Project Manual

catawba county
MAKING. LIVING. BETTER.

Agricultural Resource Center & Catawba Education Center

2760 US HWY 70 SE
Hickory, NC 28602



Issued for Bids
June 16, 2025
Project Number #23003

adwarchitects
environmentsforlife
architecture planning interiors

Division 00 - Procurement and Contracting Requirements

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Hickory, NC
ADW Project Number: 23003

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ARCHITECT	James G. Powell, AIA	
		
PLUMBING ENGINEER FIRE PROTECTION ENGINEER MECHANICAL ENGINEER ELECTRICAL	Don Brittain, PE	
CIVIL ENGINEER	William S. Clayton, PE	
		

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Catawba County |Agricultural Resource Center & Education Center

ADW Project # 23003

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ADVERTISEMENT FOR BIDS
CATAWBA COUNTY AGRICULTURAL RESOURCE & CATAWBA EDUCATION CENTER
2760 US HWY 70 SE HICKORY, NC 28602

Catawba County is soliciting **Sealed Bids** from qualified contractors for the renovation of Catawba County Agricultural Resource & Catawba Education Center project which is located at 2760 US HWY 70 SE Hickory, NC 28602. Sealed bids will be received at the Catawba County Government Center in the 2nd Floor Meeting Room, Rm 238 (25 Government Dr. Newton, NC 28658) on **Thursday July 10th, 2025** until **2:00 PM** and thereafter publicly opened and read aloud.

Bids will be received for a Single-Prime, Lump Sum contract. The extent of the Work is shown on the drawings and specified in the project manual. Bids must be submitted in a sealed envelope and plainly labeled on the outer most package "**Catawba County Agricultural Resource & Catawba Education Center BID**". The inside and outside packages for each Bid shall include the Bidder's name, address and license number. No responsibility shall be attached to Catawba County for the premature opening of any Bid not properly addressed or identified.

Bid documents can be downloaded at no charge from the following designated County website: https://www.catawbacountync.gov/county-services/purchasing/bid-notices/ This website will be updated periodically with addenda and other information relevant to submitting a Bid for the Project. All official notifications, addenda, and other Bidding Documents will be offered only as detailed in this Advertisement. Neither Owner nor Architect will be responsible for full or partial sets of Bidding Documents, including Addenda if any, obtained from sources other than the Issuing Office.

Bidding Documents will be available for inspection, **by appointment**, at the Catawba County Purchasing Department, 25 Government Drive, Newton, North Carolina 28658, Phone: 828-465-8224.

The table below shows the intended bid schedule for this Project. Owner will make every effort to adhere to this schedule:

Event	Responsibility	Date and Time
Advertisement Issued	Owner	June 16, 2025
Pre-Bid Conference	Owner/Contractor	June 24, 2025 at 2:00 PM ET
Submit Written Questions	Contractor	July 2, 2025 at 5:00 PM ET
Bid Opening	Contractor	July 10, 2025 at 2:00 PM ET
Contract Award	Owner	TBA
Contract Effective Date	Owner	Upon Execution

Questions about the Bid documents should be sent in writing to ADW Architects Attn. Phillip Steele; psteele@adwarchitects.com and alujan@adwarchitects.com no later than **July 2nd, 2025 at 5:00**. All questions received before the deadline will be addressed in an Addendum. Any questions received after the deadline may not be addressed prior to the Bid Opening.

There will be a **Mandatory Pre-Bid Conference** at **2:00 PM on Tuesday June 24th, 2025** on-site which is located at 2760 US HWY 70 SE Hickory, NC 28602. Bids will not be accepted from Bidders who do not attend the mandatory pre-bid conference. The purpose of the mandatory conference and site visit is for prospective Contractors to apprise themselves of the conditions and requirements that will affect the

performance of work called for in the Bid Documents. Any Bidders who are not present by 2:00 PM will not be able to participate in the pre-bid conference.

Each bid proposal must be accompanied by a cashier's check issued by or a certified check drawn on a bank of trust company insured by the Federal Deposit Insurance Corporation payable to Catawba County in an amount of five percent (5%) of the gross amount of the bid proposal or by a bond in the above amount executed in accordance with and conditioned as prescribed by G.S. 143-129, State of North Carolina. If the successful bidder fails to give satisfactory surety as required by law, the Owner will retain the above deposit. All contractors are hereby notified that they shall be properly licensed under the state laws governing their trades.

Bidding General Contractor to include Performance Bond and Payment Bond for 100% of Contract Amount in the base bid. All bidders are hereby notified that they shall be properly qualified under the state laws governing their respective trades. Contractors must be licensed for the work in the state of the project's jurisdiction.

All bidders are notified that Catawba County has a verifiable five percent (5%) goal for participation by minority owned and women owned businesses in the total value of Work for which prime contractors are awarded pursuant to North Carolina General Statutes Section 143-128.

Catawba County reserves the right to reject all bids, to waive informalities and technicalities, and to cancel the Bid Process at any time.

END OF ADVERTISEMENT FOR BIDS

AIA® Document A701® – 2018

Instructions to Bidders

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

Catawba County Agricultural Resource Center & Catawba Education Center
2760 US Hwy 70 SE
Hickory, NC 28602

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

Catawba County
25 Government Drive
Newton, NC 28658

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

ADW Architects, P.A.
2815 Coliseum Centre Drive
Suite 500
Charlotte, NC 28217

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

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

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

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

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User Notes: (811095661)

ARTICLE 1 DEFINITIONS

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

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

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

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

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

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

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

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

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

ARTICLE 2 BIDDER'S REPRESENTATIONS

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

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

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 Distribution

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

(Paragraph deleted)

From the County website, as detailed in the advertisement for bids.

(Paragraph deleted)

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

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

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

§ 3.2 Modification or Interpretation of Bidding Documents

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

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids.
(Paragraph deleted)
By email, as detailed in the advertisement for bids.

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

§ 3.3 Substitutions

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

§ 3.3.2 Substitution Process

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

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

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

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

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

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

§ 3.4 Addenda

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

Also to all contractors who attend the mandatory pre-bid meeting.

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

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§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

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

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 Preparation of Bids

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

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

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

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

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

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

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

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

§ 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security:
(Paragraph deleted)
Made payable to Owner in an amount of 5% of Bidder's total bid price and in the form of a bid bond meeting the requirements of Section 4.2.3.

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

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

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

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§ 4.3 Submission of Bids

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

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

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

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

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

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

§ 4.4 Modification or Withdrawal of Bid

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

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

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

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

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

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

§ 5.2 Rejection of Bids

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

§ 5.3 Acceptance of Bid (Award)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. Unless otherwise prohibited by law, the Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's best interests.

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§ 5.3.2 Unless otherwise prohibited by law, the Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

§ 6.1 Contractor's Qualification Statement

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

§ 6.2 Owner's Financial Capability

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

§ 6.3 Submittals

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

.1 a designation of the Work to be performed with the Bidder's own forces;

.2 names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and

.3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

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

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

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

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 Bond Requirements

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

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

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

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

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

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§ 7.2 Time of Delivery and Form of Bonds

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond.

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

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

ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

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

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

.2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

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

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda:

Number	Date	Pages

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.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.)

[ ] The Sustainability Plan:

Title	Date	Pages

[ ] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents listed below:
(List here any additional documents that are intended to form part of the Proposed Contract Documents.)

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INFORMATION FOR BIDDERS

1. **BID LOGISTICS**. Bids will be received by the Purchasing Manager for Catawba County or authorized representative at the Catawba County Government Center on the 2nd Floor Meeting Room, Rm 238 (25 Government Dr. Newton, NC 28658) on **Thursday July 10th, 2025** until **2:00 PM** and thereafter publicly opened and read aloud.

   There will be a **Pre-Bid Conference** at **2:00 PM on Tuesday June 24th, 2025** on-site which is located at 2760 US HWY 70 SE Hickory, NC 28602. All General Contractors should be represented at the meeting. Interested Subcontractors are encouraged to attend. All Contractors who are not present by 2:00 PM will not be able to participate in the pre-bid conference.

   Each Bid must be submitted in a sealed envelope, addressed to Catawba County. Each sealed envelope containing a Bid must be plainly marked on the outside for "**Catawba County Agricultural Resource & Catawba Education Center BID"** and the envelope should bear on the outside the Bidder's name, address, and license number. Absolutely no bids will be accepted after **2:00 p.m**. local time.

   If submitting Bid by mail or other delivery method, the Bid must be submitted sealed and plainly marked on the outside for **"Catawba County Agricultural Resource & Catawba Education Center BID ENCLOSED"** and the envelope should bear on the outside the Bidder's name, address, and license number. The delivery information is as follows:

Mailing address for delivery of Bid via US Postal Service:	**Office address for delivery by any other method (hand delivery if delivered prior to bid opening, overnight, or any other carrier):**
Catawba County Government Center Attn: Purchasing Department Post Office Box 389 Newton, North Carolina 28658	Catawba County Government Center Attn: Purchasing Department 25 Government Drive Newton, North Carolina 28658

2. **SITE INSPECTION**. The contractor shall examine the premises to determine the extent of work involved and the conditions under which he must operate in performing his work. The submission of a Bid will be construed as evidence that such an examination has been made, and no subsequent allowance will be made in this connection on behalf of the contractor for any error or negligence on his part.

3. **SINGLE PRIME CONTRACTS**. The Owner will accept bids under the single-prime contract system only. All single-prime bidders must identify on their bid the sub-contractors they have selected for the subdivisions or branches of work for:

   (1) Heating, ventilating, and air conditioning;
   (2) Plumbing;
   (3) Electrical;

   No contractor whose bid is accepted shall substitute any person as subcontractor in the place of the subcontractor listed in the original bid except with the approval of the Owner for good cause as shown by the contractor.

   The terms, conditions and requirements of each contract between the Bidder and the subcontractor set out above performing work under a subdivision or branch of work listed above shall be substantially the same as the terms, conditions and requirements of the contract between the Bidder and the Owner.

4. **BID FORM**. All Bids must be made on the required Bid form all spaces for Bid prices must be filled in, in ink or typewritten, and the Bid form must be fully completed and executed when submitted. Only one copy of the Bid form is required.

5. **ATTACHMENTS TO BID**. The following documents are to be submitted with the Bid Form For Construction Contract and are made a part of the Bid:

   A. Required Bid Security;
   B. List of Proposed Subcontractors;
   C. Non-Collusion Affidavit of Prime Bidder;
   D. E-Verify Affidavit;
   E. Evidence of authority to do business in the state of North Carolina;
   F. Required Contractor's Qualification Statement (AIA A304-2020) with supporting data;
   G. Required MWBE Affidavits.

6. **BID ACCEPTANCE/REJECTION/WITHDRAWN**. The Owner may waive informalities, irregularities, or minor defects in a Bid received and accept the Bid which, in the Owner's judgment, is in the Owner's own best interests.

   The Owner shall have the right to accept all, some, or none of the Alternates in any order or combination, and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted.

   The Contract Documents contain the provisions required for the construction of the Project. Information obtained from an officer, agent, or employee of the Owner or any other person shall not affect the risk or obligations assumed by the Contractor or relieve the Contractor from fulfilling any of the conditions of the contract.

   After the opening of bids, no bid may be withdrawn for a period of **ninety (90) days** unless otherwise specified.

7. **LIQUIDATED DAMAGES**. The Contractor is required to complete the project within **365** calendar days from notice to proceed. It shall be the responsibility of the Contractor to pursue the orderly progression of all work until the project is completed. Should the Contractor fail to assure the completion of the total project satisfactorily within the time period specified in the contract, the Contractor shall be charged with liquidated damages at a rate of **One Thousand Five Hundred Dollars ($1,500)** per calendar day until the total project is successfully completed. Completion of the project shall be defined as substantial completion (as described in the General Conditions of the Contract for Construction).

   If, through the acts or omissions of the Contractor, the sub-contractor should suffer loss or damage on the work, the Contractor agrees to settle with such other sub-contractor by agreement if such sub-contractor will so settle.

   It will be the responsibility of the Contractor to produce, within ten (10) working days after receipt of notice to proceed with work, a Proposed Work Progress Schedule to include (among other things) specifications as to time frame for work to be done. The Contactor shall submit said schedule to the Architect.

8. **BID QUALIFICATION**. The Owner may make such investigations as deemed necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any Bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Agreement and to complete the work contemplated therein.

9. **CONTRACTORS LICENSE.** All firms for the general portion of the contract must possess an up-to-date North Carolina Contractors License to do work in North Carolina plus any other

applicable licenses. All firms bidding on trade contracts or subcontracting portions of the general or a trade contract must possess all required applicable licenses for work in North Carolina.

10. **ADA REQUIREMENTS**. The Contractor during the period of this contract will be required to comply with all provisions of the Americans with Disabilities Act.

11. **BUILDERS RISK INSURANCE**. Shall be provided by the Contractor as detailed in the Construction Contract.

12. **NON-DISCRIMINATION IN EMPLOYMENT**. During the performance of this Contract, the Contractor agrees as follows:

    The Contractor will not discriminate against any employee or applicant for employment because of race, color or religion, sex, handicap or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated equal during employment without regard to race, color, sex, religion, handicap or national origin. Such action will 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 of training, including apprenticeship.

13. **PARTICIPATION BY MINORITY BIDDERS**. All bidders are notified that Catawba County has a verifiable five percent (5%) goal for participation by minority owned and women owned businesses in the total value of Work for which prime contractors are awarded pursuant to North Carolina General Statutes Section 143-128.

    NOTE: The bidder shall include with the bid proposal the form *Identification of Minority Business Participation* identifying the minority business participation it will use on the project and shall include either *Affidavit – Listing of Good Faith Efforts or Affidavit – Intent to Perform Contract with Own Workforce* as applicable. Forms and instructions are included within the bid documents. Failure to complete these forms is grounds for rejection of the bid.

END OF SECTION 00 21 19

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

****ATTACH TO BID****

State of _____)

County of _____)

Project: Catawba County Agricultural Resource Center & Catawba Education Center

_____, being first duly sworn, deposes and says that:

1. He/she is (circle: owner, partner, officer, authorized representative or agent) of _____, the Bidder that has submitted the attached Bid;

2. He/she is fully informed respecting the preparation and contents of the attached bid and of all pertinent circumstances respecting such Bid;

3. Such Bid is genuine and is not a collusive or sham Bid;

4. Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this Affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bids of any other Bidder, or to fix any overhead, profit or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against Catawba County, N.C. or any person interested in the proposed Contract; and

5. The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees or parties in interest, including this Affiant.

_____ Authorized Signature (SEAL)

_____ Printed Name

_____ Title

Subscribed and Sworn to Before me this _____ Day of _____ , 20____.

Notary Public: _____

My Commission Expires: _____ (SEAL)

AUTHORITY TO EXECUTE CONTRACT

If the Bidder is a Corporation, attach to this page a certified copy of corporate resolutions of the Board of Directors of the Corporation authorizing an officer of the Corporation to execute the Agreement contained within this document on behalf of the Corporation.

END OF SECTION

SECTION 00 41 13 - BID FORM – STIPULATED SUM – SINGLE PRIME

PROJECT: ***Catawba County Agricultural Resource & Catawba Education Center***
Catawba County, NC

NAME OF BIDDER: _____.

BUSINESS ADDRESS: _____.

LICENSE NO. _____ **DATE** _____.

This Contractor hereby proposes to furnish all materials, labor and equipment necessary to provide the Owner with a completed project as described in these specifications and as shown, detailed or noted on the drawings listed herein and to include any information provided in addenda as indicated on this proposal form.

A. CONTRACT PRICE:

Base Bid: ……($)
5% Contingency: ……..($)
Total Base Bid + Contingency: ……($)

B. UNIT PRICES:

The undersigned quotes the following unit prices to be utilized in making adjustments to the Contract sum should the addition or omission of work required by the Contract Documents be necessary. Amount listed for unit prices will apply throughout the life of the Contract.

UP #1 In-Place Concrete paving (4" thickness) per square foot $_____

C. TIME OF COMPLETION

The undersigned further agrees to begin work immediately upon receipt of the "Notice to Proceed" with an adequate force, carry the work forward as expeditiously as possible, and complete the work in **365 days**.

D. QUALIFICATIONS AND CLARIFICATIONS:

Contractor shall obtain any clarifications with the Owner in writing prior to the bid date. Bid qualifications are not permitted.

E. ADDENDUMS:

Contractor shall acknowledge receipt of all Addenda to the drawings and specifications by affixing his signature in the spaces provided below:

	Date	**Signature**
Addendum No. 1	_____	_____
Addendum No. 2	_____	_____
Addendum No. 3	_____	_____
Addendum No. 4	_____	_____
Addendum No. 5	_____	_____

F. LISTING OF MAJOR SUBCONTRACTORS:

Plumbing Contractor: _____

Mechanical Contractor: _____

Electrical Contractor: _____

G. CONTRACTOR'S LICENSE:

The undersigned further states that he is a duly licensed Contractor, for the type of work proposed, in the State of North Carolina, and that all fees, permits, etc., pursuant to the submission of this proposal have been paid in full.

Respectfully submitted this _____day of _____, 2022.
Signature of Contractor or
Authorized Agent:

Name: _____

Title: _____

Address: _____

Phone: _____

License: _____

Witness: _____

Title: _____

Date: _____

STATE OF NORTH CAROLINA

COUNTY OF CATAWBA

E-VERIFY AFFIDAVIT

I, _____(the individual attesting below), being duly authorized by and on behalf of _____ (the entity bidding on project hereinafter "Employer") after first being duly sworn hereby swear or affirm as follows:

1. Employer understands that E-Verify is the federal E-Verify program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hired employees pursuant to federal law in accordance with NCGS §64-25(5).

2. Employer is a person, business entity, or other organization that transacts business in this State and that employs 25 or more employees in this State. (mark Yes or No)

a. YES _____, or

b. NO _____

3. Employer understands that employers employing 25 or more employees in this State must use E-Verify. Each employer, after hiring an employee to work in the United States, must verify the work authorization of the employee through E-Verify in accordance with Article 2, Chapter 64 of the North Carolina General Statutes.

4. Employer's subcontractors comply with E-Verify, and if Employer is the winning bidder on this project Employer will ensure compliance with E-Verify by any subcontractors subsequently hired by Employer.

This ____ day of _____, 20_____.

_____
Signature of Affiant

Print or Type Name: _____

Title:_____

State of _____ County of _____

Signed and sworn to (or affirmed) before me, this the _____

day of _____, 20____.

My Commission Expires:_____

_____
Notary Public
Notary Printed Name: _____

(Affix Official/Notarial Seal)

END OF SECTION

AIA® Document A305® – 2020

Contractor's Qualification Statement

THE PARTIES SHOULD EXECUTE A SEPARATE CONFIDENTIALITY AGREEMENT IF THEY INTEND FOR ANY OF THE INFORMATION IN THIS A305-2020 TO BE HELD CONFIDENTIAL.

SUBMITTED BY:
(Organization name and address.)

SUBMITTED TO:
(Organization name and address.)

TYPE OF WORK TYPICALLY PERFORMED
(Indicate the type of work your organization typically performs, such as general contracting, construction manager as constructor services, HVAC contracting, electrical contracting, plumbing contracting, or other.)

THIS CONTRACTOR'S QUALIFICATION STATEMENT INCLUDES THE FOLLOWING:
(Check all that apply.)

[ ] Exhibit A – General Information
[ ] Exhibit B – Financial and Performance Information
[ ] Exhibit C – Project-Specific Information
[ ] Exhibit D – Past Project Experience
[ ] Exhibit E – Past Project Experience (Continued)

CONTRACTOR CERTIFICATION
The undersigned certifies under oath that the information provided in this Contractor's Qualification Statement is true and sufficiently complete so as not to be misleading.

Organization's Authorized Representative Signature

Date

Printed Name and Title

NOTARY
State of:
County of:
Signed and sworn to before me this day of

Notary Signature

My commission expires:

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.

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AIA® Document A310™ – 2010

Bid Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

BOND AMOUNT: $

PROJECT:
(Name, location or address, and Project number, if any)

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

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

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

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

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

Init.
/
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User Notes: (1967207478)

Signed and sealed this day of ,

	(Contractor as Principal) *(Seal)*
(Witness)	*(Title)*
	(Surety) *(Seal)*
(Witness)	*(Title)*

Init.
/

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User Notes: (1967207478)

CONSTRUCTION CONTRACT
FOR
CATAWBA COUNTY ARC AND
CATAWBA EDUCATION CENTER PROJECT

THIS AGREEMENT made as of the ___ day of _____, 2025, by and between Catawba County, a body politic and a political subdivision of the State of North Carolina, (hereinafter "County") and _____, a North Carolina Corporation, (hereinafter "Contractor"). County and Contractor are referred to herein each as a "Party" and collectively as the "Parties".

Project: Catawba County ARC and Catawba Education Center Project

Owner:
Catawba County
Attn: Mary Furtado
25 Government Drive
Newton, North Carolina 28658

Contractor:
_____ NCGC License #: _____
_____ Qualifier Name: _____
_____

WITNESSETH:

Contractor and County, in consideration of the mutual covenants and agreements herein contained, agree as follows:

1. SCOPE OF WORK: Contractor shall furnish and deliver all of the materials and perform all of the work described in the Contract Documents ("Work"), except as specifically indicated in the Contract Documents to be the responsibility of others.

