensions of framing systems.
2. Field verify thickness and all other dimension of existing glazing.
3. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
4. Presence and functioning of weep system.
5. Minimum required face or edge clearances.
6. Effective sealing between joints of glass-framing members.

C. 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.

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. Prepare surfaces that are in contact with structural sealant according to sealant manufacturer's written instruction, to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.

C. Install weatherseal sealant according to joint sealants and according to sealant manufacturer's written instructions, to produce weatherproof joints. Install joint filler behind sealant as recommended by sealant manufacturer.

3.4 CLEANING AND PROTECTION

A. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces. Use of metal blades to clean glass is forbidden.

B. 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 089000 - LOUVERS AND VENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Fixed extruded-aluminum louvers.

2. Blank of panels

3. Screens

B. Related Sections include the following:
1. Division 7 Section "Joint Sealants" for sealants installed in perimeter joints between louver frames and adjoining construction.

1.3 DEFINITIONS

A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section, unless otherwise defined in this Section or in referenced standards.
1. Horizontal Louver: Louver with horizontal blades (i.e., the axis of the blades are horizontal).
2. Vertical Louver: Louver with vertical blades (i.e., the axis of the blades are vertical).

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.

B. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.

1. Show sealants.
2. Show mullion profiles and locations.

C. Samples: For each type of metal finish required.

1.5 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed in accordance with AMCA 500-L by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for each type of louver and showing compliance with performance requirements specified.

B. Sample Warranties: For manufacturer's special warranties.

1.6 QUALITY ASSURANCE

A. Source Limitations: Obtain louvers and vents through one source from a single manufacturer where alike in one or more respects regarding type, design, or factory-applied color finish.

B. Welding Standards: As follows:
1. Comply with AWS D1.2, "Structural Welding Code--Aluminum."
2. Comply with AWS D1.3, "Structural Welding Code--Sheet Steel."
3. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

C. SMACNA Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" recommendations for fabrication, construction details, and installation procedures.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify louver openings by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating louvers without field measurements. Coordinate construction to ensure that actual opening dimensions correspond to established dimensions.

1.8 WARRANTY

A. Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of baked enamel, powder coat, or organic finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM 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. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Ruskin.
   2. Metalaire, Metal Industries, Inc.
   3. Or approved equal

2.2 MATERIALS

A. Fasteners: Of same basic metal and alloy as fastened metal or 300 series stainless steel, unless otherwise indicated. Do not use metals that are incompatible with joined materials.
   1. Use types and sizes to suit unit installation conditions.
   2. Use Phillips flat-head screws for exposed fasteners, unless otherwise indicated.

B. Anchors and Inserts: Of type, size, and material required for loading and installation indicated. Use nonferrous metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as needed for corrosion resistance. Use toothed steel or expansion bolt devices for drilled-in-place anchors.

C. Gaskets: Of type, size, and material required for installation between louver frame and existing wall to reduce sound and vibration.

D. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12 but containing no asbestos fibers, or cold-applied asphalt emulsion complying with ASTM D 1187.

2.3 FABRICATION, GENERAL

A. Assemble louvers in factory to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.

C. Fabricate frames to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining materials' tolerances, and perimeter sealant joints.
   1. Frame Type: Angle, unless otherwise indicated.

D. Include supports, anchorages, and accessories required for complete assembly.

E. Provide vertical supports of type and at 6” o.c..

F. Louver Construction: Provide fixed-blade louvers with steel frames and blades.

G. Horizontal Drainable-Blade Louver, Extruded Aluminum :
1. Louver Depth: 6 inches (150 mm) .
2. Frame and Blade Nominal Thickness: Not less than 0.060 inch (1.52 mm) for blades and 0.080 inch (2.03 mm) for frames.
3. Mullion Type: Exposed.
4. Louver Performance Ratings:

a. Free Area: Not less than 7.0 sq. ft. (0.65 sq. m) for 48-inch- (1220-mm-) wide by 48-inch- (1220-mm-) high louver.
b. Air Performance:

1) Not more than 0.10-inch wg (25-Pa) static pressure drop 750-fpm (3.8-m/s) free-area velocity.
2) .Verify availability of seal in "AMCA Seal" Subparagraph below for louver sizes indicated. Delete if not required. Coordinate with product data submittal requirement.

5. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

2.4 LOUVER SCREENS

A. General: Provide screen at each exterior louver.

1. Screen Location for Fixed Louvers: Interior face.
2. Screening Type: Insect screening.

B. Secure screen frames to louver frames with machine screws with heads finished to match louver, spaced a maximum of 6 inches (150 mm) from each corner and at 12 inches (300 mm) o.c.

C. Louver Screen Frames: Fabricate with mitered corners to louver sizes indicated.

1. Metal: Same type and form of metal as indicated for louver to which screens are attached. Reinforce extruded-aluminum screen frames at corners with clips.
2. Finish: Same finish as louver Mill finish unless otherwise indicated.
3. Type: Rewirable frames with a driven spline or insert.

D. Louver Screening for Aluminum Louvers:
1. Insect Screening, Stainless Steel: 18-by-18 (1.4-by-1.4-mm) mesh, 0.009-inch (0.23-mm) wire.

2.5 BLANK-OFF PANELS

A. Insulated Blank-Off Panels: Laminated panels consisting of an insulating core surfaced on back and front with metal sheets and attached to back of louver.

1. Thickness: 1 inch (25 mm).
2. Metal Facing Sheets, Aluminum: Not less than 0.032-inch (0.81-mm) nominal thickness.
3. Insulating Core: Rigid, extruded-polystyrene foam >.
4. Edge Treatment: Trim perimeter edges of blank-off panels with louver manufacturer's standard extruded-aluminum-channel frames, not less than 0.080-inch (2.03-mm) nominal thickness, with corners mitered and with same finish as panels.
5. Seal perimeter joints between panel faces and louver frames with gaskets or sealant.
6. Panel Finish: Same type of finish applied to louvers, but black color.
7. Attach blank-off panels with clips.

2.6 FABRICATION

A. Factory assemble louvers to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.

C. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.

1. Frame Type: Exterior flange unless otherwise indicated.

D. Include supports, anchorages, and accessories required for complete assembly.

E. Provide vertical mullions of type and at spacings indicated, but not more than is recommended by manufacturer, or 72 inches (1830 mm) o.c., whichever is less.
1. Exposed Mullions: Where indicated, provide units with exposed mullions of same width and depth as louver frame. Where length of louver exceeds fabrication and handling limitations, provide interlocking split mullions designed to permit expansion and contraction.
2. Exterior Corners: Prefabricated corner units with mitered blades with concealed close-fitting splices and with semirecessed mullions at corners.

F. Provide subsills made of same material as louvers or extended sills for recessed louvers.

G. Join frame members to each other and to fixed louver blades with fillet welds concealed from view , threaded fasteners, or both, as standard with louver manufacturer unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

2.7 ALUMINUM FINISHES

A. Finish louvers after assembly.

B. High-Performance Organic Finish, Two-Coat PVDF: Fluoropolymer finish complying with AAMA 2604 AAMA 2605 and containing not less than 50 70 percent PVDF resin by weight in color coat.

1. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate Setting Drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

B. Remove existing fixed louvers.

C. Prepare opening to receive new louvers

3.2 INSTALLATION

A. Locate and place louver units level, plumb, and at indicated alignment with adjacent work.

B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces.

C. Form closely fitted joints with exposed connections accurately located and secured.

D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.

E. Repair damaged finishes. Restore finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory, make required alterations, and refinish entire unit or provide new units.

F. Protect galvanized and nonferrous-metal surfaces from corrosion or galvanic action by applying a heavy coating of bituminous paint on surfaces that will be in contact with concrete, masonry, or dissimilar metals.

G. Install concealed gaskets, flashings, joint fillers, and insulation, as louver installation progresses. Comply with Division 7 Section "Joint Sealants" for sealants applied during louver installation.

3.3 ADJUSTING, CLEANING, AND PROTECTING

A. Periodically clean exposed surfaces of louvers and vents that are not protected by temporary covering to remove fingerprints and soil during construction period. Do not let soil accumulate until final cleaning.

B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.

C. Protect louvers and vents from damage during construction. Use temporary protective coverings where needed and approved by louver manufacturer. Remove protective covering at the time of Substantial Completion.

D. Restore louvers and vents damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.
   1. Clean and touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with,

END OF SECTION 089000

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Interior gypsum board.

B. Related Sections include the following:

1. Division 09 Section "Non-Structural Metal Framing" for non-structural framing and suspension systems that support gypsum board.
2. Division 07 Section “Insulation” for sound attenuating fire batts.
3. Division 09 Sections for primers applied to gypsum board surfaces.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For the following products:

1. Trim Accessories: Full-size Sample in 12-inch- (300-mm-) long length for each trim accessory indicated.

1.4 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.5 PROJECT 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 interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PANELS, GENERAL

A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.2 INTERIOR GYPSUM BOARD

A. General: Complying with ASTM C 36/C 36M or ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Gypsum Co.
b. G-P Gypsum.
c. National Gypsum Company.
d. USG Corporation.

B. Standard Gypsum Board: ASTM C 1629/C 1629M.

1. Core: 5/8 inch (15.9 mm),
2. Type: Type X where fire rating is require.
3. Long Edges: Tapered.
4. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

C. Abuse Resistant Board: ASTM C 1629/C 1629M.

1. Core: 5/8 inch (15.9 mm),
2. Type: Type X where fire rating is require.
3. Long Edges: Tapered.
4. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
5. Product: USG, Sheetrock, Mold Tough Very High Impact, or approved equal.

2.3 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet .
2. Shapes:

    a. Cornerbead.
    b. Bullnose bead.
    c. LC-Bead: J-shaped; exposed long flange receives joint compound.
    d. U-Bead: J-shaped; exposed short flange does not receive joint compound.
    e. Expansion (control) joint.
    f. Exterior Corner Radius
        1) Location: All external corners at GWB assemblies.
        2) Type: Radius corner trim – Softforms as manufactured by Pitcon Industries, Inc., or approved equal.

2.4 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Wallboard: Paper.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints , rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use 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.
5. Skim Coat: For final coat of Level 5 finish, use high-build interior coating product designed for application by airless sprayer and to be used instead of skim coat to produce Level 5 finish .

2.5 BLANKET INSULATION FOR SOUND ATTENUATION

A. See Divisions 07 Section “Insulation”.

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.

1. Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

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.
2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, 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. Attach very high impact gypsum fabrications to framing and substrates with steel drill screws unless otherwise indicated. Do not use pneumatic staple guns. Countersink screw heads below adjoining finished surface.

1. Predrill fastener holes in units. Clean fastener holes to remove dirt and oil.
2. Locate fasteners not less than 5/16 inch (7.9 mm) from edges or ends of units.

E. 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.

F. Form control and expansion joints with space between edges of adjoining gypsum panels.

G. 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.

H. 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.

I. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:
1. Very High Impact Type (VHI): As indicated on Drawings.

B. Single-Layer Application:
1. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing) , unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
2. 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 1 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 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. 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. Exterior Corner Radius: Outside corners and door jamb returns.

3.5 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints , rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Panels that are substrate for acoustical tile.
3. Level 3: Where indicated on Drawings.
4. Level 4: At panel surfaces that will be exposed to view, Very High Impact abuse resistant units and unless otherwise indicated.
5. Level 5: Where indicated on Drawings.

E. Repair: Repair hollows, voids, scratches, and other surface imperfections on units.

F. PROTECTION
1. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
2. Remove and replace panels that are wet, moisture damaged, and mold damaged.
   a. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.

b. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 096780 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Resilient wall base.
2. Resilient flooring accessories.
   a. Provide flooring accessories at intersection of all new carpet with existing materials to remain.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 9 Section “Resilient Tile Flooring”.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of product specified.

C. Samples for initial selection purposes of manufacturer's standard sample sets in form of pieces cut from each type of product specified showing full range of colors and patterns available.

D. Samples for verification purposes in manufacturer's standard sizes, but not less than 12 inches long, of each different color and pattern of product specified.

E. Product certificates, in lieu of laboratory test reports when permitted by Architect, signed by manufacturer certifying that each product complies with requirements.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility for Products: Obtain each type and color of product specified from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

B. Fire Performance Characteristics: Provide products with the following fire performance characteristics as determined by testing products per ASTM test method indicated below by UL or

another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Critical Radiant Flux: 0.45 watts per sq. cm or more per ASTM E 648.

2. Smoke Density: Less than 450 per ASTM E 662.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to Project site in original manufacturer's unopened cartons and containers, each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.

B. Store products in dry spaces protected from the weather with ambient temperatures maintained between 50 deg F (10 deg C) and 90 deg F (32 deg C).

C. Move products into spaces where they will be installed at least 48 hours in advance of installation.

1.6 PROJECT CONDITIONS

A. Maintain a minimum temperature of 70 deg F (21 deg C) in spaces to receive products specified in this Section for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. After this period, maintain a temperature of not less than 55 deg F (13 deg C).

B. Do not install products until they are at the same temperature as that of the space where they are to be installed.

C. Close spaces to traffic during installation of products specified in this Section.

1.7 SEQUENCING AND SCHEDULING

A. Sequence installing products specified in this Section with other construction to minimize possibility of damage and soiling during remainder of construction period.

1.8 EXTRA MATERIALS

A. Deliver extra materials to Owner. Furnish extra materials matching products installed as described below, packaged with protective covering for storage, and identified with labels clearly describing contents.

1. Furnish not less than 10 linear feet for each 500 linear feet or fraction thereof of each different type and color of resilient wall base installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products specified in each

Product Data Sheet at end of this Section.

2.2 RESILIENT WALL BASE

A. Vinyl Wall Base: Products complying with FS SS-W-40, Type II, and requirements specified in the Vinyl Wall Base Product Data Sheet at end of this Section.

B. Rubber Wall Base: Type TS (rubber, vulcanized thermoset) or Type TP (rubber, thermoplastic).

2.3 RESILIENT ACCESSORIES

A. Vinyl Accessories: Products complying with requirements specified in Vinyl Accessory Product Data Sheet at end of this Section and as listed on the drawings.

2.4 INSTALLATION ACCESSORIES

A. Concrete Slab Primer: Nonstaining type as recommended by flooring manufacturer.

B. Trowelable Underlayments and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by flooring manufacturer for applications indicated.

C. Adhesives: Water-resistant type recommended by manufacturer to suit resilient flooring product and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas where installation of products specified in this Section will occur, with Installer present, to verify that substrates and conditions are satisfactory for installation and comply with manufacturer's requirements and those specified in this Section.

3.2 PREPARATION

A. General: Comply with manufacturer's installation specifications for preparing substrates indicated to receive products indicated.

B. Use trowelable leveling and patching compounds per manufacturers directions to fill cracks, holes, and depressions in substrates.

C. Remove coatings, including curing compounds, and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil, or silicone, by using a terrazzo or concrete grinder, a drum sander, or a polishing machine equipped with a heavy-duty wire brush.

D. Broom or vacuum clean substrates to be covered immediately before installing products specified in this Section. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

E. Apply concrete slab primer, if recommended by flooring manufacturer, prior to applying adhesive. Apply according to manufacturer's directions.

3.3 INSTALLATION

A. General: Install products specified in this Section using methods indicated according to manufacturer's installation directions.

B. Apply resilient wall base to walls, columns, pilasters, casework, and other permanent fixtures in rooms and areas where base is required. Install wall base in lengths as long as practicable. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

1. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
2. Install inside and exterior corners before installing straight pieces.
3. Form inside corners on job from straight pieces of maximum lengths possible by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce snug fit to substrate.
4. Form outside corners on job from straight pieces of maximum lengths possible by shaving back of base at point where bending will occur. Remove a strip perpendicular to length of base and only deep enough to produce a snug fit without bends whitening or removal of more than half the thickness of wall base.

C. Place resilient accessories so they are butted to adjacent materials of type indicated and bond to substrates with adhesive. Install reducer strips at edges of flooring that otherwise would be exposed.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing installation:

1. Remove visible adhesive and other surface blemishes using cleaner recommended by manufacturers of resilient product involved.
2. Sweep or vacuum floor thoroughly.
3. Do not wash floor until after time period recommended by manufacturer.
4. Damp-mop resilient accessories to remove black marks and soil.

B. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods indicated or recommended by manufacturer of resilient product involved.

1. Apply protective floor polish to resilient accessories that are free from soil, visible adhesive, and surface blemishes.
2. Use commercially available metal, cross-linked, acrylic product acceptable to resilient accessory manufacturer.
3. Coordinate selection of floor polish with Owner's maintenance service.
4. Cover resilient accessories on floors and stairs with undyed, untreated building paper until

inspection for Substantial Completion.

C. Clean products specified in this Section not more than 4 days prior to dates scheduled for inspections intended to establish date of Substantial Completion in each area of Project. Clean products using method recommended by manufacturer.

1. Strip protective floor polish that was applied after completing installation, prior to cleaning.
2. Reapply floor polish after cleaning.

3.5 VINYL WALL BASE PRODUCT DATA SHEET

A. Style: Cove with top-set toe, unless otherwise noted.

B. Minimum Nominal Thickness: 0.080"

C. Height: 4” and 6” as required to match existing.

D. Lengths: Continuous roll.

E. Exterior and Interior Corners: Formed on site.

F. Color: In color as selected by the Architect from manufacturer's standards.

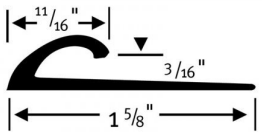
G. Products:

1. Armstrong World Industries, Inc.: Standard Coved-Toe.
2. Flexco Company: Set-On Base.
2. Tarkett: Fashion Cove.

3.6 VINYL ACCESSORY PRODUCT DATA SHEET

A. Style: Carpet transition; tile transition.

B. Configuration: 1-5/8” wide x 3/16” material height x 11/16” capture edge



C. Lengths: 12’-0”".

D. Color and Pattern : In color selected by the Architect from manufacturer's standards.

E. Products:

1. Mercer: Model 230 Mono Edge.
2. Or equal.

END OF SECTION 096780

SECTION 096814 –TILE CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 00 thru 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes modular carpet tile where indicated on drawings as Carpet Tile.

1. Section includes rolled moisture barrier under all carpet.

B. Related Sections include the following:

1. Division 09 Section “Resilient Base and Accessories” for resilient base and accessories installed with carpet tile.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include manufacturer's written data on physical characteristics, durability, and fade resistance. Include installation recommendations for each type of substrate.

B. LEED Submittals:

1. Product Data for Credit EQ 4.3:

a. For carpet tile, documentation indicating compliance with testing and product requirements of CRI's "Green Label Plus" program.
b. For installation adhesive, documentation including printed statement of VOC content.

2. Laboratory Test Reports for Credit EQ 4: For carpet and installation adhesives, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Shop Drawings: Show the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
2. Existing flooring materials to be removed.
3. Existing flooring materials to remain.
4. Carpet tile type, color, and dye lot.

5. Type of subfloor.
6. Type of installation.
7. Pattern of installation.
8. Pattern type, location, and direction.
9. Pile direction.
10. Type, color, and location of insets and borders.
11. Type, color, and location of edge, transition, and other accessory strips.
12. Transition details to other flooring materials.

D. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1. Carpet Tile: Full-size Sample.
2. Exposed Edge, Transition, and other Accessory Stripping: 12-inch- (300-mm-) long Samples.

E. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.

C. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:

1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

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. Carpet Tile: Full-size units equal to (10) 16” x 16” modular units.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.

B. Fire-Test-Response Ratings: Where indicated, provide carpet tile identical to those of assemblies tested for fire response according to NFPA 253 by a qualified testing agency.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI 104, Section 5, "Storage and Handling."

1.9 FIELD CONDITIONS

A. Comply with CRI 104.

B. Environmental Limitations: Do not install carpet tiles until 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.

C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.10 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer's standard form in which manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, and delamination.
3. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE

A. Basis-of-Design Product: Subject to compliance with requirements, provide Patcraft Beyond the door I0316, or comparable product by one of the following:

1. Tandus, Abrasive Action II

2. And/or Approved Equal.

B. Color: Preliminary selections Obsidian 00595 or Opal 00123. Final color as selected by Architect from manufacturer's full range .

C. Pattern: Match Architect's samples .

D. Installation Method: Brick.

E. Fiber Content: Eco solution Q Nylon.

F. Dye Method: Solution Dyed, 1005

G. Density: 8,000 oz./cu. yd..

H. Pile Height: 6/32 high, 3/32 low.

I. Stitches: 11 per inch.

J. Gage: 1/12 (47.2 rows/10cm).

K. Surface Pile Weight: Insert oz./sq. yd. .

L. Backing System: EcoLogix.

M. Size: 24 by 24 inches (610 by 610 mm).

N. Applied Soil-Resistance Treatment: Manufacturer's standard material .

O. Antimicrobial Treatment: Manufacturer's standard material .

P. Performance Characteristics: As follows:
1. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm.
2. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.
3. Emissions: Provide carpet tile that complies with testing and product requirements of CRI's "Green Label Plus" program.

Q. Total Recycled Content: 42%, pre-consumer 42, post-consumer 0%

2.2 INSTALLATION ACCESSORIES

A. Rolled Moisture Barrier for Concrete Floors: Dimensionally stable, four ply composite product, engineered as a rolled moisture barrier system. Provide manufacturer's approved single and double sided tape.
1. Protection up to 95% RH, ASTM F2170.
2. Mold and fungus resistant, ASTM D3273: No growth.
3. 10 year limited warranty.
4. Roll Size: 5'x144'.
5. Minimum Thickness, ASTM D5729: 24.0 mils.
6. Permeance, ASTM E96: 0.044 grain h^{-1} ft^{-2} $inHg^{-1}$

B. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.

C. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.

B. Moisture Testing: Test prior to moisture barrier installation, with results documented and retained in order to be in compliance with warranty.
1. Conduct tests in accordance with the latest version of ASTM F2170. Maximum reading of 95% permitted.

C. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet tile manufacturer.
2. Subfloor finishes comply with requirements specified in Division 03 Section "Cast-in-Place Concrete" for slabs receiving carpet tile.
3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.

D. For painted subfloors, verify the following:

1. Perform bond test recommended in writing by adhesive manufacturer.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to carpet manufacturer's written instructions to ensure adhesion of products.

B. General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.

C. Concrete Substrates: Prepare according to ASTM F710.
1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

2. Verify that substrates are dry and free of adhesives and other materials from prior installation of carpet flooring.
3. Remove substrate coatings, including adhesives from prior installations, 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.
4. Bond Testing: Using the flooring material and recommended adhesives, install 3'x3' panels space approximately 50" apart through the subfloor area. Select areas next to walls, columns or other light traffic areas. Tape edges of panels to prevent edge drying of adhesive. If the panels are securely bonded after a period of 72 hours, one may conclude that the subfloor surface is sufficiently clean of foreign material for satisfactory installation of the resilient flooring.
5. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
6. Moisture Testing: Perform tests so that each test area does not exceed 3000 sq. 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 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
    b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 80 percent relative humidity level measurement.

D. Remove all carpet, vinyl and adhesives for the substrates. Clean substrate to comply with flooring manufacturer's written requirements.
1. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.

E. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound approved by the flooring manufacturer; remove bumps and ridges to produce a uniform and smooth substrate.
1. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider and protrusions more than 1/32 inch (0.8 mm), unless more stringent requirements are required by manufacturer's written instructions.
2. Smooth concrete surfaces, removing rough areas, projections, ridges, and bumps, and filling low spots, control or construction joints, and other defects with manufacturer's approved patch and underlayment, self-leveling compound, and flexible patching and smoothing compound as recommended by the flooring manufacturer.
3. Unit Price - Moisture mitigation: In addition to other leveling and patching, install manufacturer's proprietary two part moisture mitigation system and acrylic primer.
    a. Install moisture mitigation system, rolled moisture barrier for concrete floors, at areas tested in accordance ASTM F1869 or ASTM F2170 to be in excess of allowable.
    b. Moisture mitigation system shall be installed as a part of unit prices.
4. Prime substrate as recommended by the flooring manufacturer for installation method.

5. Residual adhesives must be scraped down to the concrete surface and removed prior to installation of moisture barrier.
   a. Do not use solvent based adhesive removed chemicals which can interact and cause damage to the moisture barrier.

F. Do not install carpet or carpet 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 carpet and installation materials into spaces where they will be installed.

G. Immediately before installation of carpet tile, sweep and vacuum clean substrates.

3.3 INSTALLATION - MOISTURE BARRIER INSTALLATION

A. General: Install moisture barrier below all new carpet surfaces where moisture content exceeds those recommended by carpet and adhesive manufacturer.
   1. Furnishing and installation of moisture barrier is included within the bae bid.

B. Install in accordance with manufacturer's written recommendations.
   1. Allow materials to acclimate to surroundings.
   2. Tape and roll all seams to ensure solid bond.
   3. Install flooring on top of mineral-coated (rough) surface in accordance with flooring manufacturer's written instructions.
   4. Take care not to scratch, rip, tear, puncture or damage the moisture barrier.

3.4 INSTALLATION - CARPET

A. General: Comply with CRI 104, Section 14, "Carpet Modules," and with carpet tile manufacturer's written installation instructions.

B. Installation Method: As recommended in writing by carpet tile manufacturer.

C. Maintain dye lot integrity. Do not mix dye lots in same area.

D. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.

E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.

G. Install pattern parallel to walls and borders.

3.5 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet tile:

1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
2. Remove yarns that protrude from carpet tile surface.
3. Vacuum carpet tile using commercial machine with face-beater element.

B. Allow 5 days prior to maintaining and cleaning finish flooring in accordance with moisture barrier and flooring manufacturer's written instructions.

C. Protect installed carpet tile to comply with CRI 104, Section 16, "Protection of Indoor Installations."

D. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096814

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 00 thru 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 interior substrates:

1. Wood.
2. Metal.
3. Gypsum Board.

B. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

C. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural.

D. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

E. Related Sections include the following:

1. Division 6 Sections for shop priming carpentry with primers specified in this Section.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For each type of topcoat product indicated.

C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches (200 mm) square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.

1.4 QUALITY ASSURANCE

A. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.

a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
b. Other Items: Architect will designate items or areas required.

2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
3. Final approval of color selections will be based on benchmark samples.

a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

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 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.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. MAB Paints
2. Sherwin-Williams Company (The).
3. Benjamin Moore Paints

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.

B. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:

1. Shellacs, Clear: VOC not more than 730 g/L.
2. Shellacs, Pigmented: VOC not more than 550 g/L.
3. Flat Topcoat Paints: VOC content of not more than 50 g/L.
4. Nonflat Topcoat Paints: VOC content of not more than 150 g/L.
5. Shellacs, Clear: VOC not more than 730 g/L.
6. Shellacs, Pigmented: VOC not more than 550 g/L.
7. Primers, Sealers, and Undercoaters: VOC content of not more than 200 g/L.

D. Colors: Match Architect's samples.

2.3 PRIMERS/SEALERS

A. Wood-Knot Sealer: Sealer recommended in writing by topcoat manufacturer for use in paint systems indicated.

MAB	BIN by Zinsser
Ben Moore	N/A
SW	N/A

2.4 METAL PRIMERS

A. Alkyd Anticorrosive Metal Primer

MAB	Anticorrosive Primer (073-132)
BM	Alkyd Metal Primer Z06
SW	HS Alkyd Metal Primer B50Z

2.5 WOOD FILLERS

A. Paste wood filler:

MAB	Paste wood filler
Ben Moore	Benwood Paste Wood Filler No. 238.
SW	Sher-Wood Fast-Dry Filler

2.6 WOOD STAIN

A. Water based penetrating stain:

MAB	1 coat Zar by UGL
Ben Moore	Benwood Polyurethane C435
SW	Minwax Water based Stain

2.7 WOOD VARNISH

A. Acrylic - based polyurethane:

MAB	McCloskey Gymseal (181360)
Ben Moore	As approved by Architect
SW	As approved by Architect.

2.8 ACRYLIC PAINTS

A. High Gloss DTM

MAB	Rustolastic Acrylic DTM
Ben Moore	DTM Acrylic M28

SW DTM Acrylic Coating B66-100

2.9 LATEX PAINTS

A. Interior Latex (Eggshell):

MAB Rich Lux Latex Eggshell(029 Line)

Ben Moore Regal Aqua Velvet

SW Super Paint Eggshell

B. Interior Latex (Gloss):

MAB Rich Lux Latex Architectural Enamel(022 Line).

Ben Moore Waterborne Satin Impervo 314

SW Pro Classic Waterborne Interior Gloss Enamel B21 Series

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. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Wood: 15 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. 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 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. Strip existing paint at areas to be refinished.

1. Comply with manufacturer's recommendation for stripper that is approved for use under specified sealer and finish coats.

D. 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.

E. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.

F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

G. Wood Substrates:

1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

H. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

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 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.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:

1. Mechanical Work:

a. Uninsulated metal piping.
b. Uninsulated plastic piping.
c. Pipe hangers and supports.
d. Tanks that do not have factory-applied final finishes.
e. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
g. Mechanical equipment that is indicated to have a factory-primed finish for field painting.

2. Electrical Work:

a. Switchgear.
b. Panelboards.
c. Electrical equipment that is indicated to have a factory-primed finish for field painting.

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 may 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 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 INTERIOR PAINTING SCHEDULE

A. Steel Substrates:

1. DTM (High Gloss):

a. Prime Coat: Alkyd Anticorrosive Metal Primer.
b. Intermediate Coat: DTM matching topcoat.
c. Topcoat: DTM (high gloss)

B. Wood (non floor) Substrates:

1. Waterborne Stain Satin Varnish:

a. Filler Coat: Open grain wood filler.

b. Stain Coat: Interior wood stain.
c. Intermediate Coat: Interior waterborne clear satin varnish.
d. Top Coat: Interior waterborne clear satin varnish.

C. Gypsum Board Substrates:

1. Latex System:

a. Prime Coat: Interior latex primer/sealer
b. Intermediate Coat: Interior latex matching topcoat.
c. Topcoat: Interior latex (eggshell) . At ceilings, match existing sheen.

END OF SECTION 099123

SECTION 099300 - STAINING AND TRANSPARENT FINISHING

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. Wood stains.

B. Related Requirements:

1. Section 099123 "Interior Painting" interior paint finishes.
2. Section 099600 "High-Performance Coatings" for high-performance coatings on concrete and masonry.

1.3 ACTION SUBMITTALS

A. Product Data:

1. For each type of product.
2. Include preparation requirements and application instructions.
3. Indicate VOC content.

B. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of exposed finish.

C. Samples for Verification: Sample for each type of finish system and in each color and gloss of finish required on representative samples of actual wood substrates.

1. Size: 8 inches (200 mm) square or 8 inches (200 mm) long.
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 finish system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Extra Stock Material: 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. Stains and Transparent Finishes: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

1.5 MOCKUPS

A. Apply mockups of each finish system indicated and each color selected to verify preliminary selections made under Sample submittals to demonstrate aesthetic effects and to set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each type of finish system and substrate.

a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
b. Other Items: Architect will designate items or areas required.

2. Final approval of stain color selections will be based on mockups.

a. If preliminary stain color selections are not approved, apply additional mockups of additional stain colors selected by Architect at no added cost to Owner.

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. 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.

1.7 FIELD CONDITIONS

A. Apply finishes only when temperature of surfaces to be finished and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply finishes when relative humidity exceeds 85 percent, at temperatures of less than 5 deg F (3 deg C) above the dew point, or to damp or wet surfaces.

C. Do not apply exterior finishes in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Source Limitations: Obtain each coating product from single source from single manufacturer.

2.2 MATERIALS, GENERAL

A. Material Compatibility:

1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

B. Stain Colors: As selected by Architect from manufacturer's full range.

2.3 WOOD STAINS

A. Stain, Exterior, Solvent Based, Semitransparent: Solvent-based, oil or oil/alkyd, semitransparent, pigmented stain for new wood surfaces.
1. Ready Seal Exterior Wood Stain or approved equal.

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 Exterior Wood Substrates: 15 percent, when measured with an electronic moisture meter.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Proceed with finish application only after unsatisfactory conditions have been corrected.

1. Beginning finish application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Remove hardware, covers, plates, and similar items already in place that are removable. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and finishing.

1. After completing finishing operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

B. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each substrate condition and as specified.

1. Remove dust, dirt, oil, and grease by washing with a detergent solution; rinse thoroughly with clean water and allow to dry. Remove grade stamps and pencil marks by sanding lightly. Remove loose wood fibers by brushing.
2. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.

C. Exterior Wood Substrates:

1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
2. Prime edges, ends, faces, undersides, and backsides of wood.

a. For solid hide stained wood, stain edges and ends after priming.
b. For varnish-coated stained wood, stain edges and ends and prime with varnish. Prime undersides and backsides with varnish.

3.3 APPLICATION

A. Apply finishes according to manufacturer's written instructions.

1. Use applicators and techniques suited for finish and substrate indicated.
2. Finish surfaces behind movable equipment and furniture same as similar exposed surfaces.
3. Do not apply finishes over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. Apply finishes to produce surface films without cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other surface imperfections.

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 finish application, clean spattered surfaces. Remove spattered materials by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from finish application. Correct damage 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 finished wood surfaces.

END OF SECTION 099300

SECTION 099600 - HIGH-PERFORMANCE COATINGS

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 surface preparation and application of high-performance coating systems on the following substrates:

1. Interior Substrates:

a. Masonry
b. Concrete

1.3 DEFINITIONS

A. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

B. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include preparation requirements and application instructions.

B. Samples for Initial Selection: For each type of topcoat product indicated.

C. Samples for Verification: For each type of coating system and in each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches (200 mm) square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

3. VOC content.

1.5 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 FIELD CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply coatings 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.

C. Do not apply exterior coatings in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Benjamin Moore & Co.
2. Coronado Paint.
3. Duron, Inc.
4. PPG Architectural Finishes, Inc.
5. Sherwin-Williams Company (The).
6. Tnemec.

2.2 HIGH-PERFORMANCE COATINGS, GENERAL

A. MPI Standards: Provide products that comply with MPI standards indicated and are listed in "MPI Approved Products List."

B. Material Compatibility:

1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a coating system, provide products recommended in writing by manufacturers of topcoat for use in coating system and on substrate indicated.
3. Provide products of same manufacturer for each coat in a coating system.

C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.
   1. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: 250 g/L.
   2. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
   3. Floor coatings: 340g/L
   4. Pre-Treatment Wash Primers: 420 g/L.