   The Construction Agreement ("hereinafter Agreement") consists of the Contract Documents which includes this Contract, the General Conditions of the Construction Contract, Specifications, Plans or Drawings, any Addenda issued prior to execution of this Contract or other documents listed in this Contract or incorporated herein by reference, and any Modifications executed by the Parties after execution of this Contract, all of which form the Agreement, and are as fully a part of this Agreement as if attached to this Contract or repeated herein. The Agreement represents the entire and integrated agreement between the Parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract Documents consist of this Contract and the following:

   1. General Conditions to Construction Contract, attached as Exhibit A.
   2. Project Manual bearing the general title *"Catawba County ARC and Catawba Education Center"* ("Specifications").
   3. Drawings bearing the general title *"Catawba County ARC and Catawba Education Center"* ("Plans").
   4. Addenda numbers [_] to [_], inclusive.

5. Completed Bid Form, attached as Exhibit B ("Bid").
6. Insurance, attached as Exhibit C ("COI").
7. Performance and Payment Bonds, attached as Exhibit D-E ("Bonds").
8. Change Orders or Modifications Subsequently Executed by the Parties ("Modifications").

2. TIME OF COMPLETION: The Contractor shall commence Work to be performed under this Agreement on or about August 1, 2025, and shall fully complete all work hereunder on or before August 1, 2026, or within approximately Three Hundred Sixty-Five (365) consecutive calendar days from issuance of the Notice to Proceed ("Time of Completion"). "Substantial Completion" as used herein shall have the meaning assigned to it in Exhibit A, attached.

Where Contractor is prevented from completing any part of the Work within the Time of Completion due to delay beyond the control of Contractor, the Time of Completion may be extended in an amount equal to the time lost due to the delay if a Claim is made as provided in Section 4.2 of the of the General Conditions and if the performance of the Work is not, was not, or would not have been delayed by any other cause for which the Contractor is not entitled to an extension of the Time of Completion under the Contract Documents. Delays beyond the control of Contractor include, but are not limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work, fires, floods, epidemics, abnormal weather conditions, or acts of God. Contractor acknowledges and agrees that adjustments in the Time of Completion will be permitted for a delay only to the extent such delay (i) is not caused, or could not have been anticipated, by Contractor; (ii) could not be limited or avoided by the Contractor's timely notice to Owner of the delay or reasonable likelihood that a delay will occur; and (iii) is of a duration not less than one day. In no event will claims for delay be allowed where alleged delays do not impact the critical path of the Contractor as demonstrated on the relevant schedule provided by the Contractor for the period of time in which the delay allegedly occurred.

If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, supply chain disruptions, material or labor shortages, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor is entitled to an equitable adjustment in Time of Completion, if the adjustment is essential to Contractor's ability to complete the Work within the Time of Completion. An adjustment in the Time of Completion is Contractor's sole and exclusive remedy for the delays described in this Section.

Furthermore, to the fullest extent permitted by law, and notwithstanding anything to the contrary in the Contract Documents, an extension of the Time of Completion pursuant to Section 8.3 of the General Conditions, shall be the sole remedy of Contractor for any (i) delay in the commencement, prosecution, or completion of the Work, (ii) hindrance or obstruction in the performance of the Work, (iii) loss of productivity, or (iv) other similar claims (collectively referred to in this Section as "Delays") whether or not such Delays are foreseeable, unless a Delay is caused by acts of Owner constituting active interference with Contractor's performance of the Work, and only to the extent such acts continue after Contractor furnishes Owner with notice of such interference. In no event shall Contractor be entitled to any compensation with any Delay, including, without limitation,

consequential damages, lost opportunity costs, impact damages, or other similar remuneration. Owner's exercise of any of its rights under the Contract Documents (including, without limitation, ordering changes in the Work, or directing suspension, rescheduling, or correction of the Work), regardless of the extent or frequency of Owner's exercise of such rights or remedies, shall not be construed as active interference with Contractor's performance of the Work.

If the Time of Completion is not adjusted, then for each day in excess of the Time of Completion in which the Work is not complete, the Contractor shall pay the Owner the amount of Fifteen Hundred Dollars ($1,500.00) as liquidated damages, the rate of which is reasonably estimated and mutually agreed upon in advance, to cover the losses to be incurred by the Owner should the Contractor fail to complete the Work within the time specified.

3. CONTRACT ADMINISTRATON: Phillip Steele, ADW Architects, PA, shall serve as the Contract Administrator for this Project.

Owner's Point of Contact for Project:	Bryan Morales, Construction Coordinator
Contractor's Point of Contact for Project:	_____
This Project was designed by:	ADW Architects, PA 2815 Coliseum Centre Dr, Suite 500 Charlotte, North Carolina 28217

4. CONTRACT SUM: The Contract Sum is for an amount not to exceed _____ ($_____). The Contractor agrees to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of the above titled Project in full and complete accordance with the plans, specifications and Contract Documents to the full and entire satisfaction of Catawba County with a definite understanding that no money will be allowed for extra work without written consent of the Owner.

5. PAYMENT:
    A. Submittal and Processing of Payments. Contractor shall submit Applications for Payment in accordance with Article 9 of the General Conditions. Applications for Payment will be processed by Designer as provided in the General Conditions.
    B. Progress Payments; Retainage. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the 30th day of each month during performance of the Work as provided below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.
        1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to Liquidated Damages, in accordance with the Contract.

a. 95 percent of the value of the Work completed (with the balance being retainage).
b. 95 percent of cost of materials (excluding soil) and equipment not incorporated in the Work but delivered and suitable stored (with the balance being retainage).

2. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less Retainage as provided in Paragraph 9.4, such amounts set off by Owner as Liquidated Damages, and less 200 percent of Architect's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

C. Final Payment. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price less any such amounts set off by Owner as Liquidated Damages.

D. Consent of Surety. Notwithstanding the foregoing, Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the Surety to such payment, return, or release.

6. BID SECURITY: Each Bid must be accompanied by bid security made payable to Owner in an amount of five percent (5%) of the Bidder's Bid Price and in the form of cash, cashier's check, certified check on some bank or trust company insured by the Federal Deposit Insurance Corporation, or a bid bond issued by a surety meeting the requirements of the Owner. The Owner will only select one Bid for contract award.

7. PAYMENT BOND: The Contractor is required to submit a Payment Bond in the amount of 100% of the Contract Sum, conditioned upon the prompt payment for all labor or materials for which Contractor or a subcontractor is liable.

8. PERFORMANCE BOND: The Contractor is required to submit a Performance Bond in the amount of 100% of the Contract Sum, conditioned upon the faithful performance of this Agreement in accordance with the Plans, Specifications and conditions of the Bid and Contract Documents.

9. CONTRACTOR REPRESENTATIONS: In order to induce Owner to enter into this Contract, Contractor makes the following representations:
   A. Contractor has examined and carefully studied the Contract Documents, including Addenda.
   B. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
   C. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
   D. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site with respect to the Technical Data in such reports and drawings, if any.

E. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site.
F. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.
G. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
H. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
I. Contractor has given Contract Administrator written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Architect is acceptable to Contractor.
J. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
K. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

10. CONTRACTOR'S CERTIFICATIONS: Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10:
    A. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
    B. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
    C. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
    D. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

11. NOTICES: Any notice required by this Agreement shall be in writing and delivered by certified or registered mail, return receipt requested to the following:

Owner:	**Contractor:**	**Designer:**
Catawba County		ADW Architects, PA
Attn: Mary Furtado		Attn: Phillip Steele
25 Government Drive		2815 Coliseum Centre Dr, Ste 500
Post Office Box 389		Charlotte, NC 28217
Newton, NC 28658		

12. UTILITIES: Owner may provide certain utilities such as power or water, with connections and extensions by the Contractor.

13. ACCESS CONTROL: Owner will provide Contractor access to the Project site as reasonably necessary to perform the Work. The Contractor will be issued construction badges that will allow access to building / departments. These badges will be required to be turned back in to Owner before final payment is issued.

14. POINT OF CONTACT: The Contractor's Point of Contact ("POC") for this Project is the Catawba County Construction Coordinator, Bryan Morales, (828) 320-1606. Any questions regarding the Project shall be directed to him.

15. HOURS OF OPERATION: The normal hours of operation are Monday through Friday, 8:00 a.m. to 5:00 p.m. If Contractor anticipates working outside of those normal hours for any reason, Contractor must coordinate that with the Catawba County Construction Coordinator, Bryan Morales, (828) 320-1606.

16. NO SMOKING POLICY: All Catawba County grounds and buildings are smoke and tobacco free. During the performance of the Work under this Agreement, Contractor agrees to enforce this policy and to require all employees and any subcontractors or material providers to abide by this policy when on County property.

17. E-VERIFY: Contractor shall comply with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes. Further, if Contractor utilizes a subcontractor, Contractor shall require the subcontractor to comply with the requirements of Article 2 of Chapter 64 of the North Carolina Statutes.

18. TIME OF THE ESSENCE: Time is of the essence in the performance of this Agreement.

19. COMPLIANCE WITH LAWS: Contractor represents that it is qualified and possesses the necessary skill and experience to perform the Work under this Agreement and that it will complete the Work in compliance with all applicable laws, ordinances, codes, rules and regulations. Contractor shall comply with all laws, ordinances, codes, rules, regulations, and licensing requirements that are applicable to the conduct of its business, including those of federal, state, and local agencies having jurisdiction and/or authority, during the term of this Agreement.

20. WAIVER OF DEFAULT: Waiver by the County of any default or breach in compliance with the terms of this Agreement by Contractor shall not be deemed a waiver of any

subsequent default or breach and shall not be construed to be a modification of the terms of this Agreement unless stated to be such in writing, signed by an authorized representative of the County and the Contractor and attached to the Agreement, and then only to the extent expressly stated.

21. CHOICE OF LAW: This Agreement shall be governed and construed in accordance with the laws of the State of North Carolina. Venue for any adversarial proceeding shall be set in Catawba County.

22. ENTIRE AGREEMENT: This Agreement constitutes the entire agreement and understanding between the Parties respecting the subjects covered herein, and shall not be modified in any respect except in a writing that is signed by both Parties. The Parties may enter into additional agreements to the extent they are not inconsistent with the terms hereof. In the event there is an inconsistency, the terms of this Agreement shall prevail.

23. EXECUTION: This Agreement may be executed electronically and in multiple counterparts, with each part so executed being deemed an original, however, collectively constituting but a single document.

24. HEADINGS: The Section and Paragraph headings in this Agreement are not material parts of the agreement and should not be used to construe the meaning thereof.

25. SEVERABILITY: In the event that a court of competent jurisdiction holds that a provision or requirement of this contract violates any applicable law, each such provision or requirement shall continue to be enforced to the extent it is not in violation of law or is not otherwise unenforceable and all other provisions and requirements of this contract shall remain in full force and effect.

26. FORCE MAJEURE: If Contractor's performance of Work is delayed by a force majeure, Contractor shall immediately, but in no case more than forty-eight (48) hours after such conditions become known, notify County of the delay, the reasons therefore and the anticipated duration of any such delay. Contractor's delay in the performance of services shall be excused during the duration of such force majeure, provided Notice was timely given under this Section.

27. INDEMNIFICATION: The Work to be performed by Contractor under this Agreement shall be performed entirely at Contractor's own risk. Contractor shall indemnify and save harmless the County, its commissioners, employees, agents and representatives from any and all liabilities and claims of every kind, including attorney's fees, to which County may be subjected on account of loss, destruction or damage to property or injury to or death of persons, including Contractor and persons employed by Contractor, arising out of or in connection with performance of this Agreement. The provisions of this paragraph shall not be applicable to loss or damage caused by the negligent act of omission of County or its employees.

28. INSURANCE: Contractor will carry and maintain, throughout the period of this Agreement, at Contractor's sole expense, professional and general liability insurance of no less than $4,000,000 per occurrence and $8,000,000 annual aggregate; and worker's compensation insurance providing statutory limit coverage, plus Employer's Liability

coverage with limits of not less than $1,000,000 per accident and $1,000,000 for each employee for injury by disease. In addition, the workers' compensation policy must contain a waiver of subrogation in favor of the County. Defense costs shall be in excess of the limit of liability. Contractor shall also provide automobile insurance coverage, when applicable, for any owned, hired, or rented vehicle with a limit of not less than $1,000,000 per occurrence combined single limit for bodily injury and property damage liability and a limit of not less than $25,000 for medical payment coverage. If employees, agents or representatives of Contractor, including specifically independent contractors under contract to Contractor, transport County's clients in their personal vehicles, Contractor will ensure that any such transportation service is covered by insurance, whether it be the insurance of Contractor or of the vehicle owner, and that vehicles are maintained in a condition that imposes no apparent risk to the clients and/or to the public.

Contractor shall maintain an occurrence basis (as distinguished from a "claims made" basis) Umbrella Liability policy (true follow form) over the underlying General Liability, Automobile Liability, and Employer's Liability, with the following limits of liability: Each Occurrence $5,000,000 / Aggregate $5,000,000.

Contractor shall maintain Property Insurance in the form of an "All Risk" or equivalent policy form equal to the value of the Contract including any Change Orders added during the life of the contract.

Catawba County shall be named as an additional insured under Contractor's automobile and general liability insurance company. In the event of a loss arising out of, or related to the Contractor's services performed under this Agreement, Contractor's Liability insurance shall be primary (pay first) with respect to any other insurance which may be available to the County, regardless of how the "other insurance" provisions may read.

Contractor has provided a Certificate of Insurance ("COI") which is attached hereto as Exhibit C. Contractor agrees to indemnify County if the insurance policy referenced in the COI does not contain, at a minimum, the coverage amounts listed on the COI. All insurance policies put forth to satisfy the above requirements shall require the insurer issuing the underlying policy to provide County with a minimum of thirty (30) days' notice prior to modification or cancellation of said policy. The maintenance of such insurance will not in any manner affect Contractor's obligation to indemnify County as described herein.

29. ASSIGNMENT: This Agreement or any right hereunder, shall not be assigned by either party, nor shall any duty hereunder be delegated by either party, without the express written consent of the other party. Any attempt at assignment or delegation without such consent shall be void.

30. INDEPENDENT CONTRACTOR: This Agreement does not constitute Contractor an employee, agent, representative, joint venture or partner of County for any purpose whatsoever. Contractor is not authorized to make any contract, agreement, warranty or representation, express or implied, on behalf of County. Neither Contractor nor any employee or agent of Contractor has an employment status with County and are not entitled to participate in any benefits extended by County to its own employees. All persons employed by Contractor to perform Services hereunder shall be subject to the exclusive

direction and control of Contractor, it being the intention of the parties that Contractor and its employees shall remain independent contractors, not subject to the control of County.

31. SIGNATURE WARRANTY: The undersigned represent and warrant that they are authorized to bind their principals to the terms of this Agreement.

32. NON-DISCRIMINATION: Neither Party nor its employees will discriminate against any person based on race, religion, creed, color, sex, gender identity and expression, pregnancy, childbirth, breastfeeding, medical conditions related to pregnancy, childbirth, or breastfeeding, sexual orientation, marital status, age, national origin, ancestry, genetic information, disability, veteran status, low income status or any class protected by local, state, or federal law in the performance of this Agreement.

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

OWNER:

CATAWBA COUNTY

_____

Mary Furtado, County Manager

_____

Date

CONTRACTOR:

CONTRACTOR NAME

_____

Name, Title

_____

Date

THIS INSTRUMENT has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act as amended.

Date: _____ _____

Mary Morrison, Chief Financial Officer
Account Number:
Amount: $
Source: Federal ___ State ___ Local _X_

APPROVED AS TO FORM

Date: _____ _____

Jodi Stewart, County Attorney

Date: _____ _____

Jake Robinson, Risk Management

Exhibit A
GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1 GENERAL PROVISIONS

1.1. BASIC DEFINITIONS

1.1.1 Contract for Construction (“Agreement”). The Contract Documents form the Agreement. The Agreement represents the entire and integrated agreement between the Parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Agreement may be amended or modified only by a Modification.

1.1.2 Contract Documents. The Contract Documents consist of the Contract between Owner and Contractor (hereinafter the Contract), Conditions of the Contract (General, Supplementary and other Conditions as applicable), Drawings, Specifications, Addenda issued prior to execution of the Contract, advertisement or invitation to bid, Instructions to Bidders, other documents listed in the Agreement and Modifications issued after execution of the Contract. In the event of conflicts among the contract documents, the Specifications shall take precedence over the Drawings, and the Supplementary Conditions (if provided) shall take precedence over the General Conditions. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Owner and a Subcontractor or Sub-subcontractor.

1.1.3 Contractor. The person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. Unless otherwise stated, the term "Contractor" means the General Contractor or the General Contractor's authorized representative.

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

1.1.5 Designer. The Architect or Engineer registered in accordance with the provisions of Chapter 89C of the NC General Statutes, identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Designer" refers to the Designer or the Designer's authorized representative(s). The Designer shall be entitled to performance and enforcement of obligations under the Agreement intended to facilitate performance of the Designers’ duties.

1.1.6 Modification. A Modification is (1) a written amendment to the Contract signed by the 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 Designer.

1.1.7 Owner. The person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Owner" means the Owner or the Owner's authorized representative.

1.1.8 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 or by separate contractors.

1.1.9 Project Manual. The Project Manual is the volume usually assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

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

1.1.11 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.

1.2 EXECUTION, CORRELATION, AND INTENT

1.2.1 The Contract Documents shall be signed by the Owner and Contractor as provided in the Agreement. If either the Owner or Contractor or both do not sign all the Contract Documents, the Designer shall identify such unsigned Documents and insure that they are properly signed by the necessary Parties.

1.2.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed, correlated personal observations with requirements of the Contract Documents, has checked and verified all site conditions, and hereby waives any and all claims, present or future, for misrepresentation on the part of the Owner or Designer.

1.2.3 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.

1.2.4 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 Subcontractor.

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

1.3 OWNERSHIP AND USE OF DESIGNER'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS. The Drawings, Specifications and other documents prepared by the Designer are instruments of the Designer's service through which the Work to be executed by the Contractor is described. The Contractor may retain one contract record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Designer. The Owner will retain all common law, statutory and other reserved rights, in addition to the copyright of the drawings, specifications and other documents prepared by the Designer. All copies of them, except the Contractor's record set, shall be returned or suitably accounted for to the Designer, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Designer, and copies thereof furnished to the Contractor, are for use solely with respect to this Project; they are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects without the specific written consent of the Owner and Designer. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Designer appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this license shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Designer. Submittal or distribution to meet official regulatory requirements or for other purposes in connection

with this Project is not to be construed as publication in derogation of the Owner's copyright or other reserved rights.

1.4 CAPITALIZATION. Terms capitalized in these General Conditions include those which are (1) specifically defined, (2) the titles of numbered articles and identified references to Paragraphs, Subparagraphs and Clauses in the document or (3) the titles of other documents.

1.5 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.

ARTICLE 2 OWNER

2.1 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.1.1 The Owner shall furnish plans and profiles of existing County utilities. The Contractor is responsible for locating all existing utilities prior to Work.

2.1.2 Except for permits and fees which are the responsibility of the Contractor under the Contract Documents, 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.

2.1.3 Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness to avoid delay in orderly progress of the Work.

2.1.4 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Project Manuals as are reasonably necessary for execution of the Work.

2.2 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 seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such seven-day period, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case, an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Designer's additional services and expenses made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

3.1. REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.1.1 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner pursuant to Section 2.1, and shall at once report to the Designer and to the Owner errors, inconsistencies or omissions discovered. If the Contractor performs any construction activity knowing, or where Contractor should have known, it involves an error, inconsistency or omission in the Contract Documents without such notice to the Designer and Owner, the Contractor shall assume full responsibility for such performance and shall bear the full costs for correction.

3.1.2 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported to the Designer and Owner immediately.

3.1.3 The Contractor shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Section 3.11.

3.2 SUPERVISION AND CONSTRUCTION PROCEDURES

3.2.1 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, unless Contract Documents give other specific instructions concerning these matters.

3.2.2 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 performing portions of the Work under a contract with the Contractor.

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

3.2.4 The Contractor shall be responsible for inspection of portions of Work already performed under this Contract to determine that such portions are in proper condition to receive subsequent Work.

3.3 LABOR AND MATERIALS

3.3.1 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.

3.3.2 The Contractor shall enforce strict discipline, good order and compliance with all applicable laws, ordinances and County policies among the Contractor's employees and other persons carrying out the Work under the Agreement. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

3.3.3 Materials, equipment or items required for a complete job which are shown on the drawings but not mentioned in the specifications or materials, equipment or items required by the specifications but not shown on the drawings, shall be furnished and installed the same as though both shown on the drawings and required by the specifications.

3.4 WARRANTY

3.4.1 The Contractor warrants to the Owner and Designer that materials and equipment furnished under the Contract will be fit for their intended purpose, of good quality and new unless otherwise required or permitted by the Contract Documents; that the Work will be free from defects not inherent in the quality required or permitted; and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and

authorized, may be considered defective. If required by the Owner or Designer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.4.2 Except as otherwise specifically stated below, the Contractor shall guarantee his materials and workmanship against defect due to faulty materials or faulty workmanship or negligence for a period of twelve (12) months following Substantial Completion of the Work, unless otherwise provided for by the Parties in the certificate of completion. Where the manufacturer's warranty on equipment or parts thereof exceeds twelve (12) months, the guarantee period on such equipment or parts thereof shall be extended to include the full warranty of the manufacturer. The Contractor shall repair or replace such defective materials, equipment or workmanship to the full satisfaction of the Owner within the stipulated guarantee period without cost to the Owner.

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

3.6 PERMITS, FEES AND NOTICES

3.6.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Agreement and which are legally required when bids are received or negotiations concluded.