D. Low-Emitting Materials: Interior coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 PAINT STRIPPERS

A. Interior paint strippers
   1. Basis-of-Design Product: The design for paint stripper is based on product indicated. Subject to compliance with requirements, provide the named product or a comparable product:
      a. Back to Nature Ultra-Strip

2.4 INTERIOR PRIMERS/SEALERS

A. Interior Latex Primer/Sealer:
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Benjamin Moore & Co.; Regal, First Coat Latex Primer/Undercoater, 216
      b. Sherwin-Williams Company (The); PrepRite, 200 Latex Primer, B28W200
      c. MAB, Rich Lux Latex Sealer Undercoater(037-154)E-2,or MAB Rich Lux Prime Fast(037-138)E-1

2.5 EPOXY COATINGS

A. Water-Based Epoxy (Interior, Low Luster):
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Benjamin Moore & Co.; Acrylic Epoxy Gloss "A", Hardener "B", M43/M44.
      b. Sherwin-Williams Company (The); Industrial & Marine, Water Based Catalyzed Epoxy, B70W Series.
      c. MAB, Ply-Tile 530 Water Reducible Acrylic Epoxy(051,054 or 059 Lines)

B. Water-Based Epoxy (Interior, High Gloss)
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Benjamin Moore & Co. ; Acrylic Epoxy Glass "A", Hardener "B", M43/M44.
      b. Sherwin- Williams Company (The); Industrial & Marine, Water Based Catalyzed Epoxy, B70W Series.
      c. MAB, Ply-tile 530 Water Reducible Acrylic Epoxy (054 lines)

2.6 SOURCE QUALITY CONTROL

A. Testing of Coating Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample coating materials. Contractor will be notified in advance and may be present when samples are taken. If coating materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance 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 coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. Contractor will be required to remove rejected materials from previously coated surfaces if, on recoating with complying materials, the two coatings are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

a. Concrete: 12 percent.
b. Masonry (Clay and CMU): 12 percent.
c. Wood: 15 percent.

B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

C. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.

C. Concrete Substrates: Remove adhesives, release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

1. Clean surfaces with pressurized water.
2. Abrasive blast clean surfaces to comply with SSPC-SP 7/NACE No. 4.

D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer.

1. SSPC-SP 7/NACE No. 4, "Brush-Off Blast Cleaning."

E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.

3.3 APPLICATION

A. Apply high-performance coatings according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

1. Use applicators and techniques suited for coating and substrate indicated.
2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Coat back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

C. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner will engage the services of a qualified testing and inspecting agency to inspect and test coatings for dry film thickness.

1. Contractor shall touch up and restore coated surfaces damaged by testing.
2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, Contractor shall pay for testing and

apply additional coats as needed to provide dry film thickness that complies with coating manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.6 INTERIOR HIGH-PERFORMANCE COATING SCHEDULE

A. CMU Substrates:
   1. Water-Based Epoxy Coating System:
      a. Intermediate Coat: Water-based epoxy (interior)
      b. Topcoat: Water-based epoxy (interior and exterior), High Gloss.

B. Concrete Substrates, Horizontal Surfaces.

   1. Epoxy, High-Build System, MPI INT 3.2L:

      a. Prime Coat: High-build epoxy, matching topcoat (reduced).
      b. Intermediate Coat: High-build epoxy, matching topcoat.
      c. Topcoat: High-build epoxy, low gloss, MPI #108.

END OF SECTION 099600

SECTION 264113 – LIGHTNING PROTECTION SYSTEM ALTERATION AND RECERTIFICATION

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 SUMMARY

A. This Section includes inspection, evaluation, testing, repair, modification, alteration and recertification of the existing lightning protection system serving the existing building, including the wood-framed roof, roof-mounted equipment, conductors, bonding connections, grounding electrodes, and associated components. The scope of this or is included within a bid alternate.

B. Work includes verification of the existing lightning protection system for compliance with the requirements of:
   1. NFPA 780, Standard for the Installation of Lightning Protection Systems, current adopted edition.
   2. UL 96A, Installation Requirements for Lightning Protection Systems, current edition applicable to the certification.
   3. UL 96, Standard for Lightning Protection Components, for components replaced or added under this Section.
   4. Applicable requirements of the New Jersey Uniform Construction Code and authorities having jurisdiction.
   5. Requirements of the certifying inspection agency.

C. The intent of this Section is to restore the existing lightning protection system to a condition suitable for independent third-party inspection and issuance of a current certification.

D. Where discrepancies exist between the existing installation and the requirements of the applicable certification standard, provide all necessary repairs, replacements, additions, bonding, grounding, and other corrective work required for certification.

E. The work of this specification section shall be coordinated with proposed roof replacement and siding installation.

1.3 SYSTEM DESCRIPTION

A. Existing building is a masonry and wood-framed structure with a wood-framed roof located in Tabernacle, New Jersey.

B. The existing lightning protection system may include, but is not limited to:
   1. Air terminals/lightning rods.
   2. Roof-level lightning conductors.

3. Down conductors.
4. Bonding conductors and bonding connections.
5. Grounding electrodes and grounding connections.
6. Shingle roof-mounted equipment and projections.
7. Interconnection with building grounding and bonding systems.
8. Surge protective devices where required by the applicable standard.
9. Status of UL lightning protection labels, certificates, or documentation.

C. Contractor shall field verify the existing system prior to commencing corrective work.

1.4 DEFINITIONS

A. Lightning Protection System (LPS): Complete system of air terminals, conductors, grounding electrodes, bonding components, and associated equipment installed to provide protection against the effects of lightning.

B. Recertification: Inspection and evaluation of the existing lightning protection system by an independent qualified certification/inspection agency following completion of required corrective work.

C. Master Label Certificate: Certification issued by UL Solutions or other approved certification agency for a complete lightning protection system found compliant with the applicable standard. UL indicates that a Master Label Certificate represents a complete-structure inspection, while a Letter of Findings may be used for limited or partial scopes.

1.5 QUALITY ASSURANCE

A. Lightning protection work shall be performed by a qualified lightning protection contractor experienced in inspection, repair, testing, and certification of existing lightning protection systems.

B. Contractor shall be an installer qualified or listed by the agency performing the final certification when such qualification is required by that agency.

C. Components used for repairs and replacements shall be UL Listed or otherwise acceptable for use under NFPA 780 and UL 96A.

D. Final inspection shall be performed by an independent third-party inspection agency acceptable to the Owner and having appropriate accreditation and qualifications for lightning protection system inspection.

E. Self-certification by the installing contractor will not constitute final certification.

F. Coordinate final inspection with the certifying agency before completing concealed or inaccessible work.

1.6 SUBMITTALS

A. Submit the following prior to commencement of corrective work:
   1. Existing lightning protection system documentation, if available.
   2. Proposed repair procedures
   3. Shop Drawings: For air terminals and mounting accessories.
      a. Layout of the lightning protection system, along with details of the components to be used in the installation. Include 1/8" scale drawings showing the terminal layout. Show conductor types, sizes, routing and support methods. All terminal mounting details shall be included on the drawing as ¼" scale details. Contractor shall field verify all existing conditions for incorporation into proposed shop drawings. Contractor shall be responsible to provide layout and conductor sizing in accordance with referenced codes and standards.
      b. Include indications for use of raceway, data on how concealment requirements will be met and calculations required by NFPA 780 for bonding of grounded and isolated metal bodies.
   4. Product data for replacement components.
   5. Contractor qualifications for installer and manufacturer. Include data on listing or certification by U.L.
   6. Certification agency qualifications.
   7. Proposed testing procedures.

B. Submit the following at completion:
   1. Inspection report.
   2. Test results.
   3. Documentation of all deficiencies identified during inspection.
   4. Documentation of corrective work performed.
   5. Photographs of repaired conditions where requested.
   6. Updated lightning protection system drawings or marked-up roof plan.
   7. Final certification.
   8. UL Master Label Certificate, where specified and successfully obtained.
   9. Final Letter of Findings, if the certification agency determines that a limited-scope certificate is applicable.
   10. Manufacturer's maintenance recommendations.

1.7 EXISTING CONDITIONS

A. Before disturbing the existing system, inspect and document the condition and configuration of existing lightning protection components.

B. Contractor shall verify:
   1. Number and location of existing air terminals.
   2. Condition and attachment of air terminals.
   3. Roof conductor routing.
   4. Down conductor routing.
   5. Condition of conductors.
   6. Mechanical attachment of conductors.
   7. Connections, clamps, splices, and bonding points.
   8. Grounding electrode connections.
   9. Bonding to applicable metallic building systems.

10. Protection of down conductors at exposed or vulnerable locations.
11. Roof penetrations and attachment points.
12. Changes to the building since original installation.
13. Roof-mounted equipment and projections.
14. Existing certification labels and identification.

C. Coordinate inspection with the Owner's roofing representative to avoid damage to the existing wood roof assembly and roofing membrane.

PART 2 - PRODUCTS

2.1 GENERAL

A. Provide new components where existing components are missing, damaged, deteriorated, improperly installed, or otherwise unsuitable for certification.

B. Components shall be compatible with the existing lightning protection system and shall be selected to minimize galvanic corrosion and dissimilar-metal incompatibility.

C. Do not mix dissimilar metals unless specifically permitted by NFPA 780 and the component manufacturer.

2.2 LIGHTNING PROTECTION SYSTEM COMPONENTS

A. Comply with UL 96 and NFPA 780.

B. Roof-Mounted Air Terminals: NFPA 780, Class I, aluminum unless otherwise 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. East Coast Lightning Equipment Inc.
   b. ERICO International Corporation.
   c. Harger.
   d. Heary Bros. Lightning Protection Co. Inc.
   e. Independent Protection Co.
   f. Preferred Lightning Protection.
   g. Robbins Lightning, Inc.
   h. Thompson Lightning Protection, Inc.
2. Air Terminals More than 24 Inches (600 mm) Long: With brace attached to the terminal at not less than half the height of the terminal.

2.3 AIR TERMINALS

A. Air terminals shall comply with UL 96 and NFPA 780.

B. Provide air terminals of adequate height, spacing, and configuration to provide the required zone of protection for the existing building geometry and roof projections.

C. Secure air terminals to the roof structure in a manner that:
   1. Maintains required electrical continuity.
   2. Resists wind and weather exposure.
   3. Does not damage the wood-framed roof assembly.
   4. Does not compromise roofing or waterproofing.

2.4 LIGHTNING CONDUCTORS

A. Provide lightning protection conductors complying with NFPA 780 and UL 96.

B. Conductors shall be appropriately sized for the lightning protection system and compatible with existing system components.

C. Provide new conductors where existing conductors are damaged, undersized, severed, excessively corroded, or otherwise noncompliant.

2.5 BONDING COMPONENTS

A. Provide listed bonding clamps, connectors, fittings, and bonding conductors compatible with the materials being bonded.

B. Bond metallic systems and equipment as required by NFPA 780.

C. Provide bonding where required to prevent dangerous potential differences between the lightning protection system and nearby metallic systems.

2.6 GROUNDING ELECTRODES

A. Existing grounding electrodes shall be inspected and tested as part of the recertification work.

B. Where existing electrodes or connections are deficient, provide new or supplemental grounding electrodes in accordance with NFPA 780.

C. Provide listed connectors suitable for direct burial where applicable.

2.7 ROOF ATTACHMENTS

A. Roof-mounted lightning protection components shall be attached without compromising the integrity of the existing roof.

B. Fasteners and attachment methods shall be compatible with the wood roof construction and roofing system.

C. Do not penetrate the roofing membrane without written approval of the Owner and roofing manufacturer or roofing contractor.

D. Where roof penetration is unavoidable, provide approved flashing and waterproofing methods.

PART 3 - EXECUTION

3.1 PRE-INSTALLATION INSPECTION

A. Perform a complete visual inspection of the existing lightning protection system.

B. Inspect the entire system from air terminals through conductors, bonds, down conductors, and grounding electrodes.

C. Verify that the existing installation continues to provide the required protection for the current configuration of the building.

D. Identify alterations to the building, roof, mechanical equipment, electrical systems, communications systems, antennas, signage, and other projections that may affect the lightning protection system.

3.2 EXISTING SYSTEM TESTING

A. Test existing lightning protection system components as required by the applicable certification standard.

B. Inspect all accessible conductors for continuity and physical condition.

C. Inspect and test grounding electrodes and grounding connections.

D. Inspect all clamps, splices, connectors, and bonding points.

E. Tighten or replace loose or defective connections.

F. Repair or replace damaged, corroded, missing, or improperly supported components.

G. NFPA 780 maintenance guidance identifies inspection of conductors and components, tightening of clamps and splicers, measurement of lightning protection and grounding-electrode resistance, and evaluation of changes to the structure as appropriate maintenance activities.

3.3 GENERAL INSTALLATION

A. Install lightning protection components and systems according to UL 96A and NFPA 780.

B. Install conductors with direct paths from air terminals to ground connections. Avoid sharp bends.

C. Conceal the following conductors:
1. System conductors.
2. Down conductors.
3. Interior conductors.
4. Conductors within normal view of exterior locations at grade within 200 feet (60 m) of building.

D. Cable Connections: Use crimped or bolted connections for all conductor splices and connections between conductors and other components. Use exothermic-welded connections in underground portions of the system.

E. Air Terminals on Sloped Surfaces: Provide swivels at each location resulting in the terminal installed plumb. Provide adhesive base mounts compatible with roofing manufacturer's requirements.

3.4 CORROSION PROTECTION

A. Do not combine materials that can form an electrolytic couple that will accelerate corrosion in the presence of moisture unless moisture is permanently excluded from junction of such materials.

B. Use conductors with protective coatings where conditions cause deterioration or corrosion of conductors.

3.5 WOOD-FRAMED ROOF REQUIREMENTS

A. Exercise particular care when inspecting and repairing the lightning protection system on the wood-framed roof. The work is to be coordinated with the roof replacement and restoration.

B. Do not damage roof sheathing, roof framing, roof membrane, shingles, flashing, or waterproofing.

C. Provide secure conductor supports at required intervals in accordance with the applicable standard.

D. Where existing conductor supports are loose or deteriorated, replace with new listed supports.

E. Where existing roof penetrations are found to be leaking or improperly sealed, notify the Owner immediately and coordinate repairs with the roofing contractor.

F. Do not attach lightning protection components directly to deteriorated wood.

G. Repair or reinforce deficient wood substrate before installing new lightning protection attachments.

3.6 ALTERATION AND REPAIRS

A. Correct all deficiencies identified during the initial inspection that are necessary to achieve certification.

B. Alterations shall include but are not limited to:
   1. Removal and reinstallation of air terminals and conductors as required to accommodate the work of this contract including shingle replacement and siding installation.
   2. Alteration of conductor path and grounding methods as required to accommodate the work of this contract.

C. Repairs shall include, but not be limited to:

1. Replacement of damaged air terminals.
2. Replacement of deteriorated conductors.
3. Replacement of missing conductor supports.
4. Repair of loose connections.
5. Replacement of damaged clamps and connectors.
6. Repair of discontinuous conductors.
7. Addition of required bonding connections.
8. Repair or replacement of deficient grounding connections.
9. Addition of required air terminals.
10. Modification of conductor routing.
11. Correction of improperly protected down conductors.
12. Correction of deficiencies caused by subsequent building modifications.

D. All repairs shall comply with the applicable edition of NFPA 780 and UL 96A being used for certification.

3.7 BONDING

A. Bond the lightning protection system to applicable grounding and bonding systems as required by NFPA 780.

B. Inspect existing electrical, communications, mechanical, plumbing, and other metallic systems in the vicinity of the lightning protection system.

C. Provide additional bonding where required by the certification agency.

D. Coordinate bonding work with Division 26 electrical work.

3.8 SURGE PROTECTION

A. Inspect existing surge protective devices associated with the lightning protection system.

B. Where required by the applicable standard or identified as deficient by the certifying agency, provide or replace surge protective devices.

C. SPD installation shall comply with applicable requirements of NFPA 780, NFPA 70, and the equipment manufacturer's requirements.

D. Coordinate SPD requirements with the electrical contractor.

3.9 FINAL INSPECTION AND RECERTIFICATION

A. Following completion of all corrective work, arrange for inspection by the approved independent certification agency.

B. Contractor shall provide access to all portions of the lightning protection system required for inspection.

C. Contractor shall correct all deficiencies identified by the certification agency.

D. When deficiencies are identified, contractor shall:
1. Provide written documentation of each deficiency.
2. Perform required corrective work.
3. Request reinspection.
4. Obtain final certification.

E. The desired final deliverable is a current certification for the complete existing building.

F. Where UL certification is specified, provide a current UL Master Label Certificate following successful inspection. UL states that its Master Label Certificate documents compliance for the complete structure and that its certificate is generally valid for five years.

G. If the certification agency determines that the scope does not qualify for a Master Label Certificate, provide the appropriate Letter of Findings and clearly identify the limitations of the certification.

3.10 IDENTIFICATION

A. Maintain existing lightning protection identification labels where serviceable and where applicable.

B. Replace missing or damaged identification labels as required by the certification agency.

C. Install the new certification label/nameplate in an accessible and visible location approved by the Owner and certification agency.

D. UL indicates that Master Label nameplates are typically installed at a visible location such as a roof hatch or service entrance.

3.11 CLOSEOUT DOCUMENTATION

A. Provide final closeout documentation including:
1. Final certification.
2. Inspection report.
3. Test results.
4. List of repairs performed.
5. Photographs of significant repairs.
6. Updated roof plan showing air terminals, conductors, down conductors, and grounding locations.
7. Certification agency report.
8. Maintenance recommendations.
9. Warranty documentation.

B. Provide two electronic copies of the complete closeout documentation in PDF format.

3.12 WARRANTY

A. Provide a minimum one-year warranty on corrective work performed under this Section.

B. Warranty shall include labor and materials necessary to correct defects resulting from improper installation.

C. Warranty shall not relieve the Contractor of responsibility for obtaining final certification.

END OF SECTION 26 41 13

SECTION 310500 - EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Volume 1 Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Excavating and backfilling for buildings and structures.
   2. Drainage course for slabs-on-grade.
   3. Excavating and backfilling for utility trenches.

B. Related Sections include the following:

   1. Division 1 Section 01500 "Temporary Facilities" for temporary controls, utilities, and support facilities.
   2. Division 31 Section "Excavation Support and Protection" for shoring, bracing, and sheet piling of excavations.
   3. Division 3 Section "Cast-in-Place Concrete" for granular course if placed over vapor retarder and beneath the slab-on-grade.
   4. Division 2 and Divisions 21 through 28 Sections for installing underground mechanical and electrical utilities and buried mechanical and electrical structures.

1.3 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

   1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
   2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Course placed between the subbase course and paving.

C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Drainage Course: Course supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
2. Bulk Excavation: Excavation more than 10 feet (3 m) in width and more than 30 feet (9 m) in length.
3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. (0.76 cu. m) for bulk excavation or 3/4 cu. yd. (0.57 cu. m) for footing, trench, and pit excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:

1. Excavation of Footings, Trenches, and Pits: Late-model, track-mounted hydraulic excavator; equipped with a 42-inch- (1065-mm-) wide, maximum, short-tip-radius rock bucket; rated at not less than 138-hp (103-kW) flywheel power with bucket-curling force of not less than 28,090 lbf (125 kN) and stick-crowd force of not less than 18,650 lbf (83 kN); measured according to SAE J-1179.
2. Bulk Excavation: Late-model, track-mounted loader; rated at not less than 210-hp (157-kW) flywheel power and developing a minimum of 48,510-lbf (216-kN) breakout force with a general-purpose bare bucket; measured according to SAE J-732.

I. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 3/4 cu. yd. (0.57 cu. m) or more in volume that exceed a standard penetration resistance of 100 blows/2 inches (97 blows/50 mm) when tested by an independent geotechnical testing agency, according to ASTM D 1586.

J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

K. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

L. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

M. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 SUBMITTALS

A. Product Data: For the following:

1. Each type of plastic warning tape.
2. Geotextile.
3. Controlled low-strength material, including design mixture.
4. Geofoam.

B. Samples: 12-by-12-inch (300-by-300-mm) Sample of subdrainage geotextile.

C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:

1. Classification according to ASTM D 2487 of each on-site and borrow soil material proposed for fill and backfill.
2. Laboratory compaction curve according to ASTM D 1557 for each on-site and borrow soil material proposed for fill and backfill.

D. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earthwork operations. Submit before earthwork begins.

1.5 QUALITY ASSURANCE

A. Blasting: None

B. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

C. Pre-excavation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.

1. Notify Architect not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.
3. Contact utility-locator service for area where Project is located before excavating.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM and AASHTO M 145 Soil Classification Groups A-1, A-2-4, A-2-5, and A-3, or a combination of these groups; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487 and A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145, or a combination of these groups.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.

E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.

F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.

G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.

H. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-mm) sieve.

I. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch (25-mm) sieve and 0 to 5 percent passing a No. 4 (4.75-mm) sieve.

J. Sand: ASTM C 33; fine aggregate, natural, or manufactured sand.

K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 GEOTEXTILES

A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Grab Tensile Strength: 157 lbf (700 N); ASTM D 4632.
3. Sewn Seam Strength: 142 lbf (630 N); ASTM D 4632.
4. Tear Strength: 56 lbf (250 N); ASTM D 4533.
5. Puncture Strength: 56 lbf (250 N); ASTM D 4833.
6. Apparent Opening Size: [No. 40 (0.425-mm)] [No. 60 (0.250-mm)] [No. 70 (0.212-mm)] sieve, maximum; ASTM D 4751.
7. Permittivity: 0.5 per second, minimum; ASTM D 4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Grab Tensile Strength: 247 lbf (1100 N); ASTM D 4632.
3. Sewn Seam Strength: 222 lbf (990 N); ASTM D 4632.
4. Tear Strength: 90 lbf (400 N); ASTM D 4533.
5. Puncture Strength: 90 lbf (400 N); ASTM D 4833.
6. Apparent Opening Size: No. 60 (0.250-mm) sieve, maximum; ASTM D 4751.
7. Permittivity: 0.02 per second, minimum; ASTM D 4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

C. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches (750 mm) deep; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 2 Section "Site Clearing."

C. Protect and maintain erosion and sedimentation controls, which are specified in Division 2 Section "Site Clearing," during earthwork operations.

D. Provide protective insulating materials to protect subgrades and foundation soils against freezing temperatures or frost.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
2. Install a dewatering system, specified in Division 2 Section "Dewatering," to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.3 EXPLOSIVES

A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.5 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.

B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit, unless otherwise indicated.

1. Clearance: 12 inches (300 mm) each side of pipe or conduit.

C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. For pipes and conduit less than 6 inches (150 mm) in nominal diameter and flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
2. For pipes and conduit 6 inches (150 mm) or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill.
3. Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

D. Trench Bottoms: Excavate trenches 4 inches (100 mm) deeper than bottom of pipe elevation to allow for bedding course. Hand excavate for bell of pipe.

1. Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

3.6 SUBGRADE INSPECTION

A. Notify Architect when excavations have reached required subgrade.

B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Proof-roll subgrade below the building slabs and pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph (5 km/h).
2. Proof-roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons (13.6 tonnes).
3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.7 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi (17.2 MPa), may be used when approved by Architect.

1. Fill unauthorized excavations under other construction or utility pipe as directed by Architect.

3.8 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.9 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.10 UTILITY TRENCH BACKFILL

A. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Backfill trenches excavated under footings and within 18 inches (450 mm) of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Division 3 Section "Cast-in-Place Concrete."

D. Provide 4-inch- (100-mm-) thick, concrete-base slab support for piping or conduit less than 30 inches (750 mm) below surface of roadways. After installing and testing, completely encase

piping or conduit in a minimum of 4 inches (100 mm) of concrete before backfilling or placing roadway subbase.

E. Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch (25 mm) in any dimension, to a height of 12 inches (300 mm) over the utility pipe or conduit.

1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

F. Controlled Low-Strength Material: Place initial backfill of controlled low-strength material to a height of 12 inches (300 mm) over the utility pipe or conduit.

G. Backfill voids with satisfactory soil while installing and removing shoring and bracing.

H. Place and compact final backfill of satisfactory soil to final subgrade elevation.

I. Controlled Low-Strength Material: Place final backfill of controlled low-strength material to final subgrade elevation.