3.6.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on performance of the Work.

3.6.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Designer and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

3.6.4 If the Contractor performs Work the Contractor knows or should have known to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Designer and Owner, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs.

3.7 ALLOWANCES

3.7.1 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 against which the Contractor makes reasonable objection.

3.7.2 Unless otherwise provided in the Contract Documents: (1) materials and equipment under an allowance shall be selected promptly by the Owner to avoid delay in the Work; (2) allowances shall cover the cost to the Contractor of materials and equipment delivered to the site and all required taxes, less applicable trade discounts; (3) 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 and not in the allowances; (4) whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by a Change Order. The amount of the Change Order shall reflect (a) the difference between actual costs and the allowances under Clause 3.7.2.(2) and (b) changes in Contractor's costs under Clause 3.7.2.(3).

3.8 SUPERINTENDENT. 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. Important communications shall be confirmed in writing upon request.

3.9 CONTRACTOR'S CONSTRUCTION SCHEDULES

3.9.1 Promptly after being awarded the Contract, the Contractor shall prepare and submit for the Designer's review and comment a construction schedule for the Work. The schedule shall not exceed time limits provided in the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. If separate prime contracts are awarded by the Owner in connection with this Project, the Contractor shall additionally submit a Contractor's construction schedule for the Work to the General Contractor in order for the General Contractor to carry out its duties under Article 6.

3.9.2 The Contractor shall prepare and keep current, for the Designer's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Designer reasonable time to review submittals.

3.9.3 The Contractor shall conform to the most recent schedules.

3.10 DOCUMENTS AND SAMPLES AT THE SITE. The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, addenda, Change Orders and other Modifications, in good order and marked currently to record changes and selections made during construction, and in addition approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Designer and shall be delivered to the Designer for submittal to the Owner upon completion of the Work.

3.11 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.11.1 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.

3.11.2 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.

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

3.11.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Designer is subject to the limitations of Paragraph 4.1.6.

3.11.5 The Contractor shall review, approve and submit to the Designer Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors.

Submittals made by the Contractor which are not required by the Contract Documents may be returned without action.

3.11.6 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been reviewed and approved or other appropriate action taken by the Designer. Such Work shall be in accordance with approved submittals.

3.11.7 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

3.11.8 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Designer's review and approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Owner and Designer in writing of such deviation at the time of submittal and the Designer, after consultation with the Owner, has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Designer's approval thereof.

3.11.9 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 Designer on previous submittals.

3.11.10 Informational submittals upon which the Designer is not expected to take responsive action may be so identified in the Contract Documents.

3.11.11 When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Designer shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

3.12 USE OF SITE. The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

3.13 CUTTING AND PATCHING

3.13.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

3.13.2 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 such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.14 CLEANING UP

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

3.14.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor, or deducted from the next payment to the Contractor.

3.15 ACCESS TO WORK. The Contractor shall provide the Owner and Designer access to the Work in preparation and progress wherever located.

3.16 ROYALTIES AND PATENTS. The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of patent rights and shall hold the Owner and Designer harmless from loss unless a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents. However, if the Contractor has, or should have, reason to believe that the required design, process or product is an infringement of a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Designer.

3.17 INDEMNIFICATION

3.17.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Designer, Designer's consultants, and agents, commissioners and employees of any of them from and against claims, damages, economic losses and expenses of any kind (including but not limited to fees and charges of engineers, attorneys, and other professionals and costs related to court action or mediation), arising out of or resulting from performance of the Work under this Agreement, provided 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) including loss of use resulting therefrom, caused in whole or in part by 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 unless caused in whole or part by the negligence of Owner. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section 3.17.

3.17.2 In claims against any person or entity indemnified under this Section 3.17, 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 this Section 3.17, 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.

3.17.3 The obligations of the Contractor under this Section 3.17, shall not extend to the liability of the Designer, the Designer's consultants, and agents and employees of any of them arising out of (a) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or (b) the giving of or the failure to give directions or instructions by the Designer, the Designer's consultants, and agents and employees of any of them provided such giving or failure to give is the primary cause of the injury or damage.

ARTICLE 4 ADMINISTRATION OF THE CONTRACT

4.1 ADMINISTRATION OF THE CONTRACT

4.1.1 The Designer, in consultation with the Owner's Construction Manager ("Construction Manager"), will provide administration of the Contract as described in the Contract Documents, and will be the Owner's representative during construction through final payment, and with the Owner's concurrence, from time to time during the correction period described in Paragraph 11.2. The Designer will advise and consult with the Owner. The Designer will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument in accordance with other provisions of the Contract.

4.1.2 The Designer will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility as provided in Paragraph 3.2. The Designer will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Designer 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 of any other persons performing portions of the Work.

4.1.3 Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate through the Designer. Communications by and with the Designer's consultants shall be through the Designer. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Designer.

4.1.4 Based on the Designer's inspections, observations and evaluations of the Contractor's Applications for Payment, the Designer will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

4.1.5 The Designer will have authority to reject Work which does not conform to the Contract Documents. Whenever the Designer considers it necessary or advisable for implementation of the intent of the Contract Documents, the Designer will have authority to require additional inspection or testing of the Work in accordance with Paragraphs 12.7.2 and 12.7.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Designer 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 Designer to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

4.1.6 The Designer 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 Designer's action will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Designer'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 Designer's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Article 3. The Designer's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Designer, of any construction means, methods, techniques, sequences or procedures. The Designer's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

4.1.7 The Designer, in consultation with the Construction Manager, will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Paragraph 7.4.

4.1.8 The Designer will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, will 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, and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.

4.1.9 The Designer will interpret and decide matters concerning performance under and requirements of the Contract documents on written request of either the Owner or Contractor. The Designer's response to such requests will be made with reasonable promptness and within any time limits agreed upon. If no agreement is made concerning the time within which interpretations required of the Designer shall be furnished in compliance with this Paragraph 4.1.9, then delay shall not be recognized on account of failure by the Designer to furnish such interpretations until 15 days after written request is made for them.

4.1.10 Interpretations and decisions of the Designer 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 Designer will endeavor to secure faithful performance by both Owner and Contractor, and will not show partiality to either.

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

4.1.12 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Article 11.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Designer may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Designer to stop the Work shall not give rise to a duty on the part of the Designer to exercise this right for the benefit of the Contractor or any other person or entity.

4.2 CLAIMS AND DISPUTES

4.2.1 A Claim is a demand or assertion by one of the Parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of 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 Agreement. Claims must be made pursuant to the Dispute Resolution Procedure set forth in Paragraph 4.4. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.2.2 DECISION OF DESIGNER. Claims, including those alleging an error or omission by the Designer, shall be referred initially to the Designer for action as provided in Paragraph 4.4. A decision by the Designer shall be required as a condition precedent to mediation and litigation of a Claim between any Party involved in this construction Project as to all such matters arising prior to the date final payment is due, regardless of whether such matters relate to execution and progress of the Work or the extent to which the Work has been completed. The decision by the Designer in response to a Claim shall not be a condition precedent to litigation in the event (1) the position of Designer is vacant, (2) the Designer has not received evidence or has failed to render a decision within agreed time limits, or (3) 45 days have passed after the Claim has been referred to the Designer.

4.2.3 TIME LIMITS ON CLAIMS. Claims by the Contractor must be made within 10 days after occurrence of the event giving rise to such Claim or within 10 days after the Contractor first recognizes the condition giving rise to the Claim, whichever is later. Claims must be made by written notice. An additional Claim made after the initial Claim has been implemented by Change Order will not be considered.

4.2.4 CONTINUING CONTRACT PERFORMANCE. Pending final resolution of a Claim, unless otherwise agreed in writing, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

4.2.5 WAIVER OF CLAIMS: FINAL PAYMENT. The making of final payment shall constitute a waiver of Claims by the Owner except those arising from: (1) unsettled claims arising out of the Agreement; or (2) failure of the Work to comply with the requirements of the Contract Documents; or (3) terms of special warranties required by the Contract Documents.

4.2.6 CLAIMS FOR CONCEALED OR UNKNOWN CONDITIONS. If conditions are encountered at the site which are (a) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (b) unknown physical conditions of an unusual nature, which 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, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than ten (10) days after first observance of the conditions. The Designer will promptly investigate such conditions and, if 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 an equitable adjustment in the Contract Sum or Contract Time, or both. If the Designer 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 Designer shall so notify the Owner and Contractor in writing stating the reasons, Claims by either party in opposition to such determination must be made within twenty-one (21) days after the Designer has given notice of the decision. If the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Designer for initial determination, subject to further proceedings pursuant to Paragraph 4.4.

4.2.7 CLAIMS FOR ADDITIONAL COST. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.3. If the Contractor believes additional cost is involved for reasons including but not limited to (a) a written interpretation from the Designer, (b) a written order for a minor change in the Work issued by the Designer, (c) termination of the Contract by the Owner, Claim shall be filed in accordance with the procedure established herein. This Article and Article 7, shall be the exclusive means by which the Contractor may claim additional cost or damages from the Owner, and the Contractor hereby waives any and all right to claim additional cost or damages by any other remedy including, without limitation, *quantum meruit*, subrogation, or implied contract.

4.2.8 CLAIMS FOR ADDITIONAL TIME. If the Contractor wishes to make Claim for an increase in the Time of Completion, written notice as provided herein 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. Adverse weather conditions shall not be a basis for a Claim for additional time nor costs.

4.3 INJURY OR DAMAGE TO PERSON OR PROPERTY. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts such party is legally liable, written notice as such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not

exceeding ten (10) days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. If a Claim for additional cost or time related to this Claim is to be asserted, it shall be filed as provided in Subparagraphs 4.2.7 or 4.2.8.

4.4 DISPUTE RESOLUTION PROCEDURE

4.4.1 To prevent disputes and litigation, it is agreed by the Parties that any claim, question, difficulty or dispute arising from this Agreement or the construction process shall be first submitted to the Designer to address the issue. Upon review of the Claim, the Designer shall take one or more of the following preliminary actions within ten (10) days of receipt of a Claim: (1) request additional supporting data from the claimant, (2) submit a schedule to the parties indicating when the Designer expects to take action, (3) reject the Claim in whole or in part stating reasons for rejection, (4) recommend approval of the Claim by the other Party, or (5) suggest a compromise. The Designer may also, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim.

4.4.2 If a Claim has been resolved, the Designer will prepare or obtain appropriate documentation.

4.4.3 The laws of the State of North Carolina shall apply to the interpretation and enforcement of this Agreement. Prior to initiating a legal action, any Party to this Agreement shall initiate the mediation process as provided in **Appendix A** to these General Conditions. Mediation, pursuant to this Section, shall be a pre-condition to initiating litigation concerning the dispute. During the pendency of any dispute and after a determination thereof, the Parties to the dispute shall act in good faith to mitigate any potential damages including utilization of construction schedule changes and alternate means of construction. All mediation sessions shall be held in Catawba County, North Carolina.

4.4.4 If the disputed issue cannot be resolved in mediation, the parties may seek resolution in the exclusive venue of the General Court of Justice in the County of Catawba and the State of North Carolina.

4.4.5 The dispute resolution procedure set forth in this Section shall be made available to any party involved in this construction Project including County, Contractor, Designer, Subcontractors as well as Sub-subcontractors and is a precondition to initiation of litigation concerning the dispute.

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 subcontractors of a separate contractor.

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

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Designer the names of persons or entities (including those who are to furnish materials or equipment fabricated to

a special design) proposed for each principal portion of the Work, including (1) Heating, ventilating, and air conditioning, (2) Plumbing, (3) Electrical, and (4) General. The Designer will promptly reply to the Contractor in writing stating whether or not the Owner or the Designer, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Designer to reply promptly shall constitute notice of no reasonable objection.

5.2.2 The Contractor shall NOT substitute any person or company listed in the Contractor's original Bid Proposal, except (1) if the listed subcontractor's bid is later determined by the Contractor to be non-responsible or non-responsive or the listed subcontractor refuses to enter into a contract for the complete performance of the work, or (2) with the approval of the Owner for good cause shown by the Contractor.

5.3 SUBCONTRACTUAL RELATIONS. By appropriate agreement, written where legally required for validity, 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 and conditions of the Contract Documents and this Agreement, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these documents, assumes toward the Owner and Designer. Each subcontract agreement shall incorporate by reference the applicable terms of this Agreement, and shall preserve and protect the rights of the Owner and Designer under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

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 Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site.

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 General Contractor shall provide for coordination of the activities of each separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate Contractors and the General Contractor in reviewing their construction schedules. The Contractor shall make any revisions to the 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 and separate contractors 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, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the Contractor under the Conditions

of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10 and 11.

6.1.5 The General Contractor shall be responsible for scheduling the work of all contractors; the maintenance of the progress schedule for all prime contractors for this Project; and for the notification of the Designer of any changes in the progress schedule.

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 report to the Construction Manager and Designer apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor to so report shall constitute an acknowledgment that the Owner's or separate Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 Costs caused by delays, by improperly timed activities, defective construction, or any other damages shall be borne by the Party responsible therefor. The Owner shall not be liable nor responsible for any delays or damages to the Contractor caused by separate Contractors or the Designer.

6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate Contractors as provided in Paragraph 10.2.5.

6.2.5 Claims and other disputes and matters in question between the Contractor and a separate Contractor shall be subject to the provisions of Sections 4.2 and 4.4, provided the separate Contractor has reciprocal obligations.

6.2.6 The Owner and each separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Paragraph 3.13.

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 as described in Paragraph 3.14, the Owner may clean up and allocate the cost among those responsible as the Designer determines to be just.

ARTICLE 7 CHANGES IN THE WORK

7.1 CHANGES

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 Designer; a Construction Change Directive requires agreement by the Owner and Designer 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 Designer alone pursuant to Paragraph 7.4.

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

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

7.1.5 Overhead and profit shall not exceed 10% of the value of labor and material for work performed by any contractor or subcontractor.

7.2 CHANGE ORDERS

7.2.1 A Change Order is a written instrument prepared by the Designer and signed by the Owner, Contractor, and Designer, stating their agreement upon all of the following: (1) a change in the Work; (2) the amount of the adjustment in the Contract Sum, if any; and (3) the extent of the adjustment in the Time of Completion, if any.

7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Paragraph 7.3.3.

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.1 A Construction Change Directive is a written order prepared by the Designer and signed by the Owner and Designer, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Time of Completion, 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 Time of Completion being adjusted accordingly.

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

7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods: (1) mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation; (2) unit prices stated in the Contract Documents or subsequently agreed upon; (3) cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or (4) as provided in Paragraph 7.3.6.

7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Designer 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 Time of Completion.

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

7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Designer 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, a reasonable allowance for overhead and profit. In such case, and also under clause 7.3.3(3), the Contractor shall keep and present, in such form as the Designer may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Paragraph 7.3.6 shall be limited to the following: costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance; costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed; rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others; costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and additional costs of supervision and field office personnel directly attributable to the change.

7.3.7 Pending final determination of cost to the Owner, amounts not in dispute may be included in Applications for Payment. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Designer. 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.

7.3.8 If the Owner and Contractor do not agree with the adjustment in Time of Completion or the method for determining it, the adjustment or the method shall be referred to the Designer for determination.

7.3.9 When the Owner and Contractor agree with the determination made by the Designer concerning the adjustments in the Contract Sum and Time of Completion, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order.

7.4 MINOR CHANGES IN THE WORK. The Designer or Construction Manager will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Time of Completion and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 8 TIME

8.1 DEFINITIONS

8.1.1 Unless otherwise provided, Time of Completion 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. The date shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible.

8.1.3 The date of Substantial Completion is the date certified by the Designer in accordance with Paragraph 9.9.

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 Time of Completion is a reasonable period for performing the Work. The Contractor and the Contractor's surety shall be liable for and shall pay the Owner such sums as shall be set forth in the Agreement between Owner and Contractor as liquidated damages each calendar day of delay until the work is substantially complete.

8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by the Agreement to be furnished by the Contractor. The date of commencement of the work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by a notice to proceed given by the Designer, the Contractor shall notify the Owner and Designer in writing not less than five days before commencing the Work.

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

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 If the Contractor is delayed at any time in progress of the Work by an act or neglect of the Owner or Designer, or of an employee of either, or of a separate Contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidably casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending litigation, or by other causes which the Designer determines may justify delay, then the Time of Completion shall be extended by Change Order for such reasonable time as the Designer may determine.

8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Paragraph 4.2.8.

8.3.3 Should the Work be interrupted or hindered by the Owner or Designer, the Contractor shall be entitled to an extension of time pursuant to Paragraph 4.2 in an amount equal to such interruption or hindrance but such interruption or hindrance shall not constitute a claim for damages nor for loss of anticipated profits by the Contractor.

8.3.4 Should the Work be delayed in whole by any act or acts of the Contractor, the Contractor shall not be entitled to an extension of time pursuant to Paragraph 4.2, nor shall such delay constitute a claim either for damages or for loss of anticipated profits by the Contractor. Should the Work be delayed in part by any act or acts of the Contractor and in part by any act or acts of the Owner or Designer, the Contractor shall be entitled to an extension of time pursuant to Paragraph 4.2 in an amount equal to that portion of the delay for which the Contractor is not responsible, but such delay shall not constitute a claim either for damages or for loss of anticipated profits by the Contractor.

8.3.5 Should the Work be delayed, interrupted or hindered, in whole or in part, by any act or acts of any separate prime contractors, the Contractor shall be entitled to an extension of time pursuant to Paragraph 4.2.8 in an amount equal to such delay, interruption or hindrance but such delay, interruption or hindrance shall not constitute a claim for damages nor for loss of anticipated profits by the Contractor.

ARTICLE 9 PAYMENTS AND COMPLETION

9.1 CONTRACT SUM. 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.

9.2 SCHEDULE OF VALUES. Before the first Application for Payment, the Contractor shall submit to the Designer a Schedule of Values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Designer may require. This Schedule of Values, unless objected to by the Designer, shall be used as a basis for reviewing the Contractor's Applications for Payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 At least twenty (20) days before the date established for each progress payment, the Contractor shall submit to the Designer an itemized Application for Payment for operations completed in accordance with the schedule of values. Such application shall be notarized, supported by such data substantiating the Contractor's right to payment as the Owner or Designer may require, such as copies of requisitions from subcontractors and material suppliers and reflecting retainage if provided for elsewhere in the Contract Documents.

9.3.2 Such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives but not yet included in Change Orders.

9.3.3 Such applications may not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier because of a dispute or other reason.

9.3.4 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 applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

9.3.5 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, and as represented by signed releases or lien waivers, be free and clear of liens, claims, security interests, or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work.

9.3.6 Provided an Application for Payment is received by the Designer not later than the tenth (10th) day of a month, the Owner shall make payment to the Contractor not later than the thirtieth (30th) day of the month.

9.4 RETAINAGE. To ensure proper performance of this Contract, Owner shall retain five percent (5%) of the amount of each approved Application for Payment until the Project Work is 50% complete provided that the Contractor continues to perform satisfactorily and any non-conforming Work identified in writing prior to that date has been corrected by the Contractor and accepted by the Owner. Thereafter, if the Owner determines the Contractor’s performance is unsatisfactory, the Owner may reinstate retainage in the amount of 5% for each subsequent periodic Application for Payment until the Contractor’s performance becomes satisfactory. The Project shall be deemed fifty percent (50%) complete when the Contractor's gross Project invoices, excluding the value of materials stored off-site, equal or exceed fifty percent (50%) of the value of the Contract Sum, except the value of materials stored on-site shall not

exceed twenty percent (20%) of the Contractor's gross Project invoices for the purpose of determining whether the Project is fifty percent (50%) complete. Following 50% completion of the Project, the Owner may also withhold additional retainage from any subsequent periodic payment, not to exceed 5%, in order to allow the Owner to retain 2 ½% total retainage through the completion of the Project. Within sixty (60) days after the submission of a final pay application, the Owner with written consent of the Surety shall release to the Contractor all retainage on payments held by the Owner if (1) the Owner receives a certificate of substantial completion from the Designer or design consultant in charge of this Project, or (2) the Owner receives beneficial occupancy or use of the Project. However, the Owner may retain sufficient funds to secure completion of the Project or corrections to any Work. If the Owner retains funds, the amount retained shall not exceed two and one half times the estimated cost of the Work to be completed or corrected. Any reduction in the amount of retainage on payments shall be with the consent of the Contractor's Surety. Retainer provisions contained in Contractor's subcontracts may not exceed the terms and conditions for retainage provided herein. Contractor is further required to satisfy the retainage provisions of N.C.G.S. 143- 134.1(b2) with regard to subcontracts for early finishing trades (structural steel, piling, caisson, and demolition) and to coordinate the release of retainage for such trades from the retainage held by Owner from the Contractor pursuant to statute. Nothing herein shall prevent the Owner from withholding payment to the Contractor in addition to the amounts identified herein for unsatisfactory job progress, defective construction not remedied, disputed work, or third party claims filed against the owner or reasonable evidence that a third party claim will be filed.

9.5 CERTIFICATES FOR PAYMENT

9.5.1 The Designer will, within seven (7) days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Designer determines is properly due, or notify the Contractor and Owner in writing of the Designer's reasons for withholding certification in whole or in part as provided in Paragraph 9.6.1.