J. Install warning tape directly above utilities, 12 inches (300 mm) below finished grade, except 6 inches (150 mm) below subgrade under pavements and slabs.

3.11 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.
3. Under steps and ramps, use engineered fill.
4. Under building slabs, use engineered fill.
5. Under footings and foundations, use engineered fill.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.12 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.13 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557 and ASTM 698 (select areas only):

1. Under structures, building slabs, steps, and pavements, scarify and re-compact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent of the maximum modified proctor density, ASTM D-1557.

2. Under walkways and pavement areas scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 93 percent percent of the maximum modified proctor density, ASTM D-1557.

3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.

4. For basement walls and utility trenches compact each layer of initial and final backfill soil material at 93 percent of the standard Proctor density, ASTM D-698.

3.14 SUBBASE AND BASE COURSES

A. Place subbase course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place subbase course under pavements and walks as follows:

1. Install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
2. Place base course material over subbase course under hot-mix asphalt pavement.
3. Shape subbase course to required crown elevations and cross-slope grades.
4. Place subbase course 6 inches (150 mm) or less in compacted thickness in a single layer.
5. Place subbase course that exceeds 6 inches (150 mm) in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick.
6. Compact subbase course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

C. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders, at least 12 inches (300 mm) wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.15 DRAINAGE COURSE

A. Place drainage course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:

1. Install subdrainage geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
2. Place drainage course 6 inches (150 mm) or less in compacted thickness in a single layer.
3. Place drainage course that exceeds 6 inches (150 mm) in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick.
4. Compact each layer of drainage course to required cross sections and thicknesses to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.16 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.

D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:

1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least 1 test for every 2000 sq. ft. (186 sq. m) or less of paved area or building slab, but in no case fewer than 3 tests.
2. Foundation Wall Backfill: At each compacted backfill layer, at least 1 test for each 100 feet (30 m) or less of wall length, but no fewer than 2 tests.
3. Trench Backfill: At each compacted initial and final backfill layer, at least 1 test for each 150 feet (46 m) or less of trench length, but no fewer than 2 tests.

E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.17 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.18 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Stockpile suitable soils for use until end of project.

B. Disposal: Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.

1. Remove any unused soils only after the owner has determined them not to be used.

END OF SECTION 023000

SECTION 311005 - SUBSURFACE INVESTIGATION

PART 1 GENERAL

1.1 DESCRIPTION

A. Subsurface investigation includes the excavation of test pits to ascertain the location of buried utilities or surface conditions.

B. Before laying pipes or constructing any structure, the CONTRACTOR shall ascertain the location and grade of utility pipes and other subsurface structures which may interfere with such construction. Test pits shall be excavated wherever necessary to obtain the required information, subject to the approval of the ARCHITECT.

PART 2 PRODUCTS

No products are involved.

PART 3 EXECUTION

3.1 METHODS OF WORK

A. The approximate location of known utility structures and facilities that may be encountered within and adjacent to the limits of the work are shown on the plans. The accuracy and completeness of this information is not guaranteed by the ARCHITECT, and the bidder is advised to ascertain for himself all the facts concerning the location of these utilities.

B. The CONTRACTOR shall adhere to Section 105, Cooperation with Utilities, of the Standard Specifications regarding location of and construction around public utilities.

C. All tests pits shall be backfilled with the material excavated. All backfill shall be thoroughly compacted in accordance with Specification Section entitled Site Excavation, Filling and Grading.

D. The CONTRACTOR shall permit the owners of the utilities of their agents, access to the site of the work at all times, in order to relocate or protect their facilities, and he shall cooperate with them in performing this work.

E. The CONTRACTOR shall cooperate with the utility owners concerned and shall notify them not less than ten (10) days in advance of the time he proposes to perform any work that will endanger or affect their facilities.

F. The CONTRACTOR shall call 1-800-272-1000 for a utility mark-out prior to any excavation activities.

END OF SECTION

SECTION 312050 - SOIL MATERIALS

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. Subsoil materials for site work and under buildings.

B. Related Sections and references include the following:

1. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb (4.54 kg) Rammer and an 18-in (457 mm) Drop.

2. ASTM D2487 - Classification of Soils for Engineering Purposes.

3. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

4. NJDOT Standard Specifications for Road and Bridge Construction.

PART 2 - PRODUCTS

2.1 SUBSOIL MATERIALS

A. Type S-1 Onsite (excavated) or Imported Material: Soil Aggregate, meeting Section 901.09 with a gradation meeting a I-3 as given in Table 901-2, NJDOT Classification for Zone 3 Borrow Excavation, Section 203.03.

B. Type S-2 Onsite (excavated) or Imported Material: Soil Aggregate, meeting Section 901.09 with a gradation meeting a I-6 as given in Table 901-2, NJDOT Classification for Borrow Excavation, Bridge Foundation, Section 203.03.

PART 3 - EXECUTION

3.1 STOCKPILING

A. Stockpile materials on site at locations designated by Owner.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. Separate differing materials with dividers or stockpile apart to prevent mixing.

D. Prevent intermixing of soil types or contamination.

E. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

3.2 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION

SECTION 312600 - EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Volume 1 Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes temporary excavation support and protection systems.

B. Related Sections include the following:

1. Division 1 Section "Temporary Facilities and Controls" for temporary utilities and support facilities.
2. Division 31 Section "Earthwork" for excavating and backfilling and for existing utilities.

1.3 PERFORMANCE REQUIREMENTS

A. Design, furnish, install, monitor, and maintain excavation support and protection system capable of supporting excavation sidewalls and of resisting soil and hydrostatic pressure and superimposed and construction loads.

1. Provide professional engineering services needed to assume engineering responsibility, including preparation of Shop Drawings and a comprehensive engineering analysis by a qualified professional engineer.
2. Prevent surface water from entering excavations by grading, dikes, or other means.
3. Install excavation support and protection systems without damaging existing buildings, pavements, and other improvements adjacent to excavation.

1.4 SUBMITTALS

A. Shop Drawings for Information: Prepared by or under the supervision of a qualified professional engineer for excavation support and protection systems.

1. Include Shop Drawings signed and sealed by the qualified professional engineer responsible for their preparation.

B. Qualification Data: For Installer and professional engineer.

C. Photographs or videotape, sufficiently detailed, of existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by the absence of, the installation of, or the performance of excavation support and protection systems.

1.5 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.

B. Project-Site Information: A geotechnical report has been prepared for this Project and is available for information only. The opinions expressed in this report are those of geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by geotechnical engineer. Owner will not be responsible for interpretations or conclusions drawn from this data.

1. Make additional test borings and conduct other exploratory operations necessary for excavation support and protection.
2. The geotechnical report is available from the owner upon request.

C. Survey adjacent structures and improvements, employing a qualified professional engineer or land surveyor; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

1. During installation of excavation support and protection systems, regularly resurvey benchmarks, maintaining an accurate log of surveyed elevations and positions for comparison with original elevations and positions. Promptly notify Architect if changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that are either new or in serviceable condition.

B. Structural Steel: ASTM A 36/A 36M, ASTM A 690/A 690M, or ASTM A 992/A 992M.

C. Steel Sheet Piling: ASTM A 328/A 328M, ASTM A 572/A 572M, or ASTM A 690/A 690M; with continuous interlocks.

D. Wood Lagging: Lumber, mixed hardwood, nominal rough thickness of 4 inches .

E. Cast-in-Place Concrete: ACI 301, of compressive strength required for application.

F. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation support and protection system operations.

1. Shore, support, and protect utilities encountered.

B. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

C. Locate excavation support and protection systems clear of permanent construction so that forming and finishing of concrete surfaces is not impeded.

D. Monitor excavation support and protection systems daily during excavation progress and for as long as excavation remains open. Promptly correct bulges, breakage, or other evidence of movement to ensure that excavation support and protection systems remain stable.

E. Promptly repair damages to adjacent facilities caused by installing excavation support and protection systems.

3.2 SOLDIER BEAMS AND LAGGING

A. Install steel soldier beams before starting excavation. Space soldier beams at regular intervals not to exceed allowable flexural strength of wood lagging. Accurately align exposed faces of flanges to vary not more than 2 inches from a horizontal line and not more than 1:120 out of vertical alignment.

B. Install wood lagging within flanges of soldier beams as excavation proceeds. Trim excavation as required to install lagging. Fill voids behind lagging with soil, and compact.

C. Install wales horizontally at centers indicated and secure to soldier beams.

3.3 SHEET PILING

A. Before starting excavation, install one-piece sheet piling lengths and tightly interlock to form a continuous barrier. Limit vertical offset of adjacent sheet piling to 60 inches. Accurately align exposed faces of sheet piling to vary not more than 2 inches from a horizontal line and not more than 1:120 out of vertical alignment. Cut tops of sheet piling to uniform elevation at top of excavation.

3.4 TIEBACKS

A. Tiebacks: Drill for, install, grout, and tension tiebacks into position. Test load-carrying capacity of each tieback and replace and retest deficient tiebacks.

1. Test loading shall be observed by a qualified professional engineer responsible for design of excavation support and protection system.
2. Maintain tiebacks in place until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.5 BRACING

A. Bracing: Locate bracing to clear columns, floor framing construction, and other permanent work. If necessary to move brace, install new bracing before removing original brace.

1. Do not place bracing where it will be cast into or included in permanent concrete work, unless otherwise approved by Architect.
2. Install internal bracing, if required, to prevent spreading or distortion of braced frames.
3. Maintain bracing until structural elements are supported by other bracing or until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.6 REMOVAL AND REPAIRS

A. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and bear soil and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils or damaging structures, pavements, facilities, and utilities.

1. Remove excavation support and protection systems to a minimum depth of 48 inches below overlying construction and abandon remainder.
2. Repair or replace, as approved by Architect, adjacent work damaged or displaced by removing excavation support and protection systems.

B. Leave excavation support and protection systems permanently in place.

END OF SECTION 312600

SECTION 314850 – LAWN REJUVENATION

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 Scope of Work

A. Provide necessary labor, materials, tools and services to seed all disturbed areas after construction.

B. Seeding practices will include:
1. Furnishing and spreading topsoil in designated areas and areas disturbed by this Work.
2. Seeding
3. Maintenance and repair
4. Cleanup

1.3 SUBMITTALS

A. Topsoil sample.

1.4 DELIVERY

A. Store and protect products in accordance with the manufacturer's recommendations.

B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

1.5 SCHEDULING

A. This work will be undertaken only after all other items are complete and during March 15 through June 1, or September 15 through November 1. End dates given are for the completion of all seeding work. Permanent seeding applications will be performed as soon as possible after soil supplement operations are completed.

1.6 GUARANTEE

A. The Contractor will guarantee all seeded areas for a period of 12 months after acceptance of work as determined by the Project Administrator.

PART 2 - PRODUCTS

2.1 SEED

A. Permanent Seeding Mix:

Seed shall be sown at seven (4) pounds per 1000 (one thousand) square feet.

.75 lbs Festuca rubra	Creeping Red Fescue
2.75lbs Festuca rubra commutata	Jamestown Chewing Fescue
.50 lbs Lolium perenne	Perennial Ryegrass

B. All mixes to have 0.15% maximum weed seed.

PART 3 - EXECUTION

3.1 PREPARATION

A. All areas disturbed by construction will be considered areas to receive this work.

B. The Contractor will examine areas and conditions and report any defects detrimental to this work. Do not proceed until such defects are corrected, as start of work will be considered an acceptance of conditions.

3.2 TOPSOIL AND SOIL AMENDMENTS

A. Approved topsoil will be delivered and spread over all areas to receive seed to a minimum depth of 3", and to bring areas to finish grades, and with a tolerance of plus or minus 1/2". Compact with a roller, one weighing not over 120 lbs. per foot width of roller of roller or by other acceptable methods, as directed. Remove overdepth topsoil. Do not place topsoil in a wet or frozen condition, and place during dry weather.