9.5.2 The Designer's certification for payment shall constitute a representation to the Owner, based on the Designer's inspections at the site and on the data comprising the Contractor's Application for Payment, that the Work has progressed to the point indicated and that the inspections of the construction, repairs, or installations have been conducted with the degree of care and professional skill and judgment ordinarily exercised by a member of his profession; and that to the best of his knowledge and in the professional opinion of the Designer, the Contractor has fulfilled the obligations of such plans, specifications, and contract. The Designer's certification for payment shall be signed and sealed by the Designer and presented to the Owner. 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 minor deviations from the Contract Documents correctable prior to completion and to specific qualifications expressed by the Designer. The issuance of a Certificate for Payment shall further constitute a representation by the Designer, that the Contractor is entitled to payment in the amount certified.

9.6 DECISIONS TO WITHHOLD CERTIFICATION

9.6.1 The Designer may decide not to certify payment and may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Designer's opinion, the representations to the Owner required by Paragraph 9.5.2 cannot be made. If the Designer is unable to certify payment in the amount of the Application, the Designer will notify the Contractor and Owner as provided in Paragraph 9.5.1. If the Contractor and Designer cannot agree on a revised amount, the Designer will promptly issue a Certificate for Payment for the amount for which the Designer is able to make such representations to the Owner. The Designer may also decide not to certify payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Designer's opinion to

protect the Owner from loss due to: defective Work not remedied; third party claims filed or reasonable evidence indicating probable filing of such claims; failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment; reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum; damage to the Owner or another contractor; reasonable evidence that the Work will not be completed within the Time of Completion, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or persistent failure to carry out the Work in accordance with the Contract Documents.

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

9.7 PROGRESS PAYMENTS

9.7.1 After the Designer 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 Designer.

9.7.2 The Contractor must promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor must, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in similar manner.

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

9.7.4 Neither the Owner nor Designer shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

9.7.5 Payment to material suppliers must be treated in a manner similar to that provided in Paragraphs 9.7.2, 9.7.3, and 9.7.4.

9.7.6 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.

9.8 FAILURE OF PAYMENT. The Contractor must not stop the Work for the failure of the Designer to issue a Certificate of Payment or the Owner to make timely payment.

9.9 SUBSTANTIAL COMPLETION

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

9.9.2 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 Designer a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item or such list does not alter the responsibility for the Contractor to complete all Work in accordance with the contract Documents. Upon receipt of the Contractor's list, the Designer will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Designer's inspection discloses any item,

whether or not included on the Contractor's list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Designer. The Contractor shall then submit a request for another inspection by the Designer to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the Designer will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

9.9.3 Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Designer, the Owner shall make payment, reflecting adjustment in retainage, if any, for such Work or portion thereof as provided in the Contract Documents.

9.10 PARTIAL OCCUPANCY OR USE

9.10.1 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 authorized by public authorities having jurisdiction over the Work. 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 Designer as provided under Subparagraph 9.9.2. 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 Designer.

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

9.10.3 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.

9.11 FINAL COMPLETION AND FINAL PAYMENT

9.11.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Designer will promptly make such inspections and, when the Designer finds the Work acceptable under the Contract Documents and the Contract fully performed, the Designer will promptly issue a Final Certificate for Payment stating that to the best of the Designer's knowledge, information and belief, and on the basis of the Designer's observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in said Final Certificate is due and payable. The Designer's Final Certificate for Payment will constitute a further representation that the conditions listed in Paragraph 9.11.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

9.11.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Designer (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 Agreement to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial 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 and (5) if required by the Owner, other or additional data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances rising 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. If such lien 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 such lien, including all costs and reasonable attorneys' fees.

9.11.3 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 Designer so confirms, the Owner shall, upon application by the Contractor and certification by the Designer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for work not fully completed and accepted is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of 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 Designer prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

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

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract and construction of the Project.

10.1.2 In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (hereinafter “PCB”) which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and Designer by phone and in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos or PCB and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or PCB, or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Designer.

10.1.3 The Contractor shall not be required to perform without consent of Owner and Designer any Work relating to asbestos or PCB.

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: employees working on the Project and other persons who may be affected thereby; 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 or the Contractor's Subcontractors or Sub-subcontractors; and 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 give notices and comply with applicable laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury, or loss.

10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including erecting necessary barricades or other temporary walls and structures as required during the period of construction, posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.

10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of 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 to property referred to in Paragraphs 10.2.1.(2) and (3), caused in whole or in part by the Contractor, 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 Paragraphs 10.2.1.(2) and (3), except damage or loss attributable to acts or omissions of the Owner or Designer 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 Article 3. All costs to repair any damage and loss to property referred to in Paragraphs 10.2.1.(2) and (3), shall be the sole responsibility of the Contractor and such repair or replacement shall be performed expeditiously without cost to the Owner.

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, required under Paragraph 3.8, unless otherwise designated by the Contractor in writing to the Owner and Designer.

10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.
10.2.8 Existing utilities have been identified and described in the Contract Documents insofar as information is reasonably available, however, it is the Contractor’s responsibility to verify such information and to preserve all existing utilities whether shown in the Contract Documents or not. If utility conflicts are encountered by the Contractor during construction, Contractor shall file sufficient notice to the owners of the utilities so that they may make the necessary adjustments, as well as the Designer or Designer.

10.3 EMERGENCIES. In an emergency affecting the 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 Paragraphs 4.2.7, 4.2.8 and Article 7. As soon as practicable, the Contractor must notify the Construction manager and Designer of any such emergency.

ARTICLE 11 UNCOVERING AND CORRECTION OF WORK

11.1 UNCOVERING OF WORK

11.1.1 If a portion of the Work is covered contrary to the Designer's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Designer, be uncovered for the Designer's observation and be replaced at the Contractor's sole expense without change in the Time of Completion.

11.1.2 If a portion of the Work has been covered which the Designer has not specifically requested to observe prior to its being covered, the Designer may request to see such Work and it shall be uncovered by the Contractor. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs unless the condition was caused by the Owner or a separate contractor in which event the Owner or separate contractor shall be responsible for payment of such costs. If such work is in accordance with the Contract Documents, the Owner, by appropriate Change Order, shall be charged with the cost of uncovering and replacement.

11.2 CORRECTION OF WORK

11.2.1 The Contractor shall promptly correct Work rejected by the Designer or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear any and all costs of correcting such rejected Work, including additional testing and inspections and compensation for the Designer's services and expenses made necessary thereby.

11.2.2 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 Paragraph 9.10.1 or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. This period of one year 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 performance of the work. This obligation under this Paragraph 11.2.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

11.2.3 The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

11.2.4 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Paragraph 2.2. If the Contractor does not proceed with correction of such nonconforming Work within a reasonable time fixed by written notice from the Designer, the Owner may remove it and store the salvageable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage within ten (10) days after written notice, the Owner may upon ten (10) additional days' written notice sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for the Designer's services and expenses made necessary thereby. If such proceeds of sale do not cover costs which the Contractor should have borne, the Contract Sum shall be reduced by the deficiency. If payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

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

11.2.6 Nothing contained in this Section 11.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of one year as described in Paragraph 11.2.2, 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.

11.3 ACCEPTANCE OF NONCONFORMING WORK. If the Owner prefers to accept Work which 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 12 MISCELLANEOUS PROVISIONS

12.1 GOVERNING LAW. This Agreement shall be governed by and in accordance with the laws of the State of North Carolina. All actions relating in any way to this Contract, shall be brought exclusively in the General Court of Justice in the County of Catawba and the State of North Carolina, after exhausting the dispute resolution procedure set forth in Section 4.4, herein.

12.2 SUCCESSORS AND ASSIGNS. The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to the other Party hereto and to partners, successors, assigns, and legal representatives of such other Party in respect to covenants, agreements, and obligations contained in the Contract Documents. Neither Party to the Contract shall assign the Contract as a whole without written consent of the other. If either Party attempts to make such an assignment without such consent, that Party shall nevertheless remain legally responsible for all obligations under the Contract.

12.3 WRITTEN NOTICE. Written notice shall be deemed to have been duly served if delivered in person to the individual or 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 to the business address listed in the Agreement.

12.4 RIGHTS AND REMEDIES. 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.

12.5 WAIVER OF RIGHTS. No action or failure to act by the Owner or Designer shall constitute an obligation 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 in writing.

12.6 COMPLIANCE WITH LAWS. Contractor represents that it is in compliance with all Federal, State, and local laws, regulations or orders, as amended or supplemented. The implementation of this contract will be carried out in strict compliance with all Federal, State, or local laws regarding discrimination in employment.

12.7 TESTS AND INSPECTIONS

12.7.1 Tests, inspections, and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. 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 the Owner shall bear the costs of tests, inspections, and approvals. Should any retest be necessary due to the failure of the Work to pass the first test or for any other reason whatsoever, the Contractor shall bear all related costs of retests, inspections or re-inspections, and approvals. The Contractor shall give the Designer timely notice of when and where tests and inspections are to be made so the Designer may observe such procedures.

12.7.2 If the Designer, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Paragraph 12.7.1, the Designer 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 Designer of when and where tests and inspections are to be made so the Designer may observe such procedures.

12.7.3 If such procedures for testing, inspection or approval under Paragraphs 12.7.1 and 12.7.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs made necessary by such failure including the costs of bringing the Work into compliance with the Contract Documents as well as the costs of any repeated procedures, testing, inspection or approval and the compensation for the additional services and expenses of the Designer.

12.7.4 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 Designer.

12.7.5 If the Designer is required by the Contract Documents to observe tests, inspections, or approvals, the Designer will do so promptly and, where practicable, at the normal place of testing.

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

12.8 COMMENCEMENT OF STATUTORY LIMITATION PERIOD. As between the Owner and Contractor:

Before Substantial Completion. As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion.

Between Substantial Completion and Final Certificate for Payment. As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the Final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the Final Certificate for Payment.

After Final Certificate for Payment. As to acts or failures to act occurring after the relevant date of issuance of the Final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any warranty provided under Paragraph 3.4, the date of any correction of the Work or failure to correct the Work by the Contractor under Section

11.2 or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

ARTICLE 13 TERMINATION OR SUSPENSION OF THE CONTRACT

13.1 TERMINATION BY THE CONTRACTOR

13.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 180 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor, for any of the following reasons: issuance of an order of a court or other public authority having jurisdiction; an act of government, such as a declaration of national emergency, making material unavailable; because the Designer has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Paragraph 9.6.

13.1.2 If one of the above reasons exists, Contractor shall send written notice of the condition to Owner and Designer and Owner and Designer shall have thirty (30) days to cure or correct the condition. If owner fails to cure the Condition, the Contractor may, upon seven (7) additional days' written notice to the Owner and Designer, terminate the Contract and recover from the Owner payment for work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, not including overhead, profit, or damages. In no event shall Owner be responsible for lost profits, special or consequential damages.

13.2 TERMINATION BY THE OWNER FOR CAUSE

13.2.1 The Owner may terminate the Contract if the Contractor: refuses or fails to supply enough properly skilled workers or proper materials; fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors; persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or otherwise is in substantial breach of a provision of the Contract Documents.

13.2.2 When any of the above reasons exist, the Owner, upon certification by the Designer that sufficient cause exists to justify such action, 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 (7) days written notice and opportunity to cure, terminate employment of the Contractor and may, subject to any prior rights of surety: take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor; and finish the Work by whatever reasonable method the Owner may deem expedient.

13.2.3 When the Owner terminates the Contract for one of the reasons stated in Paragraph 13.2.1, the Contractor shall not be entitled to receive further payment.

13.2.4 If the unpaid balance of the Contract Sum does not cover the cost of finishing the Work, the Contractor shall pay the difference to the Owner. The amount to be paid to the Owner, shall be certified by the Designer, upon application, and this obligation for payment shall survive termination of the Contract.

13.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

13.3.1 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.

13.4 TERMINATION BY OWNER FOR CONVENIENCE

13.4.1 The Owner may, at any time, terminate the Contract for the Owner's Convenience and without cause.

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

1. Cease operations as directed by the Owner in the notice;
2. Take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
3. Except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

13.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work properly executed and costs incurred by reason of such termination. Termination shall not relieve the Contractor of its responsibilities for any completed portion of the Work nor shall it relieve its sureties of their obligation for and concerning any claims arising out of the Work performed.

13.4.4 In the event of termination by the Owner for convenience, the Contractor shall not be entitled to any other compensation, including compensation for lost profit, lost opportunity, or any other direct, special or consequential cost, loss or damage.

13.5 BANKRUPTCY

13.5.1 The bankruptcy of the Contractor shall not terminate this Contract until such time that it is specifically rejected by the Trustee or Contractor in bankruptcy. During the election period the Contractor has to assume or reject this Contract, the Contractor shall continue to perform its Work under the Contract.

13.5.2 In the event the Contractor in Bankruptcy assumes the Contract, the Contractor shall apply progress payments to all of its unpaid obligations on this Project before using any of these monies for either administrative expenses of the bankruptcy or as general assets of the estate.

13.6 SECURITY OF NON-PUBLIC RECORDS.

13.6.1 Pursuant to NCGS § 132-1.7 entitled, "Sensitive Public Security Information", public records, as defined in NCGS § 132-1, shall not include information containing specific details of public security plans and arrangements or the detailed plans and drawings of public buildings and infrastructure facilities. Therefore, all information provided, received, gathered or obtained by Contractor containing specific details of public security plans and arrangements or the detailed plans and drawings of public buildings and infrastructure facilities shall be held confidential and shall be used by the Contractor only for the purpose of fulfilling the terms of this Agreement. All plans and drawings shall be returned to the County, or otherwise destroyed at the direction of the County, upon termination or expiration of this Agreement. Any breach of this paragraph by Contractor shall result in the immediate termination of this contract.

Appendix A

RULES IMPLEMENTING MEDIATED SETTLEMENT CONFERENCES IN CATAWBA COUNTY

Adopted: February 5, 2024

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RULE 1. INITIATING MEDIATED SETTLEMENT CONFERENCES

A. Purpose of Mandatory Settlement Conferences. Pursuant to Catawba County Code Section 8-35 and NCGS §143-128(f1), these Rules are promulgated to implement a system of settlement events which are designated to focus the parties' attention on settlement rather than on claim preparation and to provide a structured opportunity for settlement negotiations to take place. Nothing herein is intended to limit or prevent the parties from engaging in settlement procedures voluntarily at any time prior to or during commencement of the dispute resolution process.

B. Initiating the Dispute Resolution Process.

1. Any party to a Catawba County contract governed by Catawba County Code Chapter(s) 8 or 30 and who is a party to a dispute arising out of the construction process in which the amount in controversy is at least $15,000 may submit a written request to Catawba County for mediation of the dispute.

2. Prior to submission of a written request for mediation to Catawba County, the parties should give notice of any and all claims in accordance with their respective contracts, obtain decisions on the claims as required or allowed by their respective contracts, and attempt to resolve the dispute according to the terms and conditions in their respective contracts. The Mediator may adjourn any mediated settlement conference if the Mediator believes, in his or her sole discretion, that the parties have not satisfied all of the terms and conditions of their respective contracts and that doing so will enhance the prospects for a negotiated settlement.

C. Condition Precedent to Litigation. Before any party to a Contract may commence a civil action against Catawba County seeking remedies for breach or non-performance of the Contract by the County, said party must first initiate the dispute resolution process under these rules and attend and participate in good faith in the mediated settlement conference.

RULE 2. SELECTION OF A MEDIATOR

A. Selection of a Certified Mediator by Agreement of the Parties. The parties shall select a Certified Mediator within twenty-one (21) days of receipt by the County of the request for mediation. If the Mediator selected is not available or declines to participate for any reason, the parties shall select another Certified Mediator. If the parties are unable to agree on a mediator within twenty-one (21) days of the request for mediation, the County shall have the right in its absolute discretion to appoint a Certified Mediator.

B. Withdrawal or Disqualification of a Mediator. Any party may request replacement of a mediator by Catawba County for good cause. If a mediator withdraws or is disqualified, then the parties shall select another Certified Mediator within three (3) days of the notice of withdrawal or disqualification. A mediator who has withdrawn or been disqualified shall not be entitled to receive an administrative fee, unless the mediation has been commenced. If the parties do not select and designate a mediator within three (3) days from the notice of withdrawal or disqualification, the County shall have the right in its absolute discretion to appoint a Certified Mediator.

RULE 3. THE MEDIATED SETTLEMENT CONFERENCE

A. Where the Conference is to be Held. Unless all parties and the mediator otherwise agree, the mediated settlement conference shall be held in Catawba County. The mediator shall be responsible for reserving a place and making arrangements for the conference and for giving timely notice of the time and location of the conference to all attorneys, unrepresented parties and other persons and entities required to attend.

B. When the Conference is to be Held. The mediation shall be completed within ninety (90) days after selection of the mediator.

C. Request to Extend the Deadline for Completion. A party, or the mediator, may request that Catawba County extend the deadline for completion of the mediated settlement conference. Such request shall state the reasons the extension is sought and shall be served by the moving party upon the other parties and the mediator. If any party does not consent to the request, said party shall promptly communicate its objection, and the reasons for its objection, to Catawba County. Catawba County may grant the request by setting a new deadline for completion of the conference, or deny the request to extend the deadline, resulting in an impasse of the mediation.

D. Recesses. The mediator may recess the mediated settlement conference at any time and may set times for reconvening. If the time for reconvening is set before the conference is recessed, no further notification is required for persons present at the conference.

E. Postponements. A mediated settlement conference session may be postponed for good cause only after notice by the movant to all parties of the reason for the postponement and a finding of good cause by Catawba County.

F. Construction Project. The mediated settlement conference or the matter subject of the mediated settlement conference shall not be cause for the delay of the construction project which is the focus of the dispute.

RULE 4. DUTIES OF PARTIES AND OTHER PARTICIPANTS

A. Attendance.

1. All parties to the dispute must attend the mediated settlement conference. Failure of a party to a construction contract to attend the mediated settlement conference will result in Catawba County's withholding of monthly payment to that party until such party attends the mediated settlement conference.

2. Attendance shall constitute physical attendance, not by telephone or other electronic means. Notwithstanding the foregoing, all parties and persons required to attend a mediated settlement conference may agree to conduct the conference using remote technology, or using a hybrid of in-person attendance and remote technology.

3. Any party that is a nongovernmental entity shall be represented at the mediated settlement conference by an officer, employee, or agent who is not the entity's outside counsel and who has been authorized to decide whether, and on what terms, to settle the action on behalf of the entity, or who has been authorized to negotiate on behalf of the entity and can promptly communicate during the conference with persons who have decision-making authority to settle the action; provided, however, that if a specific procedure is required by law (e.g., a statutory pre-audit certificate) or the entity's governing documents (e.g., articles of incorporation, bylaws, partnership agreement, articles of organization, or operating agreement) to approve the terms of the settlement, then the representative shall have the authority to negotiate and make recommendations to the applicable approval authority in accordance with that procedure.

4. Any party that is a governmental entity shall be represented at the mediated settlement conference by an employee or agent who is not the entity's outside counsel and who: (i) has authority to decide on behalf of the entity whether and on what terms to settle the action; (ii) has been authorized to negotiate on behalf of the entity and can promptly communicate during the conference with persons who have decision-making authority to settle

the action; or (iii) has authority to negotiate on behalf of the entity and to make a recommendation to the entity's governing board, if under applicable law the proposed settlement terms can be approved only by the entity's governing board. Notwithstanding anything in these rules to the contrary, any agreement reached which involves a governmental entity may be subject to the provisions of NCGS §159-28(a).

5. Attorneys on behalf of parties may attend the mediated settlement conference but are not required to do so.

6. Sureties or insurance company representatives are not required to attend the mediated settlement conference unless any monies paid or to be paid as a result of any agreement reached as a result of mediation require their presence or acquiescence. If such agreement or presence is required, then authorized representatives of the surety or insurance company must attend the mediation.

B. Finalizing the Agreement. If an agreement is reached in the mediated settlement conference, parties to the agreement shall reduce the terms to writing and sign it along with their counsel, if counsel is present, prior to the adjournment of the conference. If additional time is required to formalize an agreement, the mediator may recess the conference and set a time certain for reconvening pursuant to Rule 3(D). The time for reconvening shall be as soon as practicable to allow for formalization of the agreement.

C. Mediation Fee. The mediation fee and any ancillary fees shall be paid in accordance with Rule 6 Compensation of the Mediator.

D. Failure to Compensate the Mediator. Any party's failure to compensate the mediators in accordance with Rule 6 shall subject that party to a withholding of said amount of money from the party's monthly payment by Catawba County.

RULE 5. AUTHORITY AND DUTIES OF MEDIATORS

A. Authority of Mediators.

1. Control of Conference. The mediator shall at all times be in control of the mediated settlement conference and the procedures to be followed.

2. Private Consultation. The mediator may communicate privately with any participant or counsel prior to and during the mediated settlement conference. The fact that private communications have occurred with a participant shall be disclosed to all other participants at the beginning of the conference.

3. Scheduling the Conference. The mediator shall make a good faith effort to schedule the mediated settlement conference at a time that is convenient with the participants, attorneys and mediator. In the absence of agreement, the mediator shall select the date for the mediated settlement conference.

B. Duties of Mediators.

1. The mediator shall define and describe the following at the beginning of the mediated settlement conference:
   a. The process of mediation;
   b. The difference between mediation and other forms of conflict resolution;
   c. The costs of the mediated settlement conference;

d. That the mediated settlement conference is not a trial, the mediator is not a judge, and the parties retain their legal rights if they do not reach settlement;
e. The circumstances under which the mediator may meet and communicate privately with any of the parties or with any other person;
f. Whether and under what conditions communications with the mediator will be held in confidence during the conference;
g. The inadmissibility of conduct and statements as provided by NCGS §7A-38.1(l);
h. The duties and responsibilities of the mediator and the participants; and
i. Any agreement reached will be reached by mutual consent.

2. Disclosure. The mediator has a duty to be impartial and to advise all participants of any circumstance bearing on possible bias, prejudice or partiality.

3. Declaring an Impasse. It is the duty of the mediator to timely determine that an impasse exists and that the mediated settlement conference should end.

4. Reporting the Results of the Conference. The mediator shall report to Catawba County within ten (10) days of the mediated settlement conference whether or not an agreement was reached by the parties. If an agreement was reached, the report shall state the nature of said agreement. The mediator's report shall inform Catawba County of the absence of any party known to the mediator to have been absent from the mediated settlement conference without permission. Catawba County must require the mediator to provide statistical data for evaluation of the mediated settlement conference program.

5. Scheduling and Holding the Conference. It is the duty of the mediator to schedule the mediated settlement conference and conduct it prior to the deadline of completion set by these Rules. Deadlines for completion of the conference shall be strictly observed by the mediator unless said time limit is changed by a written order from Catawba County.

RULE 6. COMPENSATION OF THE MEDIATOR

The parties shall compensate the mediator for mediation services, and any ancillary fees related to the mediation, at the rate in accordance with the rate charged for Superior Court mediation. The parties shall also pay to the mediator a one-time per case administration rate in accordance with the rate charged for Superior Court mediation, which is due upon appointment.

RULE 7. MEDIATOR CERTIFICATION

All mediators shall be properly certified in accordance with the rules certifying mediators in Superior Court in North Carolina. (Except when otherwise allowed by Catawba County upon the request of the parties to the mediation.) When selecting mediators, the parties may designate a preference for mediators with a background in construction law or public construction contracting. Such requirements, while preferred, are not mandatory under these Rules. All mediators chosen must either demonstrate they are certified in accordance with the Rules for Mediated Settlement Conferences in Superior Court or must gain the consent of Catawba County to mediate any dispute in accordance with these Rules.

RULE 8. RULE AMENDMENTS

These Rules are subject to amendment by Catawba County at any time the County deems appropriate.

RULE 9. TIME LIMITS

Any time limit provided for by these Rules may be waived or extended by the County for good cause shown.

RULE 10. NO RECORDING

There shall be no stenographic, audio, or video recording of the mediation process by any participant. This prohibition includes recording either surreptitiously or with the agreement of the parties.

AIA® Document A312™ – 2010

Performance Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

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

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

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT
Date:

Amount:

Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond: ☐ None ☐ See Section 16

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or **BROKER:**

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

Sample

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

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

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

.1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

.2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

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

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

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

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

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

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

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

.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

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§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

.2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and

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

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

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

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

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

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

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

§ 14 Definitions

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

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

Sample

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§ 16 Modifications to this bond are as follows:

Sample

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

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address		Address	

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AIA® Document A312™ – 2010

Payment Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

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

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

CONSTRUCTION CONTRACT
Date:

Amount:

Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond: ☐ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or **BROKER:**

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

Sample

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

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- **.1** have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- **.2** have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

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

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

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

Sample

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

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

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

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

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

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- **.1** the name of the Claimant;
- **.2** the name of the person for whom the labor was done, or materials or equipment furnished;
- **.3** a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- **.4** a brief description of the labor, materials or equipment furnished;
- **.5** the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- **.6** the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- **.7** the total amount of previous payments received by the Claimant; and
- **.8** the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

Sample

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§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

Sample

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

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address		Address	

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AIA® Document F703™ – 2023

Request for Certificate of Insurance

TO: *(name and address)*

FROM: *(name and address)*

DATES:
Date of Request:
Certificates Due Date:

The undersigned hereby requests the following certificates of insurance.

Certificate of Insurance Requested:
(Check each applicable policy type.)

- ☐ Commercial General Liability
- ☐ Automobile Liability
- ☐ Worker's Compensation
- ☐ Employers' Liability
- ☐ Professional Liability
- ☐ Other: *(Specify)*

Requested Pursuant to Requirement in Written Agreement

- ☐ Yes. If yes, identify the agreement and provision:
- ☐ No

Reason for Request:
(Describe the reason for this request.)

Other Information:
(Insert other information pertinent to this request, such as the Facilities or project location.)

SUBMITTED BY:

NAME OF COMPANY

SIGNATURE

PRINTED NAME AND TITLE

DATE

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AIA® Document A313™ – 2020

Warranty Bond

CONTRACTOR/PRINCIPAL:
(Name, legal status, and address)

SURETY:
(Name, legal status, and address)

OWNER/OBLIGEE:
(Name, legal status, and address)

CONSTRUCTION CONTRACT
Date:
Description:
(Name and location)

BOND
Term of the Bond
The Term of this Bond commences on the date of final completion under the Construction Contract and continues for a period of 2 years, unless otherwise specified below, notwithstanding a longer warranty period set forth in the Construction Contract.

Amount of this Bond: $
Modifications to this Bond: ☐ None ☐ See Section 16

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	

(Any additional signatures appear on the last page of this Warranty Bond.)

(FOR INFORMATION ONLY — Name, address, and telephone)

AGENT or **BROKER:**

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

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

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

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

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User Notes: (1634023286)

§ 1 During the Term of the Bond, the Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the Contractor's warranty obligations set forth in the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor satisfies its warranty obligations under the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond. It is understood and agreed that in no event shall the Surety's obligations under this Bond extend to warranties provided by the Contractor's suppliers and manufacturers.

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

.1 the Owner first provides notice to the Contractor and the Surety during the Term of the Bond of the Owner's intent to declare a Contractor Default;

.2 the Contractor fails to remedy the Contractor Default within a reasonable amount of time of such notice; and,

.3 the Owner declares a Contractor Default and notifies the Surety.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly, under reservation of rights, and at the Surety's expense, remedy the Contractor's Default. The Surety may, with the consent of the Owner, arrange for the Contractor to remedy the Contractor's Default.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 The responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. The Surety is obligated, without modification or qualification, for the responsibilities of the Contractor for correction of defective work as set forth in the Construction Contract, and additional legal and design professional costs resulting from the Contractor's Default or resulting from the actions or failure to act of the Surety under Section 5.

§ 8 The Owner may request an extension of the Term of this Bond. The Surety, at its sole option, may extend the Term of this Bond by continuation certificate or rider setting forth the new expiration date.

.1 If the Surety extends the Term of this Bond, the Bond shall be considered one continuous bond.

.2 If the Surety decides not to extend the Term of this Bond, then the Surety shall notify the Owner in writing thirty (30) days prior to the end of the current term of this Bond at the address indicated on page 1.

.3 Neither the Surety's failure to extend the Term of this Bond nor the Contractor's failure to provide a replacement bond or other acceptable security shall be considered a breach or default by the Surety or Contractor on this Bond, nor serve as a basis for a claim or demand on this Bond.

§ 9 The Surety's total liability under this Bond is limited to the Amount of this Bond indicated on Page 1, regardless of whether the Term of this Bond is extended, the length of time this Bond remains in force, and the number of premiums that shall be payable or paid.

§ 10 No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work of the Contractor required by the Construction Contract is located and shall be instituted within two years after a declaration of Contractor Default. If the provisions of this Paragraph are void or

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User Notes: (1634023286)

prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be in writing and mailed or delivered to the address shown on the first page of this Bond.

§ 13 Provisions in this Bond that conflict with applicable statutory or other legal requirements shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein.

§ 14 Definitions

§ 14.1 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.2 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with the warranties required under the Construction Contract.

§ 14.3 Owner Default. Failure of the Owner, which has not been remedied or waived, to perform or otherwise comply with the other material terms of the Construction Contract.

§ 14.4 Contract Documents. All the documents that comprise the Construction Contract.

§ 14.5 Surety. The company or companies lawfully authorized to issue surety bonds in the jurisdiction where the project is located.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this Bond are as follows:

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

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address:		Address:	

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AIA® Document G701™ – 2017

Change Order

PROJECT: *(Name and address)*	CONTRACT INFORMATION:	CHANGE ORDER INFORMATION:
	Contract For: General Construction Date:	Change Order Number: 001 Date:
OWNER: *(Name and address)*	**ARCHITECT:** *(Name and address)*	**CONTRACTOR:** *(Name and address)*

THE CONTRACT IS CHANGED AS FOLLOWS:
(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits. Also include agreed upon adjustments attributable to executed Construction Change Directives.)

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

The Contract Time will be increased by Zero (0) days.
The new date of Substantial Completion will be

NOTE: This Change Order does not include adjustments to the Contract Sum or Guaranteed Maximum Price, or the Contract Time, that have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.

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

ARCHITECT *(Firm name)*	CONTRACTOR *(Firm name)*	OWNER *(Firm name)*
SIGNATURE	SIGNATURE	SIGNATURE
PRINTED NAME AND TITLE	PRINTED NAME AND TITLE	PRINTED NAME AND TITLE
DATE	DATE	DATE

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User Notes: (3B9ADA4B)

AIA® Document G702® – 1992

Application and Certificate for Payment

TO OWNER:

PROJECT:

APPLICATION NO: 001
PERIOD TO:
CONTRACT FOR:
CONTRACT DATE:
PROJECT NOS: / /

Distribution to:
OWNER: ☐
ARCHITECT: ☐
CONTRACTOR: ☐
FIELD: ☐
OTHER : ☐

FROM CONTRACTOR:

VIA ARCHITECT:

CONTRACTOR'S APPLICATION FOR PAYMENT

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

1. ORIGINAL CONTRACT SUM		$0.00
2. NET CHANGE BY CHANGE ORDERS		$0.00
3. CONTRACT SUM TO DATE (Line 1 ± 2)		$0.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)		$0.00
5. RETAINAGE:		
a. 0 % of Completed Work (Column D + E on G703)	$0.00	
b. 0 % of Stored Material (Column F on G703)	$0.00	
Total Retainage (Lines 5a + 5b or Total in Column I of G703)		$0.00
6. TOTAL EARNED LESS RETAINAGE (Line 4 Less Line 5 Total)		$0.00
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate)		$0.00
8. CURRENT PAYMENT DUE		$0.00
9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6)	$0.00	

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	$0.00	$0.00
Total approved this Month	$0.00	$0.00
TOTALS	$0.00	$0.00
NET CHANGES by Change Order		$0.00

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

CONTRACTOR:

By: _____ Date: _____

State of:

County of:

Subscribed and sworn to before me this day of

Notary Public:

My Commission expires:

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED $0.00

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

ARCHITECT:

By: _____ Date: _____

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

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(3B9ADA64)

AIA® Document G703® – 1992

Continuation Sheet

AIA Document G702®, Application and Certification for Payment, or G732™, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: 001
APPLICATION DATE:
PERIOD TO:
ARCHITECT'S PROJECT NO:

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED FROM PREVIOUS APPLICATION (D + E)	WORK COMPLETED THIS PERIOD	MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G÷C)	BALANCE TO FINISH (C - G)	RETAINAGE (IF VARIABLE RATE)
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
	GRAND TOTAL	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**0.00%**	**$0.00**	**$0.00**

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Catawba County, North Carolina
Contractors Reimbursable Sales and Use Tax Statement (must accompany each pay request)

Project: _____ Project Location: _____ Pay App/Invoice No: _____

Name of Contractor: _____ For Period: _____

Invoice Date	Vendor Name	Type of Property Purchased	Invoice Number	Invoice Total (Including tax)	State Tax 4.75% (ex.)	County Tax 2.25% (ex.)	Total Tax 7% (ex.)	County
	TOTALS							

The undersigned individual certifies (1) that he or she is an employee or principal of the Contractor that is filing this form with the County to request reimbursement for N.C. State and local sales and use taxes that the Contractor has paid, (2) that the above listed vendors were paid sales tax upon purchases of building materials during the period covered by the construction estimate, and the property upon which such taxes were paid with or will be used in the performance of this contract,(3) that no tax on purchases or rentals of tools and/or equipment is included in the above list, (4) that all of the material above became a part of or is annexed to the building or structure being erected, altered or repaired, and (5) that all of the information on this form, and any additional pages added to this page, if any, is true and accurate.

_____ County, North Carolina
Signed and sworn to (or affirmed) before this day by _____ _____
(name of principal) (signature of principal)

Date: _____ _____
Notary Public's Signature

_____
(Notary's printed or typed name, Notary Public) (Official Seal) My commission expires: _____

AIA® Document G704® – 2017

Certificate of Substantial Completion

PROJECT: *(name and address)*	**CONTRACT INFORMATION:** Contract For: Date:	**CERTIFICATE INFORMATION:** Certificate Number: 001 Date:
OWNER: *(name and address)*	**ARCHITECT:** *(name and address)*	**CONTRACTOR:** *(name and address)*

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

ARCHITECT *(Firm Name)*	**SIGNATURE**	**PRINTED NAME AND TITLE**	**DATE OF SUBSTANTIAL COMPLETION**

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

WORK TO BE COMPLETED OR CORRECTED
A list of items to be completed or corrected is attached hereto, or transmitted as agreed upon by the parties, and identified as follows:
(Identify the list of Work to be completed or corrected.)

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

Cost estimate of Work to be completed or corrected: $

The responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work, insurance, and other items identified below shall be as follows:
(Note: Owner's and Contractor's legal and insurance counsel should review insurance requirements and coverage.)

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

CONTRACTOR *(Firm Name)*	**SIGNATURE**	**PRINTED NAME AND TITLE**	**DATE**
OWNER *(Firm Name)*	**SIGNATURE**	**PRINTED NAME AND TITLE**	**DATE**

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User Notes: (3B9ADA4F)

AIA® Document G706® – 1994

Contractor's Affidavit of Payment of Debts and Claims

PROJECT: *(Name and address)*	**ARCHITECT'S PROJECT NUMBER:**	OWNER: ☐ ARCHITECT: ☐
	CONTRACT FOR:	CONTRACTOR: ☐
TO OWNER: *(Name and address)*	**CONTRACT DATED:**	SURETY: ☐ OTHER: ☐

STATE OF:
COUNTY OF:

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

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

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

Indicate Attachment ☐ Yes ☒ No

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

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

CONTRACTOR: *(Name and address)*

BY:

(Signature of authorized representative)

(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:

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AIA® Document G706®A – 1994

Contractor's Affidavit of Release of Liens

PROJECT: *(Name and address)*	**ARCHITECT'S PROJECT NUMBER:**	OWNER: ☐
		ARCHITECT: ☐
	CONTRACT FOR:	
TO OWNER: *(Name and address)*	**CONTRACT DATED:**	CONTRACTOR: ☐
		SURETY: ☐
		OTHER: ☐

STATE OF:
COUNTY OF:

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

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.

2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR: *(Name and address)*

BY:

(Signature of authorized representative)

(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:

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catawba county
finance

DUMPSTER / ROLL-OFF CONTAINER REQUIREMENTS

Catawba County has a franchise agreement with Republic Services for solid waste disposal. If you need a dumpster or roll-off container for your project, you must use Republic Services.

REPUBLIC SERVICES CONTACT: TABETHA TALLENT
CONSTRUCTION ACCOUNT MANAGER
TELEPHONE: 828-303-0191

- If you own a solid waste dumpster or roll-off container and means to transport it, you may use your own equipment.
- If you have issues establishing service with Republic Services, please contact the Catawba County Utilities & Engineering Office at 828-465-8217.

catawba county
human resources

MAKING. LIVING. BETTER.

Catawba County Government
Contractor Safety Guidebook

Contractor Safety Guidebook Acknowledgement

I hereby acknowledge that I have received a copy of the Catawba County Government Contractor Safety Guidebook.

Name: _____

Title: _____

Company:_ _____

Signed: _____

Date: _____

Return to: Catawba County Government
Purchasing Department
PO BOX 389
Newton, NC 28658

The safety policy of Catawba County Government is to provide for the protection of its employees, citizens, visitors, facilities and surrounding environment through the development and implementation of a comprehensive safety program.

Contractors are expected to also provide safe workplaces and implement their own safety programs. This guidebook is intended to assist in coordinating Catawba County Government facilities and con-tractor operations during construction and renovation projects. By becoming familiar with the policies and procedures in this guidebook, the safety-minded contractor should get the job done safer and with less workplace hazards.

Contractors are expected to comply with all applicable Federal, State, and Local laws and also follow safe work practices for construction trades. Some of these regulations and safe work practices are outlined in this guidebook.

Due to the wide variety of construction operations, it is not possible to outline every conceivable applicable regulation and work practice in this guidebook. Nothing in this guidebook should be construed to be part of the contract specification.

Contractor management and supervision must thoroughly review their own work practices and workplace hazards and then provide employees all the necessary training and equipment for their safety.

EMERGENCY NUMBER — call 911.

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SAFETY PROGRAM OBJECTIVES

Safety and health programs strive to protect people, property, and the environment and must comply with governmental regulations. The objective of this guidebook is to assist in providing a safe environment for employees, citizens, visitors and construction workers in all areas during renovation or new construction projects.

Major objectives of a contractor's safety and health program are to:

1. Protect employees, visitors, property and the environment from potential hazards.
2. Provide a safe and healthful workplace free from recognized hazards.
3. Comply with all governmental safety, health, and environmental standards.
4. Maintain an effective health and safety program, which includes managers, supervisors, and employees.
5. Cooperate with building occupants and others involved in the work area to maintain a safe and healthful workplace.

BASIC SAFETY RULES

Contractors and their employees shall:

1. Observe the posted speed limit.
2. Obey all posted warnings.
3. Observe the No Smoking and Drug Free Workplace policies on the Catawba County Government Campus.
4. Refrain from fighting and horseplay on Catawba County Government property.
5. Remain in designated areas at all times and use approved travel routes into and out of the job site.
6. Maintain work areas in an orderly manner that does not block exits or traffic through the work area.
7. Remove trash daily.

SPECIAL PROCEDURES AND WORK PERMITS

The following special procedures are specific to Catawba County Government. Although some topics listed below are covered by state and federal regulations, they receive special interest in the County setting.

1. Hazard Communication and Chemical Safety

a) Contractors shall have copies of Safety Data Sheets (SDS) available at the job site for review.

b) To ensure that all contractors' employees know and understand the hazards of all chemicals they are exposed to and how to protect themselves from hazardous chemicals, each contractor must

establish and maintain an effective hazard communication program. The program must comply with OSHA standard 29 CFR 1926.59.

c) The contractors HAZCOM program must provide:

- A written hazard communication program,
- An inventory of chemicals,
- Safety data sheets (SDS) for all chemicals at the site, • Labeling of all containers and other warnings, and
- Employee training.

d) Catawba County will provide information to contractors if known asbestos or lead hazards are involved in the construction project. Upon discovery of materials that may contain asbestos (Presumed Asbestos asbestos-containing material, PACM) or lead, the contractor should contact the Project Manager and/or Risk Manager for environmental testing.

2. Excavations and Trenches

a) A daily inspection of excavations, the adjacent areas, and protective systems shall be performed by a competent person.

b) Trenches more than 5 feet deep require shoring or sloping.

c) Substantial barricades to prevent persons from falling into an open trench shall be maintained around the perimeter of trenches. This is especially important at the end of the workday for trenches that must remain open overnight. A plastic ribbon is not substantial for this purpose.

d) Ladders will be provided at least every 25 feet for access to trenches over 4 feet deep.

3. Electrical Hazards

a) It is very important that each contractor establish and maintain an effective electrical safety-related work practices program. References for such a program include OSHA standards 29 CFR 1910.331 to 1910.333 — Electrical Safety-Related Work practices and CFR 1926 Subpart K Electrical.

b) Training shall be documented for all employees who face a risk of electric shock from working on, near, or with electrical circuits which are not reduced to a safe level by electrical insulation.

4. Lockout/Tagout

a) The lockout/tagout standard (the control of hazardous energy standard) in 29 CFR 1926.417 and will be followed by all contractors on all job sites. The OSHA lockout/tagout procedure requires at a minimum:

- Use of locks and/or tags on energy isolating devices.

- Special lockout/tagout procedures for jobs requiring multiple lockout/tagout devices.

- Contractors must provide their own lockout/tagout equipment.
- All contractors' employees, (authorized, affected, and other employees), must be trained by the contractor (or another acceptable training source) concerning lockout/tagout procedures.

- An annual inspection shall be conducted by an authorized employee of the contractor to evaluate the implementation & efficacy of lockout/ tagout procedures.

- Locks and/or tags must not be removed by anyone other than the employee applying them except under a special, approved permit.

- Testing or positioning of machines or equipment will be performed only under special procedures per OSHA 29 CFR 1910.147(f).

b) Procedures: All contractors will have a general lockout/tagout program prior to performing work at or for Catawba County Government. A written form will be required for lockout/tagout procedures for machinery on equipment which require more than one energy isolating device to be locked and/or tagged.

c) Training: All contractors' employees will be trained by the contractor (or another acceptable training source) concerning the lockout/tagout procedures prior to beginning work at the site. A record will be kept of all employees trained and verification (by exam or other written means) that they understood the training they received. The training will include the disciplinary actions which will be taken if lockout/ tagout procedures are not followed.

d) Inspections: Audits and inspections of the lockout/tagout procedures will be conducted routinely by the contractor's foreman, supervisor, or on-site safety personnel. A record will be kept of the inspections and the follow- up action taken.