B. Lime will be applied separately and prior to the application of any fertilizer or seed and, only on seed beds as prepared above. Apply lime at a rate of 4 lbs/1000 SF to topsoil in areas to be seeded. Blend lime into top 2 inches minimally of topsoil by raking, disking or harrowing, or other acceptable method, evenly and uniformly. Liming will precede fertilizer operations by 10 days.

C. Apply 10-20-20 analysis dry fertilizer at a rate specified by manufacturer. Fertilizer will be applied uniformly just prior to seeding operations and, after which, the seedbed will again be properly graded and dressed to a smooth finish.

3.3 MANUAL SEEDING OPERATIONS

A. After seed bed preparation, disturbed areas will be seeded by sowing evenly with a mechanical spreader at the rate of 4 pounds per 1000 square feet in two operations, crosswise.

B. All seed will be fresh, clean and of the latest crop. No seed will be utilized that has a mix date older than nine (9) months.

C. After seed is sown, it will be raked lightly into the soil to a depth not exceeding 1/4 inch with a flexible rake, then rolled with a water-ballast roller.

D. Clean weed-free straw or hay mulch will be spread over the seeded area at the rate of approximately 60 pounds per 1000 square feet so that approximately 50% of the surface soil is visible after the mulch settles. At no
time will any deviation be permitted resulting in less than 20% of the surface being visible. Mulch will be anchored or pressed into place by approved methods to avoid its being blown away. After mulching, the seeded area will be well-watered, but not flooded, to a moist depth of 4".

E. Temporary seeding is primarily for use in soil erosion and sedimentation control operations and will be performed in the same manner as manual seeding. Soil amendments are not required for temporary seeding, and operations can be performed throughout the growing season, or from March 1 through November 1.

3.4 MAINTENANCE

A. Grass and soil will be kept constantly wet, close to the saturation point for the ten days following seeding.

B. Areas and spots which do not show a prompt catch of grass will be reseeded; this operation will be repeated until a complete coverage is obtained. When the areas does not need to be reseeded, it will be thoroughly wetted every time the surface shows evidence of drying out, and be continued through the maintenance period.

C. Control of growth of weeds. Weedwhack or mow seeded areas around trees and shrubs when grass or any weed growth exceeds a height of 6 inches.

D. Contractor will install barrier around newly seeded areas as protection from pedestrian traffic. Such protection will remain until the completion of the contract work, whereupon, it will be removed and disposed by the Contractor.

E. Maintenance of seeded areas will commence immediately after each portion of lawn is completed and will continue for a period of three cuttings.

END OF SECTION 314850

SECTION 321216 - HOT-MIXED ASPHALT (HMA-MIX)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 00 and 01 Specification Sections, apply to this Section.

B. The quality of materials and performance of work specified in this Specification section shall be in accordance with the Standard Specifications.

C. The work of this section includes construction and overlay of the bituminous pavement areas as specified and/or shown on the Plans or as directed by the ARCHITECT with hot-mixed bituminous concrete materials and as required or patching and repair of asphalt surfaces or to accommodate new or relocated utility services, or to repair asphalt after the removal of the existing generator.

1.2 REFERENCE STANDARDS

A. Standard Specifications

1.3 DEFINITIONS

A. Subgrade: Surface upon which pavement structure will be constructed.

B. Subbase: That portion of the pavement cross section consisting of quarry processed stone and/or soil aggregate.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Paving materials and mixtures - Materials and mixtures shall comply with the following sections of the Standard Specification:
   1. Hot Mix Asphalt surface course and level course:
      a. Materials: Section 902.02 of the Standard Specifications.
      b. Mixture: HMA 9.5M64 Surface Course, Section 902.02.
   2. Hot Mix Asphalt base course:
      a. Material: Section 902.02
      b. Mixture: HMA 19M64 Base Course, Section 902.02.
   3. Tack coat: Grade RC-70 or RC-T cutback asphalt or Grade SS-1 emulsified asphalt, Section 401.03.02 of the Standard Specifications.
   4. Prime coat: Grade MC-30 or MC-70 cutback asphalt: Section 401.03.02 of the Standard Specifications.

B. Job mix formula requirements:
   1. Provide job mix formulas for each required bituminous aggregate mixture as specified in Section 902.02.03-1 of the Standard Specifications, and as specified by the testing laboratory.
   2. Submit for the ARCHITECT's approval prior to beginning paving operations.

C. Mix design and control requirements: The design and control requirements for all paving mixtures shall conform to Section 902.02.03 of the Standard Specifications.

D. Sampling and testing for conformance to job mix formula and mix design requirements:
   1. Methods and rates of sampling bituminous mixtures shall conform to Section 902.02.04 of the Standard Specifications:
      a. Sampling shall be performed by the CONTRACTOR under the supervision of the ARCHITECT unless otherwise directed by the ARCHITECT.
      b. For small scale projects where it is not possible to attain the minimum lot size specified, a total of five (5) samples shall be taken at random for each type of mix specified.
   2. Testing of bituminous concrete mixtures to determine the quantity of bitumen, gradation of the aggregate, and conformance to mix design requirements shall be performed by the CONTRACTOR'S quality control technician, as approved by the ARCHITECT as specified in Section 902.02.04 of the Standard Specifications.
   3. Submit results of tests on forms acceptable to the ARCHITECT. Forms shall be signed by producer's quality control technician and forwarded to the ARCHITECT as directed.

E. Preparation of mixtures: The preparation of all bituminous mixtures shall conform to Section 902 of the Standard Specifications.

PART 3 - EXECUTION

3.1 METHODS OF CONSTRUCTION

A. Qualifications of bituminous concrete producer: Use only materials which are furnished by a bulk bituminous concrete producer regularly engaged in the production of hot-mix, hot-laid bituminous concrete.

B. Paving methods - Methods shall comply with the following sections of the Standard Specification:
   1. Section 401: Hot Mix Asphalt Courses
   2. Section 301.03.01: Subbase.

C. The method of construction to include bituminous concrete plant and equipment, bituminous concrete paver, vehicles for transporting bituminous mixtures, rollers, and all construction methods shall conform to Section 401 of the Standard Specifications for hot mix asphalt courses, except as modified by the Supplemental Requirements below:
   1. Equipment shall be as specified in Section 401.02.02 of the Standard Specifications.
   2. Excavation for base pavement:
      a. Prior to excavating, cut existing pavements vertically with a sharp tool on a straight line along designated excavation limits, as directed by the ARCHITECT.

b. Remove existing pavement, subgrade material, earth, rock, stone and all other materials encountered to required depth.
c. Promptly dispose of excess excavated materials.
d. Prepare subgrade for base repairs and paving as specified in Specification Section entitled “Site Excavation, Filling and Grading”.

3. Proof roll:
   a. Proof roll subgrade surfaces using a vehicle equal to, or greater than the weight of the vehicles used to construct the paving, approved by the ARCHITECT.
      1) Check for unstable areas.
      2) Check for areas requiring additional compaction.
   b. Notify ARCHITECT of unsatisfactory conditions.
   c. Do not begin paving work until such conditions have been corrected and are ready to receive paving.
4. Surface preparation:
   a. Earth and subbase surfaces:
      1) Remove loose and foreign material from compacted subgrade surface immediately before application of paving.
      2) Use power broom or blowers and hand brooming as required.
      3) Do not displace subgrade material.
   b. Existing pavement surfaces:
      1) Remove loose and foreign material from existing pavement surfaces immediately before application of paving.
      2) Use self-propelled mechanical sweepers. Supplement with hand brooming as required.
      3) Pay particular attention to cleaning of gutterlines and outer edges of pavement areas.
      4) Remove all weeds, grass or other vegetative matter growing in pavement areas, particularly along curbs.
   c. Minor patching:
      1) Existing pavement surfaces: Fill in depressions, and patch pavement in overlay areas that are not marked out for base repairs. Patch as directed by ARCHITECT in the field.
5. Tack coat:
   a. Apply to cleaned surfaces of all pavements to be overlaid and at adjoining curb lines.
   b. Apply to cleaned surfaces of newly constructed base pavement if coated with dust, dirt, foreign materials in sufficient amount to prevent bond with surface course paving as determined by ARCHITECT.
   c. Apply to edges of paving where base repairs are to be made.
   d. Apply tack coat material at temperatures, and observe safety precautions, specified in Section 401.03.02 of the Standard Specifications.
   e. Apply at rate of 0.02 to 0.08 gallon per square yard for cut back asphalt or 0.04 to 0.15 gallons per square yard for diluted emulsified asphalt as directed by ARCHITECT, immediately prior to placing pavement.
   f. Apply track coat by brush to contact surfaces of pavement cold joints, curbs, gutters, manholes, and other structures projecting into or abutting asphalt concrete pavement.
   g. Allow surface to dry until material is in a condition of tackiness to receive pavement.

h. Take precautions to insure tack coat is not applied to exposed surfaces or curbs or other exposed surfaces. Tack coat so applied shall be removed by CONTRACTOR at no additional cost to OWNER.

6. Prime coat (subbase surfaces): If and Where Directed
   a. Uniformly apply at rate of 0.15 to 0.35 gallon per square yard over compacted and cleaned subbase surface.
   b. Apply enough material to penetrate and seal, but not flood the surface.
   c. Allow to cure and dry as long as required to attain penetration and evaporation of volatile components, and in no case less than twelve (12) hours unless otherwise acceptable to the ARCHITECT.
   d. Apply prime coat material at temperatures, and observe safety precautions, specified in Section 401.03.02 of the Standard Specifications.
7. Perform work as additionally described in the Statement of Work.
8. For pavement replacement, install compacted thickness indicated on Plans of bituminous stabilized base course over excavated area and dense graded aggregate subbbase.
9. For pavement replacement install compacted thickness indicated on Plans of hot mix asphalt surface course over base course.
10. For new pavements, install hot mix asphalt base course in layers of not more than two and one-half (2 1/2") inches compacted thickness, except in those areas where stone mix is prescribed and the total combined thickness of the surface course, binder course, if any, and base course is seven (7") inches or greater, the CONTRACTOR may construct layers of not more than four (4") inches compacted thickness.
11. The requirements for string line or ski type reference systems for bituminous concrete pavers is deleted.
12. General surface requirements:
    a. Test finish surface of each concrete course for smoothness using a ten (10) foot straightedge.
    b. The straightedges shall have projections on the bottom at each end, either built-in or firmly attached, so that it is supported six (6") inches above the pavement surface at the ends. It shall be free from warp and deflection, subject to approval by the ARCHITECT, and furnished by the CONTRACTOR without additional compensation.
    c. Check surfaced areas at intervals and in directions specified by ARCHITECT.
    d. Check surfaces for pavement smoothness immediately after initial compaction, and correct variations by removing or adding material as may be necessary. Then rolling shall be continued as specified.
    e. Immediately after final rolling and while the pavement is still hot, the smoothness of the course shall be checked again and all projections or depressions exceeding the specified tolerances shall be corrected by removing defective work and replacing it with new surface course as specified. Portions of the surface otherwise unsatisfactory shall be replaced to the satisfaction of the ARCHITECT.
    f. Finished surfaces shall be free of all roller marks, ridges and voids.
13. Surface requirements:
    a. Base courses will not be acceptable if exceeding 1/4 inch in ten feet (10') when tested in any direction.
    b. Intermediate courses and surface courses will not be acceptable if exceeding 1/4 inch in ten feet (10') when tested in any direction.

D. Field quality control:

1. Pavement cores and testing for the determination of conformance to control air voids and pavement thickness shall be provided by the CONTRACTOR as required by the ARCHITECT in accordance with Section 401.03.05 of the Standard Specifications.
2. Areas of pavement removed for field quality control testing shall be replaced by the CONTRACTOR as follows:
   a. Clean debris from core area. Cut all exposed pavement edges vertical.
   b. Apply tack coat to exposed surfaces before installing replacement pavement.
   c. Fill core area with surface course mixture for the full depth of the core.
   d. Compact and grade mixture; seal repaired area with tack coat; apply a thin layer of sand over tack coat in a manner satisfactory to the ARCHITECT.