5. Confined Space Entry Program

a) Confined spaces present serious potential hazards to employees entering them, including oxygen deficiency, toxic materials, flammable materials, and hazardous energy. Each contractor must establish and maintain an effective confined space entry procedure that complies with OSHA standard 29 CFR 1926.21(b)(6) and 1910.146 when applicable.

b) For those contractors performing work in areas with confined spaces, a copy of the confined space entry procedures must be submitted to the Project Manager and/or Risk Manager prior to beginning work at the site.

c) Contractors must provide all equipment required for safe entry, including special rescue equipment.

6. Fall Protection

a) Reasonable fall protection shall be provided to protect personnel from accidental falls associated with floors, platforms, scaffolds, guardrails, physical barriers, and elevated work locations. Standard guardrails must be provided for work locations 6 feet or more above the adjacent level per OSHA standard 29 CFR 1926.500 and fall protection generally provided over 10 feet.

b) All employees working at unguarded locations above 6 feet in construction (10 feet on scaffolds) must be protected by properly wearing approved fall protection equipment including safety harnesses and life lines as specified by supervision. All employees required to wear approved fall protection devices must be properly trained concerning the need for and purpose of the protection. In addition, employees must be instructed in the proper use of the equipment and shall demonstrate that they know, understand, and can use the fall protection devices properly.

c) Supervisors shall ensure the use of fall protection devices as required by 29 CFR 1926.500 Subpart M.

7. Scaffolds

a) Contractors shall comply with OSHA Standards 29 CFR 1926, Subpart L on Scaffolding and 29 CFR 1910.28.

b) Access to scaffolds shall be limited to authorized personnel only, especially after working hours.

SAFETY POLICIES

a) Facilities, Equipment, Tools and Vehicles: All workplace facilities equipment, tools and vehicles must be properly designed and maintained from a safety standpoint. All workplace facilities, equipment, and activities must comply with the applicable governmental regulations including OSHA and EPA. Proper stairs, ladders, platforms, and guardrails must be provided to ensure employee safety and compliance with OSHA regulations. All equipment tools and vehicles used must be used in accordance with manufacturers operating instructions.

b) Education and Training: All managers, supervisors, and employees must be properly trained to recognize, evaluate, and control workplace safety and health hazards. No employee is allowed to perform a job until he or she has been properly trained to perform the job safely. Specific training must be provided concerning the safety rules and procedures pertaining to the jobs being performed. Safety and health training is to be conducted initially upon employment and at least annually thereafter. Frequent refresher training such as tool box safety talks should also be part of the training program.

c) Inspections: Contractors should perform frequent and regular safety inspections.

d) Emergency Procedures: All employees must know, understand, and be able to follow all workplace emergency procedures pertaining to their assignment, including calling 911. Periodic tests, drills, audits, etc. must be conducted to verify employee knowledge and understanding of all emergency procedures.

e) Accidents: All accidents, incidents, injuries and illnesses must be reported to supervision immediately, so they can be properly investigated and employees properly protected. Injuries and illnesses requiring an "Employers' first Report of Accident" will be reported to the Project Manager and/or Risk Manager.

f) Manual Materials Handling: Manual materials handling and other physical activities must be performed only by those employees physically able to do so.

g) Enforcement: Contractors should consider disciplinary action for unsafe acts.

GENERAL SAFETY PROCEDURES

The following General Safety Procedures apply to the entire workplace and should be followed by managers, supervisors and employees.

1. OSHA General Duty Clause

Hazardous conditions or practices not covered in an OSHA standard may be covered under Section 5(a)(1) of the Occupational Safety and Health Act of 1970 which states: "Each employer shall furnish to each of his employee's employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

2. General Inspections and Training

a) Contractors should designate a competent site-safety coordinator for each job site. The contractor's site-safety coordinator should be identified to the Project Manager and/or Risk Manager in the event that safety concerns regarding the worksite arise.

b) Contractors should initiate and maintain an inspection program to provide for frequent and regular self-inspections of the job site, materials, and equipment.

c) Contractors should instruct each employee in the recognition and avoidance of unsafe conditions and in the regulations applicable to his or her work environment and to control or eliminate any hazards or other exposure to illnesses or injury.

d) The use of any machinery, tool, material, or equipment which is not in compliance with any applicable requirements of North Carolina DOL or OSHA standards is prohibited.

3. Medical Services and First Aid

a) A person trained to render first aid is to be available at the worksite.

b) Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.

4. Hand and Power Tools

a) Electric power operated tools shall either be approved double-insulated, or be properly grounded, and used with ground fault circuit interrupters when used in damp or wet areas.

b) Only authorized and properly trained employees shall use power tools.
c) Powder actuated tools require certified operators and warning signs posted in all areas affected by the noise of the nail gun.

d) Wrenches shall not be used when the jaws are sprung to the point that slip page occurs.

e) Impact tools shall be kept free of mushroomed heads.

f) The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the tool.

5. Personal Protective Equipment (PPE)

Appropriate personal protective equipment shall be worn in all operations where there is an exposure to hazardous conditions or where the need is indicated for using such equipment to reduce the hazard to the employees.

6. Eye and Face Protection

a) Eye and face protection shall be provided when machines or operations present potential eye or face injury.

b) Eye and face protective equipment shall meet the requirements of ANSI Z87.1-1991, “Practice for Occupational and Educational Eye and Face Protection.”

c) Employees involved in welding operations shall be furnished with filter lenses or plates of at least the proper shade number.

d) Employees exposed to laser beams shall be furnished suitable laser safety goggles that will protect for the specific wavelength of the laser and be optical density adequate for laser involved.

7. Head Protection

Head protective equipment (hard hats/ helmets) shall be worn in areas where there is a possible danger of head injuries from impact, flying or falling objects, or electrical shock and burns. Hard hats/ helmets shall meet the performance requirements of ANSI Z89.1, "Standard for Industrial Protective Helmets."

8. Hearing Protection

a) Feasible engineering or administrative controls shall be utilized to protect employees against sound levels in excess of those shown in Table D-2, OSHA Standard 1926.52

b) When engineering or administrative controls fail to reduce sound levels within the limits of Table D-2, hearing protective devices shall be provided and used.

c) Hearing protection is required at constant noise above 85 decibels or impact noise above 140 decibels.

d) In all cases where the sound levels exceed the values shown in safety and health regulations, a hearing conservation program shall be administered.

9. Respiratory Protection

a) When engineering or administrative controls are not effective in controlling toxic substances, appropriate respiratory protective equipment will be provided and shall be used.

b) Respiratory protective devices provided by supervisors shall be appropriate for the hazardous material involved and the extent and nature of the work requirements and conditions.

c) Employees required to use respiratory protective devices shall be thoroughly trained in their use.

d) Contractors should have a written respirator protection program that includes respirator training, fit-testing and medical qualification documentation.

10. Gases, Vapors, Fumes, Dusts, and Mists

a) Exposure to toxic gases, vapors, fumes, dusts, and mists at a concentration above those specified in the most recent "Threshold Limit Values of Airborne Contaminants" of the ACGIH, shall be avoided.

b) Administrative or engineering controls must be implemented whenever feasible to comply with TLV's.

c) When engineering and administrative controls are not feasible to achieve full compliance, protective equipment or other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed. Any equipment and technical measures used for this purpose must first be approved for each particular use by an industrial hygienist or other technically qualified person.

11. Electrical

a) All electrical work shall be in compliance with the most recent National Electrical Code or the NEC according to the construction documents.

b) Only qualified persons are permitted to work on or near energized conductors or parts and then only under special procedures that ensure proper employee protection.

c) Unqualified persons shall not be allowed to work within 10 feet of energized overhead power lines.

d) Equipment must not be operated closer than 10 feet to overhead energized power lines unless specific procedures are followed by qualified persons using appropriate protection equipment.

e) Extension cords used with portable electric tools shall be the 3-wire type and shall be protected from damage. Splices shall have soldered wire connections with insulation equal to the original. Worn or frayed cords shall not be used.

f) Bulbs on temporary lights shall be equipped with guards or deeply recessed in the reflector. Temporary lights shall not be suspended by their electric cords unless designed for suspension.

g) Receptacles for attachment plugs shall be of the approved concealed contact type. Where different voltages, frequencies, or types of current are supplied receptacles shall be of such designs that attachment plugs are not interchangeable.

h) Each disconnecting means of motors and appliances and each service feeder or branch circuit at the point where it originates shall be legibly marked to indicate its purpose, unless located and arranged so the purpose is evident.

i) Cable passing through work areas shall be covered or elevated to protect it from damage which would create a hazard to employees.

j) Boxes for disconnecting means shall be securely and rigidly fastened to the surface upon which they are mounted and fitted with covers.

k) All extension cords and cord and plug connected equipment shall be protected by an assigned equipment grounding conductor program.

l) No employer shall permit an employee to work in proximity to any part of an electric power circuit that he may contact, unless the employee is protected against electric shock by de- energizing the circuit and grounding it or by guarding it by effective insulation or other means.

m) In work areas where the exact location of underground electric power lines is unknown, workers using jackhammers, bars, or other hand tools which may contact an energized line shall be provided with insulated protective gloves.

12. Fire Protection

a) Firefighting equipment will be conspicuously located, readily accessible at all times, shall be periodically inspected, and shall be maintained in operating condition.

b) Extinguishers are to be placed at least every 75 feet. Extinguishers are to be provided by the contractor.

c) Each employee must know the alarm system at the worksite so the employees and the local fire department, can be alerted during an emergency.

13. Flammable and Combustible Liquids

a) Flammable and combustible liquids shall only be stored in approved containers and in appropriate quantities for the job site use.

b) Conspicuous and legible signs prohibiting smoking shall be posted in service and refueling areas.

c) Flammable liquids shall be dispensed through grounded and bonded containers.

14. Welding, Cutting and Heating

a) All employees shall be instructed in the safe use of welding equipment prior to using this equipment.

b) Proper precautions (isolating welding and cutting, removing fire hazards from the vicinity, providing a fire watch, etc.) for fire prevention shall be taken where welding or other “hot work” is being done. No welding, cutting or heating shall be done where the application of flammable paints or the presence of any other flammable compounds, or heavy dust concentration creates a fire hazard.

c) Arc welding and cutting operations shall be shielded by noncombustible or flameproof shields to protect persons from direct arc rays. Visual barrier screens are required for arc welding operations.

d) When electrode holders are to be left unattended, electrodes shall be removed and the holder shall be placed or protected so that it cannot make electrical contact with employees or conducting objects.

e) All arc welding and cutting cables shall be completely insulated and be capable of handling the maximum current requirements for the job. There shall be no repairs or splices within 10 feet of the electrode holder except where splices are insulated equal to the insulation of the cable. Defective cables shall be repaired or replaced.

f) Fuel gas and oxygen hoses shall be easily distinguishable and shall not be interchangeable. Hoses shall be inspected at the beginning of each shift and shall be repaired or replaced if defective.

g) General mechanical or local exhaust ventilation or airline respirators shall be provided, as required, when welding, cutting or heating:

- zinc, lead, cadmium, mercury, or beryllium-bearing, materials in enclosed spaces.
- stainless steel with inert-gas equipment.
- in confined spaces.
- where an unusual condition can cause an unsafe accumulation of contaminants.

h) Proper eye protective equipment shall be provided when appropriate.

i) Oxygen cylinders will be stored in a well-protected, well ventilated, dry location 20 feet from combustibles.

15. Housekeeping

a) Form and scrap lumber with protruding nails and all other debris shall be kept clear from all work areas.
b) Combustible scrap and debris shall be removed at regular intervals.
c) Containers shall be provided for collection and separation of all refuse.
d) Covers shall be provided on containers used for flammable or harmful substances.
e) Wastes shall be disposed of at frequent intervals
f) Lay down areas shall be orderly and free from tripping hazards

16. Storage

a) All materials stored in tiers shall be secured to prevent sliding, falling, or collapse.
b) Aisles and passageways shall be kept clear and in good repair.
c) Storage of materials shall not obstruct exits.
d) Materials shall be stored with due regard to their fire characteristics.

17. Ladders

a) The use of ladders with broken or missing rungs or steps, broken or split side rails or with other faulty or defective construction is prohibited. When ladders with such defects are discovered they shall immediately be withdrawn from service.
b) Portable ladders shall be placed on a substantial base at a 4 to 1 pitch, have clear access at top and bottom, extend a minimum of 36 inches above the landing, or be provided with grab rails and secured against movement while in use.
c) Portable metal ladders shall not be used for electrical work or where they may contact electrical conductors.
d) Job-made ladders shall be constructed for their intended use. Cleats shall be inset into side rails 1/2 inch, or filler blocks used. Cleats shall be uniformly spaced, 12 inches, top-to-top.
e) Except where either permanent or temporary stairways or suitable ramps or runways are provided, ladders shall be used to give safe access to all elevations.
f) All users of ladders shall be properly trained and documented by the contractor.
g) Ladders shall be inspected periodically by the contractor.

18. Railings

a) A standard railing used to protect personnel from falls shall consist of top rail, intermediate rail, toe board, and posts, and have a vertical height of approximately 42 inches from upper surface of top rail to the floor, plat- form, etc.

b) The top rail of a railing shall be smooth-surfaced, with strength to with- stand at least 200 pounds. The intermediate rail shall be approximately halfway between the top rail and floor.

c) A stair railing shall be of construction similar to a standard railing, but the vertical height shall be not more than 34 inches, nor less than 30 inches from upper surface of top rail to surface of tread in line with face or riser at forward edge of tread.

19. Scaffolds

a) Scaffolds shall be erected on sound, rigid footing, capable of carrying the maximum intended load without settling or displacement.

b) Scaffolds and their components shall be capable of supporting, without failure, at least 4 times the maximum intended load.

c) Guardrails and toe boards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor, except needle beam scaffolds and floats. Scaffolds 4 feet to 10 feet in height, having a minimum dimension in either direction of less than 45 inches, shall have standard guardrails installed on all open sides and ends of platform.

d) There shall be a screen with maximum 1/2-inch openings between the toe board and the guardrail, where the persons are required to work or pass under the scaffold.

e) All planking shall be Scaffold Grade or equivalent. The maximum permissible span for 1 1/4 x 9 inch or wider plank of full thickness is 4 feet, with medium loading of 50 p.s.f.

f) Scaffolding planking shall be overlapped a minimum of 12 inches or secured from movement.

g) Scaffold planks shall extend over their end supports not less than 6 inches nor more than 12 inches.

h) All scaffolding and accessories shall have any defective parts immediately replaced or repaired.

i) An access ladder or equivalent safe access shall be provided.

20. Air Tools

a) Pneumatic power tools shall be secured to the hose or whip in a positive manner to prevent accidental disconnection.

b) Safety clips or retainers shall be securely installed and maintained on pneumatic impact tools to prevent attachments from being accidentally expelled.

c) The manufacturer’s safe operating pressure for all fittings shall not be exceeded.

d) All hoses exceeding 1/2-inch inside diameter shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure.

21. Compressed Air

a) Compressed air used for cleaning purposes shall not exceed 30 psi.

b) Compressed air for cleaning will only be used with effective chip guarding and personal protective equipment. This requirement does not apply to concrete form, mill scale, and similar cleaning operations.

22. Compressed Gas Cylinders

a) Valve protection caps shall be in place when compressed gas cylinders are transported, moved, or stored.

b) Cylinder valves shall be closed when work is finished and when cylinders are empty or moved.

c) Compressed gas cylinders shall be secured in an upright position at all times, except if necessary for short periods of time when cylinders are actually being hoisted or carried.

d) Cylinders shall be kept at safe distances or shielded from welding or cutting operations. Cylinders shall be placed where they cannot become part of an electrical circuit.

e) Oxygen and fuel gas regulators shall be in proper working order while in use.

f) Applicable technical portions of American National Standards Institute, Z49.1, Safety in Welding and Cutting, shall be followed.

23. Hoists and Cranes

a) Contractors must comply with the manufacturer's specifications and limitations for hoists. Rated load capacities, recommended operating speeds, and special hazard Warnings or instructions shall be posted on cars and platforms.

b) Suspended loads should never be moved directly over personnel.

24. Accident Record Keeping and Reporting Requirements

Within eight (8) hours after the death of any employee from a work-related incident.

Within 24 hours of the in-patient hospitalization of one or more employees, amputation or loss of eye as a result of a work-related incident.

Risk Management will call OSH Division at 1-800-625-2267 or 919-779-8560.

Catawba County

Minority-owned, Woman-owned, Disadvantaged-owned Outreach Plan and Guidelines

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OUTREACH PLAN AND GUIDELINES FOR RECRUITMENT AND SELECTION OF MINORITY BUSINESSES FOR PARTICIPATION IN CATAWBA COUNTY BUILDING CONSTRUCTION CONTRACTS

In accordance with G.S. 143-128.2 (effective January 1, 2002) these guidelines establish goals for minority participation in single-prime bidding, separate-prime bidding, Construction Manager-at-Risk, and alternative contracting methods on Catawba County building construction projects in the amount of $300,000 or more. The Outreach Plan shall also be applicable to the selection process of architectural, engineering and Construction Manager-at-Risk services.

Catawba County's current goal for minority participation for public building construction is five percent (5%). The overall goal will be reviewed annually or as soon as relevant data is available.

INTENT

The intent of these guidelines is that Catawba County, as awarding authority for construction projects, and the contractors and subcontractors performing the construction contracts awarded, shall cooperate and in good faith do all things, legal, proper and reasonable to achieve the statutory goal of five percent (5%) for participation by minority businesses in each construction project as mandated by GS 143-128.2. Nothing in these guidelines shall be construed to require contractors or awarding authorities to award contracts or subcontracts to or to make purchases of materials or equipment from minority-business contractors or minority-business subcontractors who do not submit the lowest responsible responsive bid or bids.

DEFINITION

1. Minority – a person who is a citizen or lawful permanent resident of the United States and who is:
    a. Black, that is, a person having origins in any of the black racial groups in Africa;
    b. Hispanic, that is, a person of Spanish or Portuguese culture with origins in Mexico, South or Central American, or the Caribbean Islands, regardless of race;
    c. Asian American, that is, a person having origins in any of the original peoples of the Far East, Southeast Asia and Asia, the Indian subcontinent, or the Pacific Islands;
    d. American Indian, that is, a person having origins in any of the original peoples of North America; or
    e. Female

2. Minority Business – means a business
    a. In which at least fifty-one percent (51%) is owned by one or more minority persons, or in the case of a corporation, in which at least fifty-one percent (51%) of the stock is owned by one or more

minority persons or socially and economically disadvantaged individuals; and

b. Of which the management and daily business operations are controlled by one or more of the minority persons or socially and economically disadvantaged individuals who own it.

3. Socially and economically disadvantaged individual – means the same as defined in 15 U.S.C. 637. "Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias because of their identity as a member of a group without regard to their individual qualities". "Economically disadvantaged individuals are those socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged".

4. Public Entity – means State and all public subdivisions and local government units.

5. Owner – Catawba County.

6. Designer – Any person, firm, partnership, or corporation, which has contracted with Catawba County to perform architectural or engineering work.

7. Bidder – Any person, firm, partnership, corporation, association, or joint venture seeking to be awarded a public contract or subcontract.

8. Contract – A mutually binding legal relationship, or any modification thereof, obligating the seller to furnish equipment, materials or services, including construction, and obligating the buyer to pay for them.

9. Contractor – Any person, firm, partnership, corporation, association, or joint venture which has contracted with Catawba County to perform construction work or repair.

10. Subcontractor – A firm under contract with the prime contractor or Construction Manager-at-Risk for supplying materials or labor and materials and/or installation. The subcontractor may or may not provide materials in the subcontract.

MINORITY AND SMALL BUSINESS PARTICIPATION OUTREACH PLAN

1. Work with minority-focused and small business groups that support MBE and small business inclusion in the solicitation of bids. These groups

include the CVCC Small Business Development Center and the Small Business Technology Center.

2. Place more emphasis on the importance of soliciting certified MBE firms and small businesses for subcontracting opportunities at pre-bid conferences and in the bid documents. Examine specifications to identify special subcontracting opportunities and strongly encourage prime contractors to solicit bids for subcontracts from MBE firms.

3. Provide detailed information to majority contractors concerning the Guidelines for Recruitment and Selection of Minority Business and Outreach Plan and provide information on G.S. 143-129 by holding meetings with the contractors.

4. Assess the effectiveness of the MBE Program, and identify opportunities to enhance it, by evaluating MBE participation and compliance and reviewing the "good faith efforts" provided in bid packages.

5. Identify subcontracting opportunities unique to each construction contract and project and concentrate heavily on targeting certified MBE firms and small businesses that have expressed an interest in Catawba County projects. Identify these opportunities and contact interested businesses no later than 10 days prior to the bid opening and provide a list of prime contractors plan to participate in the project.

6. Build new business relationships through networking and continue networking with other North Carolina cities and counties to find out how their Outreach Program and MBE program is working and sharing "best practices" and ideas to improve the program.

7. Participate in education opportunities throughout the community as they become available and offer training sessions to share the County's Outreach Plan with interested businesses and organizations.

8. Be visible through participation in trade shows and business organizations of interest to MBE firms, majority contractors and small businesses, and provide information to the general public about the MBE Program, and continue outreach efforts to the business community.

9. Enhance the County's web page by including the Outreach Plan and Guidelines, listing good faith efforts, and creating links to MBE resources, and creating awareness of specific subcontracting opportunities.

10. Make available to minority-focused agencies, a list of subcontracting opportunities when they are identified, no later than 10 days prior to the

bid opening, and a list of prime bidders that subcontractors may wish to contact for subcontracting consideration.

11. Continue to maintain a database specifically for MBE firms and majority contractors to ensure those firms wishing to do business with Catawba County have access to up to date information.

12. Advertise upcoming bid opportunities in minority-focused media.

13. Work with architects and engineers to make subcontracting opportunities more noticeable and more easily understood by potential contractors and subcontractors.

DESIGNER

Under the single-prime bidding, separate prime bidding, dual bidding, Construction Manager-at-Risk, or alternative contracting method, the designer must do all of the following:

a. Attend the scheduled prebid conference to explain minority business requirements to the prospective bidders.
b. Assist the owner to identify and notify prospective minority business prime and subcontractors of potential contracting opportunities.
c. Maintain documentation of any contacts, correspondence, or conversations with minority business firms made in an attempt to meet the goals.
d. Review jointly with the owner, all requirements of G.S. 143-128.2(c) and G.S. 143-128.2(f) – (i.e. bidders' proposal for identification of the minority businesses that will be utilized with corresponding dollar value of the bid and affidavit listing Good Faith Efforts or affidavit of self-performance of work, if the contractor will perform work under contract by its own workforce) – prior to recommendation of an award.
e. During the construction phase of the project, review "MBE Documentation for Contract Payment" form with monthly pay applications to the owner and forward copies to the Catawba County.

PRIME CONTRACTOR(S) CONSTRUCTION MANAGER-AT RISK, AND ITS FIRST-TIER SUBCONTACTORS

Under the single-prime bidding, the separate-prime bidding, dual bidding, Construction Manager-at-Risk and alternative contracting methods, contractor(s) must do all of the following:

a. Attend the scheduled prebid conference.
b. Identify or determine those work areas of a subcontract where minority businesses may have an interest in performing subcontract work.
c. At least ten (10) days prior to the scheduled day of bid opening, notify minority businesses of potential subcontracting opportunities listed in the proposal. The notification must include all of the following:

(1) A description of the work for which the subbid is being solicited.
(2) The date, time and location where subbids are to be submitted.
(3) The name of the individual within the company who will be available to answer questions about the project.
(4) Where bid documents may be reviewed.
(5) Any special requirements that may exist, such as insurance, licenses, bonds and financial arrangements.

d. During the bidding process, comply with the contractor(s) requirements listed in the proposal for minority participation.

e. Identify on the bid the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit listing good faith efforts as required by G.S. 143-128.2(c) and G.S. 143-128.2(f) or Intent to Perform Contract with Own Workforce affidavit.

f. Make documentation showing evidence of implementation of Prime Contractor, Construction Manager-at-Risk and First Tier Subcontractor responsibilities available for review by Catawba County upon request.

g. Provide one of the following upon being named the apparent low bidder: (1) an affidavit that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal. This affidavit shall give rise to a presumption that the bidder has made the required good faith effort; or (2) if the percentage is not equal to the applicable goal, then documentation of all good faith efforts taken to meet the goal. The documentation must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations, and evidence of other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract. Failure to comply with these requirements is grounds for rejection of the bid and award to the next lowest responsible and responsive bidder.

h. Identify the name(s) of minority business subcontractor(s) and corresponding dollar amount of work on the schedule of values.

i. Submit with each monthly pay requests(s) and final payment(s), “MBE Documentation for Contract Payment” for designer’s review.

j. If at any time during the construction of a project, it becomes necessary to replace a minority business subcontractor, immediately advise the owner in writing of the circumstances involved. The prime contractor shall make a good faith effort to replace a minority business subcontractor with another minority business subcontractor.

k. ake a good faith effort to solicit subbids from minority businesses during the construction of a project if additional subcontracting opportunities become available.

MINORITY BUSINESS RESPONSIBILITIES

Catawba County does not certify minority, disadvantaged or woman-owned businesses. Any business which desires to participate as an MBE will be required to complete and submit for certification, documents required by the

agencies listed below. Only those firms holding current certification through at least one of the following agencies will be considered eligible for inclusion in meeting the MBE participation percentage goals:

North Carolina Administration Department Historically Underutilized Business (HUB) certification.
North Carolina Department of Transportation Minority/Disadvantage/Woman-owned Business certification.
Small Business Administration 8(a) certification.
Other governmental agencies on a case-by-case basis.

A copy of these guidelines will be issued with each bid package for Catawba County building construction projects. These guidelines shall apply to all contractors regardless of ownership.

MINIMUM COMPLIANCE REQUIREMENTS

All written statements, affidavits or intentions made by the Bidder shall become a part of the agreement between the Contractor and Catawba County for the performance of the contract. Failure to comply with any of these statements, affidavits or intentions, or with the minority business guidelines shall constitute a breach of contract. A finding by the County that any information, submitted either prior to award of the contract or during the performance of the contract, is inaccurate, false or incomplete, shall constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. It shall be solely at the option of Catawba County whether to terminate the contract for breach.

In determining whether a contractor has made Good Faith Efforts, Catawba County will evaluate all efforts made by the Contractor and will determine compliance in regard to quantity, intensity, and results of these efforts. Contractors are required to earn at least 50 points. Failure to file a required affidavit or documentation that demonstrates that the contractor made the required good faith effort is grounds for rejection of the bid.

(1) Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed. Value = 10 points.

(2) Making the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bid or proposals are due. Value = 10 points.

(3) Breaking down or combining elements of work in economically feasible units to facilitate minority participation. Value = 15 points.

(4) Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and those included in the bid documents to provide assistance in recruitment of minority businesses. Value = 10 points.

(5) Attending any prebid meetings scheduled by the public owner. Value = 10 points.

(6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors. Value = 20 points.

(7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing. Value = 15 points.

(8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit. Value = 25 points.

(9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public building construction or repair project when possible. Value = 20 points.

(10) Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands. Value = 20 points.

CATAWBA COUNTY

MWBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor/Architect: _____

Address & Phone: _____

Project Name: _____

Pay Application #: _____ Period: _____

The following is a list of payments to be made to minority business contractors on this project for the above-mentioned period.

Firm Name	***Minority Category**	**Payment Amount**	**Owner Use Only**

*Minority categories: Black, African American **(B)**, Hispanic **(H)**, Asian American **(A)**, American Indian **(I)**, Female **(F)**, Socially and Economically Disadvantaged **(D)**

Date: _____ Approved/Certified by: _____
Name

_____
Title

_____
Signature

****THIS DOCUMENT MUST BE SUBMITTED WITH EACH PAY REQUEST & FINAL PAYMENT**

ATTACH TO BID ATTACH TO BID ATTACH TO BID ATTACH TO BID ATTACH TO BID ATTACH TO BID

State of North Carolina
County of _____

Affidavit
Intent to Perform Contract with Own Workforce

Affidavit of _____
(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____contract.
(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____Name of Authorized Officer: _____

Signature: _____

Title: _____

Seal

State of North Carolina, County of _____
Subscribed and sworn to before me this _____day of _____20____
Notary Public_____
My commission expires_____

ATTACH TO BID ATTACH TO BID ATTACH TO BID ATTACH TO BID ATTACH TO BID ATTACH TO BID

State of North Carolina
County of _____

Affidavit
Listing of Good Faith Efforts

Affidavit of_____
(Name of Bidder)

I have made a good faith effort to comply under the following areas checked:
(A minimum of 50 points is required to have achieved a "good faith effort")

(Y/N)

____ (1) Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed.
Value = 10 points

___ (2) Making the construction plans, specifications and requirements available for review by prospective minority businesses or providing these documents to them at least 10 days before the bid or proposals are due.
Value = 10 points

___ (3) Breaking down or combining elements of work into economically feasible units to facilitate minority participation.
Value = 10 points

____ (4) Working with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
Value = 10 points

____ (5) Attending any probed meetings scheduled by the public owner.
Value = 10 points

____ (6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors.
Value = 20 points

____ (7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of minority business based on lack of qualification should have the reasons documented writing.
Value = 15 points

____ (8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily is required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
Value = 25 points

____ (9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
Value = 20 points

____ (10) Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.
Value = 20 points

In accordance with GS143-128.2(d) the undersigned will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon execution of a contract with the Owner. Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certified that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Seal

Signature: _____

Title: _____

State of North Carolina, County of_____
Subscribed and sworn to before me this _____day of _____20___
Notary Public_____
My commission expires_____

ATTACH TO BID ATTACH TO BID ATTACH TO BID ATTACH TO BID ATTACH TO BID ATTACH TO BID

Identification of Minority Business Participation

I, _____
(Name of Bidder)

do hereby certify that on this project, we will use the following minority business enterprises as construction subcontractors, vendors, suppliers or providers of professional services.

Firm Name, Address and Phone #	Work Type	*Minority Category

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**). American Indian (**I**), Female (**F**), Socially and Economically Disadvantaged (**D**)

The total value of minority business contracting will be ($) _____.

DO NOT SUBMIT WITH BID DO NOT SUBMIT WITH BID DO NOT SUBMIT WITH BID DO NOT SUBMIT WITH BID

State of North Carolina
County of _____

Affidavit
Documentation of Good Faith Efforts

If the goal of 5% participation by minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts.

Affidavit of:_____
(Bidder)

I do certify the attached documentation as true and accurate representation of my good faith efforts.

(Attach additional sheets if required)

Name and Phone Number	*Minority Category	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**), American Indian (**I**), Female (**F**), Socially and Economically Disadvantaged (**D**)

Documentation of the Bidder's good faith efforts to meet the goals set forth in these provisions. Examples of documentation shall include the following evidence:

A. Copies of solicitation for quotes to at least three (3) minority business firms form the source list provided for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contract, and location, date and time when quotes must be received.

B. Copies of quotes or responses received from each firm responding to the solicitation.

C. A telephone log of follow-up calls to each firm sent a solicitation.

D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.

E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.

F. Copy of pre-bid roster.

G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.

H. Letter detailing reasons for rejection of minority business due to lack of qualification.

I. Letter documenting proposed assistance offered to minority businesses in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

Date:_____ Name of Authorized Officer:_____

Signature:_____

Title: _____

Seal

State of _____, County of_____
Subscribed and sworn to before me this _____ day of_____ 20____
Notary Public _____
My commission expires _____

DO NOT SUBMIT WITH BID DO NOT SUBMIT WITH BID DO NOT SUBMIT WITH BID DO NOT SUBMIT WITH BID

State of North Carolina
County of _____

Portion of the Work to be Performed by Minority Firms

If the portion of the work to be executed by minority businesses as defined in GS 143-128.2 (g) is equal to or greater than 5% of the bidder's total contract price, the bidder must complete this Affidavit. This Affidavit shall be provided by the apparent lowest responsible, responsive bidder within 72 hours after notification of being low bidder.

Affidavit of:_____I do hereby certify that on the
(Bidder)

_____
(Project Name)

Project ID #_____Amount of Bid $_____

I will expend a minimum of _____% of the total dollar amount of the contract with minority business enterprises. Minority Businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below.

Attach additional sheets if required.

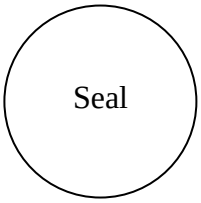
Name and Phone Number	*Minority Category	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**), American Indian (**I**), Female (**F**), Socially and Economically Disadvantaged (**D**)

Pursuant to GS 143-128.2 (d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date:_____ Name of Authorized Officer:_____



Signature:_____

Title: _____

State of _____, County of _____
Subscribed and sworn to before me this _____day of _____20____
Notary Public_____
My commission expires_____

Division 01 - General Requirements

SECTION 01 10 00 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Project consists of interior, exterior and site renovations of the existing building that will become Catawba Agricultural Resource Center and Catawba Education Center to accommodate the several Catawba County Agricultural Resource departments and an Education Center.
   1. 2550 US Hwy 70 SE, Hickory, NC 28602
   2. Owner: Catawba County

B. Architect Identification: The Contract Documents were prepared by ADW Architects, P. A., 2815 Coliseum Centre Drive, Suite 500 Charlotte, North Carolina 28217. Phone:(704) 379-1919.

1.3 CONTRACT

A. Project will be constructed under **a general construction contract**.

1.4 WORK SEQUENCE

A. The Work shall be conducted in the following sequences unless construction phases otherwise specified.
   1. Construct Work in phases to accommodate the Owner's use; if applicable, of the premises during the construction period; coordinate the construction schedule and operations with the Owner.
      The Contractor(s) shall commence work from the Catawba Education Center West side first of the building and then move to the East side to the Catawba Agricultural Resource Center.

1.5 SITE INVESTIGATION

A. The Contractor acknowledges that he has satisfied himself as to the nature and location of the Work, the general and local conditions, particularly those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, ground water table or similar physical conditions at the site, the conformation and condition of the ground, the character, quality and quantity of surface and subsurface materials to be encountered, the character of equipment and facilities needed prior to and during the performance of the Work and all other matters which can in any way affect the Work or the cost thereof under this Contract. Any failure by the Contractor to acquaint himself

with all the available information concerning these conditions will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the Work.

1.6 USE OF PREMISES

A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.
   1. Limits: Confine construction operations to existing tenant spaces to be renovated to accommodate the new Catawba Agricultural Resource Center and Education Center and the exterior portions of the existing building and site indicated on the plans to be renovated.
   2. Owner Occupancy: Allow for Owner occupancy of site and existing building.

B. Use of Existing Building: Maintain existing building in a weathertight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.

C. Occupancy Requirements
   1. Partial Owner Occupancy: The Contractor shall permit the Owner to place and install, or to have other Contractors place and install, as much equipment during the progress of the Work as is possible before the final acceptance of the various parts of the Work, and shall coordinate such placing and installation of the equipment, so that it does not in any way whatever interfere with the progress of the Work or any portion of it.

1.7 PROTECTION REQUIREMENTS FOR NEW AND EXISTING CONSTRUCTION

A. Protect the existing building from wind, storms, cold, heat, water and dust damage of any sort. Provide all equipment and enclosures to maintain this protection and keep the building interior free of water and dust during the life of the Contract.

B. Provide all shoring and bracing required to maintain the integrity and the safety of the existing structure and for the proper execution of the Work.

C. Exercise the utmost care to protect all existing utility lines from damage during the progress of the Work.

D. Provide and erect before any work begins, and maintain during the progress of the Work, all necessary fences, warning signals, signs and lights. Extent of this work and details of construction shall be in accordance with the requirements of all state and local codes.

E. Any portion of the existing building or existing utility services not included as part of this Contract or any portion of the Work damaged because of failure to provide the protection required shall be removed and replaced with new materials and construction at the Contractor's expense. This work shall be accomplished subject to the Architect's and Owners' approval.

1.8 REPLACEMENT AND REPAIR OF ANY STRUCTURES THAT HAVE BEEN DESTROYED IN THE PROGRESS OF THE WORK:

A. Because of the installation of the new items of equipment, fixtures, materials, etc., that are required by this Project, it shall become necessary to remove portions of the existing structure, equipment, and/or utility services. Unless specifically noted otherwise on the Drawings, the Contractor shall be responsible for replacing, in a condition of identical appearance,

construction, design, working order, and strength as its previous state, any such portion of the existing structure, equipment, and/or utility services so required to be disturbed. The replaced item shall meet the approval of the Architect before final approval of the Project is given.

1.9 WORK UNDER OTHER CONTRACTS

A. Separate Contract: Owner reserves the right to award separate contract(s) for the performance of certain construction operations at the Project site. Those operations could be conducted simultaneously with work under this Contract. Those contract(s) would include work related to Owner's FFE.

B. Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.

1.10 OWNER-FURNISHED PRODUCTS

A. Owner will furnish select items of FFE. The Work includes providing systems to receive Owner's equipment and plumbing, mechanical, and electrical connections as indicated.
   1. Owner will arrange for and deliver Shop Drawings, Product Data, and Samples to Contractor.
   2. Owner will arrange and pay for delivery of Owner-furnished items according to Contractor's Construction Schedule.
   3. After delivery, Owner will inspect delivered items for damage. Contractor shall be present for and assist in Owner's inspection.
   4. If Owner-furnished items are damaged, defective, or missing, Owner will arrange for replacement.
   5. Owner will arrange for manufacturer's field services and for delivery of manufacturer's warranties to Contractor.
   6. Owner will furnish Contractor the earliest possible delivery date for Owner-furnished products. Using Owner-furnished earliest possible delivery dates, Contractor shall designate delivery dates of Owner-furnished items in Contractor's Construction Schedule.
   7. Contractor shall review Shop Drawings, Product Data, and Samples and return them to Architect noting discrepancies or anticipated problems in use of product.
   8. Contractor is responsible for receiving, unloading, and handling Owner-furnished items at Project site.
   9. Contractor is responsible for protecting Owner-furnished items from damage during storage and handling, including damage from exposure to the elements.
   10. If Owner-furnished items are damaged as a result of Contractor's operations, Contractor shall repair or replace them.

1.11 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-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. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contract Documents.

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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 21 00 – ALLOWANCES

PART 1 - GENERAL

1.01 SCOPE:

A. The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents.

B. Items covered by these allowances shall be supplied for such amounts and by such persons as the Architect may direct.

C. Designate in Construction Schedule delivery dates for products under each allowance.

D. Designate in Schedule of Values quantities of materials specified under unit cost allowances.

1.02 SELECTION OF PRODUCTS:

A. Architect's Duties:
   1. Consult with Contractor in consideration of products and suppliers. Make selection, designate products to be used. Notify Contractor, in writing, designating:
      a. Product, model, and finish.
      b. Accessories and attachments.
      c. Supplier.
      d. Cost, delivered and unloaded at site.

B. Contractor's Duties:
   1. Assist Architect in determining qualified suppliers. Obtain proposals from suppliers when requested by Architect. Make appropriate recommendations for consideration of Architect. Notify Architect of any effect anticipated by selection of product or supplier under consideration on the Construction schedule or the Contract Sum.
   2. On notification of selection, enter into purchase agreement with designated supplier.

1.03 DELIVERY:

A. Contractor's Responsibility:
   1. Arrange for delivery and unloading.
   2. Promptly inspect products for damage or defects.
   3. Submit claims for transportation damage.

1.04 INSTALLATION:

A. Comply with requirements of referenced specification section.

1.05 ADJUSTMENT OF COSTS:

A. Each Allowance includes the cost, expense, and/or materials as set forth for each item.

B. In the event the materials, as set forth in each allowance, do not cost, as much as allotted, a credit shall revert to the Owner.

C. In the event the materials, as set forth in each allowance, are not used in their entirety, a monetary credit shall revert to the Owner.

D. In either of the above instances, the Contractor shall be required to substantiate quantity actually used of the allotted monies and/or materials.

PART 2 - PRODUCTS -

2.01 ALLOWANCE NO. 1 - CONTINGENCY ALLOWANCE:

A. Make a cash allowance for a contingency that is to cover minor, unforeseen items of work arising during construction. It does not include error or omissions by Contractor. Work shall be charged against this allowance only under the direction of the Architect with approval by Owner.

B. Determined Cash Allowance: **5% of Base Bid.**

2.02 ALLOWANCE NO. 2 –FIRE EXTINGUISHERS AND CABINETS:

A. Make a cash allowance to furnish and install (2) kitchen fire extinguishers and cabinets and (3) fire extinguishers and cabinets for a total of (5). See Specifications Section 10 44 00.

B. Determined Cash Allowance: _____.

C. This allowance shall include the net cost of all materials, delivered FOB job site, plus all applicable taxes, installation, handling and storage. The Contractor's overhead and profit shall be considered as part of the Contract Sum and not part of this allowance.

PART 3 - EXECUTION

(NOT APPLICABLE)

END OF SECTION 01 21 00

SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for unit prices.

B. See Division 01 Section "Allowances" for procedures for using unit prices to adjust quantity allowances.

1.2 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.

1.3 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 at the end of this Section. 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. #1**: IN-PLACE CONCRETE PAVING

1. Description: In-place concrete paving, including procedures for measurement and payment, according to Division 32.
2. Unit of Measurement: Per square foot (4" thickness)

END OF SECTION 01 22 00

SECTION 01 25 00 - PRODUCT SUBSTITUTIONS-PRIOR TO BID

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. The General Conditions of the Contract for Construction (AIA A201-2017) Article 1.2 apply to this section

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling requests for substitutions prior to the Owner's receipt of bids.

B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Division 01 Section "Submittal Procedures".

C. Standards: Refer to Division 01 Section "References" for applicability of industry standards to products specified.

D. Procedural requirements governing the Contractor's selection of products and product options are included under Division 01 Section "Product Requirements".

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor are considered requests for "substitutions". The following are not considered substitutions:

1. Substitutions that are requested by Bidders beyond the 10 days prior to bid opening submittal period.
2. Revisions to Contract Documents requested by the Owner or Architect.
3. Specified options of products and construction methods included in Contract Documents.
4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

A. Substitution Request Submittal: Requests for substitution from prime bidders will be considered if received by the architect ten (10) days prior to the bid opening.

1. Submit three (3) copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required below.

2. Identify the product or the fabrication or installation method to be replaced in each request. Include related specification sections and drawing number.
3. Provide complete documentation on both the product specified and the proposed substitution including the following information as appropriate.

    a. Comparison of specified and proposed substitute product data, fabrication drawings, and installation procedures.
    b. Samples where applicable or requested.
    c. A detailed comparison of significant qualities of the proposed substitution with those of the work specified.
    d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors, that will become necessary to accommodate the proposed substitution.

4. Certification by the Contractor or manufacturer that the substitution proposed is equal-to or better in every respect to that required by the Contract Documents, and that it will perform equal or superior to product specified in the application indicated. The Contractor waives any right to additional payment or time, that may subsequently become necessary because of the failure of the substitution to perform adequately.