END OF SECTION

SECTION 329219 – SEEDING (SITE WORK)

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included:
1. Preparation of subgrade.
2. Furnishing and placing additional topsoil to achieve required depths.
3. Seeding.
4. Fertilizing.

B. Related Work:
1. Other sections of the specifications, not referenced below, shall also apply to the extent required for proper performance of this work.
2. See Lawn Rejuvenation for seeding mix.

C. References:
1. New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction, 2001, English, and all amendments thereto (Standard Specifications).

1.2 SUBMITTALS

A. Comply with provisions of Section 01 30 00, Submittal Procedures.

B. Manufacturer's product data:
1. Complete materials list of all materials proposed to be furnished and installed under this section.
2. Specifications and other data required to demonstrate compliance with the specified requirements.
3. Manufacturer’s descriptive literature and printed application instructions for erosion control mulching blanket.

C. Delivery slips:
1. Accompany all shipments of topsoil with delivery slip showing the product weight and name of supplier.
2. Each shipment of grass seed mixture shall be accompanied by a certified weight slip and an analysis of the composition, purity, and germination of the seed mixture, certified by the seed house and furnished at the time of delivery. All tags and labels shall comply with N.J.S.A. 4:8-17.15.

D. Test reports:
1. Submit results of test report for pH analysis of soil, and when ground limestone is required, the total amount of magnesium and calcium oxides required.

E. Manufacturer's recommended installation procedures.

1.3 QUALITY ASSURANCE

A. Qualifications of manufacturer:
   1. Products used in the work of this section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the ARCHITECT.

B. Qualifications of workmen:
   1. Provide at least one person who shall be present at all times during execution of the work of this section, who shall be thoroughly familiar with the specified requirements and the materials and methods needed for Their execution, and who shall direct all work performed under this section.
   2. Provide adequate numbers of workmen skilled in the necessary crafts and properly informed of the methods and materials to be used.
   3. In acceptance or rejection of the work of this section, the ARCHITECT will make no allowance for lack of skill on the part of workmen.

C. Basis of acceptance:
   1. The manufacturer's installation instructions, as approved by the ARCHITECT, will provide the basis for acceptance or rejection of the work performed under this section.

1.4 PRODUCT DELIVERY STORAGE AND HANDLING

A. Comply with provisions of Section 01 60 00, Product Requirements.

B. Protection: Use all means necessary to protect the materials of this section before, during, and after installation and to protect the installed work and materials of all other trades.

C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the ARCHITECT and at no additional cost to the OWNER.

D. Delivery and storage: Deliver all materials to the job site in their original unopened containers with all labels intact and legible at time of use. Store in strict accordance with the manufacturer's recommendations as approved by the ARCHITECT.

1.5 PROJECT CONDITIONS

A. Environmental requirements:
   1. Plant seed on unfrozen soil. Soil shall be friable condition at time of seeding.
   2. Do not perform seeding when wind exceeds 15 mph.
   3. Do not seed between calendar dates from May 15th to August 15th, and from October 15th to March 1st, except when weather and soil conditions are favorable as determined by ARCHITECT.
   4. Do not apply synthetic plastic emulsion binder or vegetable based gel binder during rain or freezing weather.

B. Perform mulching only after preceding related work is accepted.

C. Restrict foot and vehicular traffic from mulched areas to end of maintenance period.

D. Disturbed areas that will be exposed in excess of 14 days shall be temporarily seeded and/or mulched until proper weather conditions exist for establishment of a permanent vegetative cover except in areas where final restoration is expected to be completed within 7 days after the completion of construction, in which case no temporary protective measures will be required. If final restoration is expected to begin more than 7 days and completed more than 30 days after the start of construction, seeding shall be required for temporary protection, except where seasonal conditions are not suitable for growing vegetation. In this case, mulch may be applied until conditions are suitable for establishing vegetative cover or until final restoration is implemented. [NJAC 7:22-10.11(c) 3]

1.6 GUARANTEE

A. If, at the end of the 12-week lawn maintenance period, a satisfactory stand of lawn and grass has not been produced, the Contractor shall renovate and reseed the lawn and unsatisfactory portions thereof immediately, or if after September 1, during the next planting season. If a satisfactory stand of lawn and grass develops by July 1 of the following year, it will be accepted. If it is not accepted, a complete replanting will be required during the planting season meeting all of the requirements specified under CONSTRUCTION METHODS.

B. A satisfactory stand is defined as a section of lawn that has:
1. No bare spots larger than 3 square feet.
2. Not more than 10 percent of total area with bare spots larger than 1 square foot.
3. Not more than 15 percent of total area with bare spots larger than 6 inches square.

C. Twelve weeks after the start of maintenance on the last section of completed lawn, and on written notice from the Contractor, the ARCHITECT will, within 15 days of such written notice, make an inspection to determine if a satisfactory stand has been produced. If a satisfactory stand has not been established, another inspection will be made after written notice from the Contractor that the lawn is ready for inspection following the next growing season.

PART 2 - PRODUCTS

2.1 GENERAL

A. Proprietary Products: Whenever materials or equipment are described using a certain brand, make, supplier, manufacturer or by specification, such naming shall be regarded as a standard and be intended to convey function, design features, general style, type, materials of construction, character and quality of material or equipment, serviceability and other described essential characteristics.

B. Other materials may be considered by the ARCHITECT in accordance with the provisions of Section 01 60 00, Product Requirements.

2.2 TOPSOIL

A. Topsoil shall not contain stones, lumps, roots, or similar objects larger than 2 inches in any dimension and shall have not less than a 5.8 pH value. When the topsoil has less than a 5.8 pH

value, it shall be increased by applying pulverized limestone at a rate necessary to attain a 6.5 pH value. When the topsoil has greater than a 7.0 pH value, it shall be decreased to attain a 6.8 pH value. The method to decrease the soil pH shall be submitted for approval before work.

B. Unacceptable Topsoil Sources.
   1. Material stripped from the following sources shall not be considered suitable for use as topsoil:
      a. Soils having less than 4.1 pH value.
      b. Chemically contaminated soils.
      c. Areas from which the original surface has been stripped and/or covered over such as borrow pits, open mines, demolition sites, dumps, and sanitary landfills.
      d. Wet excavation.
   2. Topsoil furnished from sources outside the limits of the Project shall have a minimum organic content of not less than 2.75 percent by weight. When the organic content is less than 2.75 percent it shall be increased by, adding peat conforming to Subsection 909.11 at a rate necessary to attain this minimum organic content. The organic content of soils will be determined according to AASHTO T 194 except that the sample is to be taken from oven-dried soil passing a No. 10 sieve. The organic content of all topsoil used for planting shall conform to the requirements specified above.

C. Gradation of Topsoil Sources:
   1. The gradation of the topsoil furnished from sources outside the limits of the Project will be determined using the Bouyoucos Hydrometer Analysis conforming to AASHTO T 88. The gradation of the topsoil shall be within the following:
      a. Not more than 20 percent of the material submitted from an off-site sample shall be retained on a No. 10 sieve.
      b. If more than one-half of the sand is smaller than 20 mils:

	Percent
Sand (80 mils to 2 mils)	40 - 80
Silt (2 mils to 0.2 mils)	0 - 30
Clay (0.2 mils and smaller)	0 - 30

      c. If more than one-half of the sand is larger than 20 mils:

	Percent
Sand (80 mils to 2 mils)	40 – 80 or 40 - 75
Silt (2 mils to 0.2 mils)	0 – 30 or 0 - 30
Clay (0.2 mils and smaller)	15 – 30 or 0 – 30

   2. Material outside these ranges is not suitable for use as topsoil.

2.3 SOIL CONDITIONERS

A. Fertilizer: Conforming to Subsection 909.02 of the Standard Specifications.

B. Peat: Conforming to Subsection 909.11 of the Standard Specifications.

C. Lime: Conforming to Subsection 909.03 of the Standard Specifications.

2.4 SEED MIXTURE

A. Seed mixture shall be as shown on the drawings and specifications.

B. Use clean, dry, new crop seed, use certified seed.

2.5 WATER: Potable.

2.6 OTHER MATERIALS

A. All other materials, not specifically described but required for a complete and proper installation of the work of this section, shall be new, first quality of their respective kinds, and as selected by the CONTRACTOR subject to the approval of the ARCHITECT.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that clearing, earthwork, grading and other preceding work affecting ground surface have been completed.

B. Verify that trees, shrubs, and other plants to remain as part of final landscaping have been identified.

C. Assure that area to be topsoiled is cleared, shaped, dressed, and approved by ARCHITECT.

D. Verify that soil is unfrozen and within allowable moisture content.

E. Do not proceed with topsoiling, seeding or mulching until conditions are satisfactory.

3.2 INSTALLATION

A. Preparation of Subgrade: After rough grading is completed and before topsoil is spread, thoroughly scarify ground to minimum depth of eight (8) inches with a toothed ripping machine by running in two directions at right angles over the entire surface to be planted.

B. Topsoiling:
1. Topsoil shall be replaced with adequate amounts of topsoil material to restore the disturbed area to its original, pre-disturbance grade and depth of topsoil. [NJAC 7:22-10.11(e) 2]
2. Spread topsoil over the prepared rough grade using a rubber-tired tractor with grader blade or equivalent not weighing more than 3-1/2 tons.
3. Place an even layer that will produce a prescribed compacted thickness of four (4) inches unless otherwise indicated.
4. Provide required topsoil from approved sources located outside project limits if quantity of topsoil obtained from stripping is insufficient for the project requirements.
5. Rake the topsoiled area to a uniform grade so that all areas drain, as indicated on the grading plan.
6. Lightly compact with a cultipacker before planting grass.
7. Remove stones, lumps, roots, and other objects larger than one (1) inch in any dimension

from graded topsoil surface.

C. Liming and fertilizing:
1. Apply line uniformly at the rate indicated on the drawings with a mechanical spreader to the entire area for grass, or at the rate determined from soil test.
2. Apply commercial fertilizer at the rate indicated on the drawings distributing uniformly with a mechanical spreader, or at rate determined from soil test.

D. Seeding:
1. Time of Seeding: Conduct seeding under favorable weather conditions during seasons which are normal for such work as given in the New Jersey Soil Erosion and Sediment Control Standards.
2. Broadcast half of seed with mechanical seeder.
3. Broadcast remaining half of seed at right angles to first seeding pattern, using same broadcast method.
4. Apply seed at the rate indicated on the drawings.
5. Cover seed to depth of 1/8 inch by raking or other method approved by ARCHITECT.
6. Roll seeded area with roller weighing maximum of 150 pounds per foot of width.
7. Water seeded area until water penetrates to a depth of 3 to 4 inches.
8. Finished seeded areas shall be smooth, even, and to prescribed lines and contour.

E. Mulching:
1. Apply straw mulch to seeded areas within five (5) days of seed application. [NJAC 7:22-10.11(e) 3]
2. Leave all mulch in place and allow to disintegrate, except remove excessive amounts of straw when directed by the ARCHITECT.
3. Spread hay or straw uniformly in layer 1 to 1½ inches thick, loose measurement.
4. Bind mulch in place using vegetable based gels or synthetic emulsion.
5. In areas where pedestrian traffic would make use of binder objectionable, ARCHITECT may direct spreading of small quantities of topsoil on the mulch as an alternative method of securing the mulch in place.

3.3 CLEANING

A. Immediately clean spills, soil, and conditioners on paved and finished areas

B. Distribute, stockpile, or haul topsoil in excess of the quantity required for the project as directed by the ARCHITECT

C. Dispose of protective barricades and warning signs at termination of maintenance period.

PART 4 - PAYMENT

4.1 SEEDING

A. Quantity and Payment: No separate payment shall be made for this item. Include all costs for SEEDING in the prices bid for the various related items of work as designated in the Proposal.

END OF SECTION 329219