5. Architect's Action: The Architect may request additional information or documentation necessary for evaluation of the request. The Architect will notify the Contractors of acceptance of the proposed substitution by means of an addendum to the bid documents. If the proposed substitute is accepted through an addendum use the product specified by name.

B. Architect/Engineer's Substitution Approval during bidding and subsequent addenda does not void the Contractor's responsibility to submit the required shop drawings and comply with the other contract documents and requirements.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: The Contractor's substitution request will be received and considered by the Architect when all of the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of Contract Documents.
3. The request is timely, fully documented and properly submitted.
4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.

B. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an approval or valid request for substitution.

PART 3 - EXECUTION

A. Submit in format as outlined on following page.

PRODUCT SUBSTITUTION

Project _____

Date: _____ Bid Opening Date: _____

Product and / or Fabrication Method: _____

Spec Section: _____

Related Drawings: _____

Criteria or Specified Product	Included
Product Data	_____
Fabrication Drawings	_____
Samples Where Applicable	_____
List of changes or Modifications Needed to Work as Noted in Spec	_____

Criteria or Specified Product	Included
Product Data	_____
Fabrication Drawings	_____
Samples Where Applicable	_____
List of changes or Modifications Needed to Work as Noted in Spec	_____

The substitution proposed is equal-to or better in every respect to that required by the Contract Documents, and it will perform equal or superior to product specified in the application indicated. The Contractor waives right to additional payment or time, that may subsequently become necessary because of the failure of the substitution to perform adequately.

Signed: _____

END OF SECTION 01 25 00

SECTION 01 25 13 - PRODUCT SUBSTITUTIONS-POST BID

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. The General Conditions of the Contract for Construction (AIA A201-2017) Article 1.2 apply to this section

1.2 SUMMARY

A. During bidding period, the Bidders shall comply with the substitution request procedures specified in the Section 01 25 00 of the Project Manual.

B. This Section specifies administrative and procedural requirements for handling requests for substitutions proposed by the Contractor after the award of the Contract.

C. The substitution process is available as a means to promote fair and open procurement by the Owner, and not to provide the Contractor the opportunity to substitute products of an inferior quality. To that end, the Owner reserves the right to reject a product not deemed an equal to the product specified; charge the Contractor for the Additional Services, if required, of the Architect; or require an equitable credit for the substituted product.

E. The Contractor's Construction Schedule and the Schedule of Submittals are included under Division 01 Section "Submittal Procedures".

F. Standards: Refer to Division 01 Section "References" for applicability of industry standards to products specified.

G. Procedural requirements governing the Contractor's selection of products and product options are included under Division 01 Section "Product Requirements".

1.3 DEFINITIONS

A. Definitions used in the Article are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Requests for changes in products, materials, equipment and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions". The following are not considered substitutions:

1. Revisions to Contract Documents requested by the Owner or Architect.
2. Specified options of products and construction methods included in Contract Documents.

3. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

A. Requests for Substitution will be considered during the bidding period. Refer to Section 01 25 00.

B. Substitution Request Submittal: Requests for substitution will be considered if received within thirty (30) days after the Notice to Proceed, or Letter of Intent, which ever comes first. Requests received more than thirty (30) days after the commencement of the work may be considered or rejected at the discretion of the Architect. Substitution items submitted without requests will be rejected.

1. Submit three (3) copies of each request for substitution for consideration. Submit requests in the form and in accordance with the procedures required for change order proposals.

2. Clearly indicate on the transmittal that the product being submitted is a substitution. Do not include on the same transmittal, any product that is not a substitution.

3. Provide a credit change order proposal if the substitution is intended to provide the Owner a product of a lesser value than the value of the specified product. If the substitution will not result in a savings to the owner, then clearly narrate the reason for the proposed change.

4. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions and the following information as appropriate:

a. Product Data, including Drawings and descriptions of products, fabrications and installation procedures.
b. Samples, where applicable or requested.
c. A detailed comparison of significant qualities of the proposed substitution with those for the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors,that will become necessary to accommodate the proposed substitution.
e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
f. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents and that it will perform adequately in the application

intended. Include the Contractor's waiver of rights to additional payment for time that may subsequently become necessary because of the failure of the substitution to perform adequately.

g. Cost information, including a proposal of the net change, if any in the contract sum.

5. Architect's Action: The Architect may request additional information or documentation necessary for evaluation of the request. The Architect will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made, use the product specified by name.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: The Contractor's substitution request will be received and considered by the Architect when all of the following conditions are satisfied, as determined by the Architect; otherwise, requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of Contract Documents.
3. The request is timely, fully documented and properly submitted.
4. The request is directly related to an "or-equal" clause or similar language in the Contract Documents.
5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
6. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for re-design and evaluation services, increased cost of other construction by the Owner or separate Contractors and similar considerations.

B. The Contractor's submittal and Architect's acceptance of Shop Drawings, product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an approval or valid request for substitution.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 25 13

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. See Division 01 Section "Allowances" for procedural requirements for handling and processing allowances.

C. See Division 01 Section "Unit Prices" for administrative requirements for using unit prices.

1.2 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."

1.3 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
   1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
   2. Within 20 days 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 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.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change.
   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 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.
5. 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.

C. Proposal Request Form: Use AIA Document G709

1.4 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. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the Purchase Order amount or Contractor's handling, labor, installation, overhead, and profit. Submit claims within 21 days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. Owner will reject claims submitted later than 21 days after such authorization.
1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
1. Construction Change Directive contains a 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 Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 26 00

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 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 Submittals Schedule and Application for Payment forms with Continuation Sheets.
   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.
   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. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
      a. Related Specification Section or Division.
      b. Description of the Work.
      c. Change Orders (numbers) that affect value.
      d. Dollar value.
         1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
   3. 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 for principal subcontract amounts, where appropriate.
   4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
   5. 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.
   6. 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.
   7. 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.

8. 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.
9. 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.

1.3 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.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. 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.

E. Transmittal: Submit a minimum of 3, or number agreed upon at pre-construction meeting, signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.
   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. 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 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. Submit final Application for Payment with or preceeded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
   1. List of subcontractors.
   2. Schedule of Values.
   3. Contractor's Construction Schedule (preliminary if not final).
   4. Submittals Schedule (preliminary if not final).
   5. List of Contractor's staff assignments.
   6. Copies of building permits.
   7. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
   8. Certificates of insurance and insurance policies.
   9. Performance and payment bonds.
   10. Data needed to acquire Owner's insurance.

H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
   1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
   2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 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. General project coordination procedures.
   2. Coordination Drawings.
   3. Administrative and supervisory personnel.
   4. Project meetings.

B. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Division 01 Section 01 73 00 "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
   2. Division 01 Section 01 77 00 “Closeout Procedures” for coordinating Contract closeout.

1.3 COORDINATION

A. Coordination: The Contactor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. The 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.

B. Contact Progress Reporting: The scheduling and sequence of all operations shall be carefully coordinated with the Owner and Architect.

C. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
   1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

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.

1.4 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
   1. Indicate relationship of components shown on separate Shop Drawings.
   2. Indicate required installation sequences.
   3. Refer to Divisions 21, 22 & 23 for specific Coordination Drawing requirements for fire suppression, plumbing and mechanical installations.
   4. Refer to Division 26 for specific Coordination Drawing requirements for electrical installations.

1.5 PROJECT MEETINGS

A. General Project Meetings: The Architect shall conduct Project coordination/progress meetings on a monthly basis. Project coordination meetings are in addition to specific meetings held for other purposes, such as preinstallation conferences. Schedule and conduct meetings and conferences at Project site, unless otherwise indicated
   1. The Contractor shall attend the monthly progress meetings for the purpose of informing the Owner and the Architect regarding the status of the project. Compile minutes of the meeting, and furnish a copy of the minutes to attendants.
   2. Attendees: Owner, Contractor, Job Superintendent, Material Suppliers, and Subcontractors, as appropriate. Each representative shall be thoroughly familiar with the status of the project and shall be prepared to discuss and act upon any situations which may arise. The time, date and location of these meetings will be established during pre-construction conference. The General Contractor shall provide an updated job progress schedule at each meeting and inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
   3. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
      a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to Combined Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      b. Schedule Updating: Revise Combined Contractor’s Construction Schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
      c. Review present and future needs of each 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) Change Orders

B. Preconstruction Conference: A preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments. The Architect will compile minutes of the meeting, and will furnish a copy of the minutes to the Contractor and Owner.

1. Attendees: Authorized representatives of Owner, Architect, Engineer's Representative, Contractor and their consultants; The Contractor and its job Superintendent (mandatory), job Foreman (mandatory), major subcontractors; manufacturers; 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. The Contractor shall also provide three (3) local telephone numbers which may be used to contact the Contractor or his authorized representative in the event of an emergency after normal business hours.
2. Agenda: Discussion of Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, materials suppliers, with the Architect and Owner, including channels and procedures for communication. Items of significance that could affect progress, including the following:
   a. Tentative construction schedule.
   b. Critical work sequencing.
   c. Designation of responsible personnel.
   d. Procedures for processing field decisions and Change Orders.
   e. Procedures for processing Applications for Payment.
   f. Distribution of the Contract Documents.
   g. Submittal procedures.
   h. Preparation of Record Documents.
   i. Use of the premises.
   j. Responsibility for temporary facilities and controls.
   k. Parking availability.
   l. Office, work, and storage areas.
   m. Equipment deliveries and priorities.
   n. First aid.
   o. Security.
   p. Progress cleaning.
   q. Working hours.
3. At the pre-construction meeting, the General Contractor shall submit a schedule of values consisting of a detailed breakdown of the Contract amount showing separate figures for labor and material for each major work item (i.e., tear-off, insulation, membrane, surfacing, metal, asbestos abatement, etc.) The work listed under the various sections and subsections of the Specifications will serve as the format for preparation of the breakdown.
4. The costs employed in making up any of these schedules will be used only for determining the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the contract price.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
   1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. If related to special inspections or material testing, the Special Inspector and Engineer must attend along with the Architect. **Approved** shop drawings must also be available at these conferences. Coordinate with the Architect the scheduling of these meeting dates.
   2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
      a. Contract Documents.
      b. Options.
      c. Related Change Orders.
      d. Purchases.
      e. Deliveries.
      f. Submittals.
      g. Review of mockups, if any.
      h. Possible conflicts.
      i. Compatibility problems.
      j. Time schedules.
      k. Weather limitations.
      l. Manufacturer's written recommendations.
      m. Warranty requirements.
      n. Compatibility of materials.
      o. Acceptability of substrates.
      p. Space and access limitations.
      q. Regulations of authorities having jurisdiction.
      r. Testing and inspecting requirements.
      s. Protection of construction and personnel.
   3. Record significant conference discussions, agreements, and disagreements.
   4. 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

B. See Division 01 for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.

C. See Division 01 for submitting test and inspection reports and Delegated-Design Submittals and for erecting mockups.

D. See Division 01 for submitting warranties Project Record Documents and operation and maintenance manuals.

1.2 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 approval. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

A. General: The Architect may, with the concurrence of the Owner, furnish to the Contractor versions of contract drawings in electronic form for Contractor's use in preparing submittals. See Paragraph 1.4 and 1.5 on the Contractor’s use of CAD Files

B. 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.

C. Submittals Schedule: Comply with requirements in Division 01 for list of submittals and time requirements for scheduled performance of related construction activities.
   1. The Contractor shall prepare and submit to the Architect, not later than 30 days following the Date of Commencement, and prior to the Contractor’s first Application for Payment, a schedule of all Shop Drawings and Submittals as required by the Contract Documents.
   2. No Applications for Payment will be reviewed or approved until receipt and approval of the Submittal Schedule.
   3. Schedule shall indicate dates for submission.
   4. All Shop Drawings, Samples and Submittals for approval shall be completed within one hundred twenty (120) calendar days following the Date of Commencement or sooner.
   5. The Architect will schedule his manpower to review submittals based on the time limits established above.

a. Submittals by the Contractor received beyond the time limit established above may affect the Architects manpower schedule resulting in additional cost; the Contractor shall reimburse the Owner for the costs of the Architect's services for the review or approval beyond the time stipulated above.

D. 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.
1. Initial Review: **Allow 15 work days for initial review of each submittal**. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. If intermediate submittal is necessary, process it in same manner as initial submittal.
3. **Allow 15 work days for processing each resubmittal**.
4. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

E. 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 4 by 5 inches 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. Unique identifier, including revision number.
   i. Number and title of appropriate Specification Section.
   j. Drawing number and detail references, as appropriate.
   k. Other necessary identification.

F. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

G. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.
1. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.

H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will discard submittals received from sources other than Contractor.
1. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
2. Transmittal Form: Use AIA Document G810 or CSI Form 12.1A.
3. If a submittal is delivered to the Architect on digital media such as a CD or DVD, include a transmittal form with the package. If a submittal is sent electronically, include a digital transmittal form with the correspondence.

I. 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.

J. Use for Construction: Use only final submittals with mark indicating action taken by Architect in connection with construction.

K. Submittal Review by Architect:
1. The Architect will review each of the Contractor's submittals one initial time, and, should re-submittal be required, one additional time to verify that the reason(s) for re-submittal have been addressed by the Contractor and corrections made.
2. Any review required by the Architect, other than the two (2) indicated above, will be considered additional scope of work for the Architect, and the Contractor shall reimburse the Owner for all costs incurred, including the cost of the Architect's services, made necessary to review such additional re-submittals.

1.4 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

A. General: At Contractor's written request, copies of Architect's CAD files may be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:
1. The Contract Documents executed or identified in accordance with Subparagraph 1.5.1 of the General Conditions shall prevail in case of an inconsistency with subsequent versions made through manipulatable electronic means involving computers**.**
2. The Contractor shall not transfer or reuse Instruments of Service in electronic or machine readable form without the prior consent of the Architect and a signed Electronic Machine Readable Release Form submitted to the Architect.
3. Sub Contractors and Material Suppliers must communicate through the Contractor for the use of Instruments of Service in Electronic Form.
4. **The ADW Electronic Machine Readable Release Form following this Section must be submitted along with subsequent fees associated with the files as noted on the form prior to the Architect providing the files**.
5. **The request, signed release form and fee must be submitted to allow 5 working days for the Architect to perform this service.**

1.5 CONTRACTOR'S USE OF ENGINEER'S AND CONSULTANT'S CAD FILES

A. General: The request for the Architect's Engineers and Consultants CAD files shall be at the discretion of the Engineers and Consultants and under the Engineers and Consultants identified conditions.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.
1. Submit one electronic copy in a digital file format. Digital file submittals must be legible and able to accept digital commenting from industry standard tools such as Adobe Acrobat or Bluebeam. Digital file submittals shall not restrict the ability to be printed, the ability to have content copied, or the ability to have pages extracted or added.
2. The General Contractor will be responsible for printing any hard copies of the submittals otherwise required by the Owner, Building Inspector, Fire Marshall, or other reviewing body.

3. Partial or incomplete submittals are not acceptable.
    a. Any submittal or shop drawing received by the Architect, that does not contain all portions required by each Section of the Specification, will be returned not reviewed, not logged and will be considered non-responsive.
    b. Requests for exceptions must be submitted in writing by the Contractor for evaluation and response, a minimum of 30 days prior to the submittal date indicated on the Contractor's approved/updated Submittal Schedule.

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. Manufacturer's catalog cuts.
    e. Wiring diagrams showing factory-installed wiring.
    f. Printed performance curves.
    g. Operational range diagrams.
    h. Compliance with recognized trade association standards.
    i. Compliance with recognized testing agency standards.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Include the following information, as applicable:
    a. Dimensions.
    b. Identification of products.
    c. Fabrication and installation drawings.
    d. Roughing-in and setting diagrams.
    e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
    f. Shopwork manufacturing instructions.
    g. Templates and patterns.
    h. Schedules.
    i. Notation of coordination requirements.
    j. Notation of dimensions established by field measurement.
2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.

D. Coordination Drawings: Comply with requirements in Division 01.

E. Samples: Prepare physical units of materials or products, including the following:
1. Comply with requirements in Division 01 for mockups.
2. 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. Submit one full set 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.

3. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, 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. Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned.
4. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Architect's sample where so indicated. Attach label on unexposed side.
5. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.
6. 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.

F. Product Schedule or List: Prepare a written summary indicating types of products required for the Work and their intended location.

G. Delegated-Design Submittal: Comply with requirements in Division 01.

H. Submittals Schedule: Comply with requirements in Division 01.

I. Application for Payment: Comply with requirements in Division 01.

J. Schedule of Values: Comply with requirements in Division 01.

K. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A.

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 in Division 01.

B. Contractor's Construction Schedule: Comply with requirements in Division 01.

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. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.

G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

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.

J. 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.

K. 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.

L. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. 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.

M. 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.

N. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 1 Section "Closeout Procedures."

O. 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.

P. 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.

Q. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections.

R. 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.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check 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. Approved
2. Approved as noted
3. Revise and resubmit
4. Approved as noted/partial resubmittal required
5. For reference only
6. Not approved
7. Not reviewed

C. Informational Submittals: Architect will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION 01 33 00

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ADW ELECTRONIC MACHINE-READABLE FILE RELEASE FORM

At your request, ADW Architects, p.a. (ADW) will provide the Contractor: _____ with electronic machine readable files for your convenience and use in the preparation of documents subject to the following terms and conditions related to the following project:

Project: Catawba County Agricultural Resource Center & Catawba Education Center

ADW utilizes electronic machine-readable files that are compatible with Autodesk and Bentley software. The files furnished, if so requested, will be exported to a .dwg format. ADW makes no representation as to the compatibility of these files with your hardware and/or software. The Contractor shall understand that the automated conversion of information and data from the system and format used by ADW to an alternate system or format cannot be accomplished without the introduction of inexactitudes, anomalies and errors, whether inadvertently or otherwise. In the event project documentation provided in electronic machine-readable format is so converted, the Contractor agrees to assume all risks associated therewith and, to the fullest extent permitted by law, to hold harmless and indemnify ADW from and against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees, arising therefrom in connection therewith.

Data contained on these electronic machine-readable files is part of ADW's instruments of service and shall not be used by the Contractor or anyone else receiving this data through and from the Contractor for any purpose other than as a convenience in the preparation of documents pertaining to the specific project as indicated on the files furnished. The Contractor recognizes that changes or modifications to ADW's instruments of professional service introduced by anyone other than ADW may result in adverse consequences, which ADW can neither predict nor control. Therefore, and in consideration of ADW's agreement to deliver its instruments of professional service in an electronic machine-readable format, the Contractor agrees, to the fullest extent permitted by law, to hold harmless and indemnify ADW from and against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees, arising out of or in any way connected with the modification, misinterpretation, misuse, or reuse by others of the electronic machine-readable information and data provided by ADW under this agreement. The foregoing indemnification applies, without limitation, to any use of the project documentation on other projects, for additions, or for completion by others, excepting only such use as may be authorized, in writing, by ADW.

These electronic or machine-readable files are not Contract Documents. Significant differences may exist between these electronic machine-readable files and corresponding hard copy Contract Documents due to addenda, change orders or other revisions. ADW makes no representation regarding the accuracy or completeness of the electronic or machine-readable files you receive. In the event that a conflict arises between the signed Contract Documents prepared by ADW and the electronic machine-readable files, signed Contract Documents shall govern. The Contractor is responsible for determining if any conflict exists. By your use of these files, you are not relieved of your duty to fully comply with the Contract Documents, including and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate your work with that of other Contractors.

Under no circumstances shall delivery of the electronic machine-readable files for use by The Contractor be deemed a sale by ADW and ADW makes no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event shall ADW Architects be liable for any loss of profit or any consequential damages. Usage by any parties of the data contained in the electronic machine-readable files released shall constitute agreement to these terms. However, for record keeping we request that you sign this agreement, copy it for your files and return the original hard copy to us along with requested files and the required payment for this service.

The cost of providing this service will be $90.00 per CAD file request payable to:

ADW Architects, pa
Six Coliseum Center
2815 Coliseum Center Drive
Suite 500
Charlotte, N.C. 28217

Acknowledged and accepted by:

_____
Company

_____ _____
Authorized Representative **Date**

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for 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-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 quality-control procedures that facilitate compliance with the Contract Document requirements.
   3. Requirements for Contractor to provide quality-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 “Cutting and Patching” for repair and restoration of construction disturbed by testing and inspecting activities.
   2. Review 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 ensure that proposed construction complies with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size, physical example assemblies to illustrate finishes and materials. 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.

D. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.4 DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

1.5 SUBMITTALS

A. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

B. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

C. Not later than 30 calendar days after the Notice to Proceed date, the contractor shall furnish to the Architect for review a complete list of all subcontractors and all material and equipment to be used in the Project showing the manufacturer, supplier, trade name, and model number of each. Where the specification allows a choice, the list shall indicate the Contractor’s choice. This list shall follow the sequence of the sections of the specifications.

1.6 QUALITY ASSURANCE

A. 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.

B. 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.

C. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.

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. 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.

F. 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.

G. 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.
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.

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 the types of testing and inspecting they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.

B. Special Tests and Inspections: Owner will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.
1. Testing agency will notify Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
3. Testing agency will submit a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
5. Testing agency will retest and reinspect corrected work.

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.

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 revised or replaced Work that failed to comply with requirements established by the Contract Documents.

E. 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 FFfollowing:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field-curing of test samples.
5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
6. Security and protection for samples and for testing and inspecting equipment at Project site.

F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-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.
2. Notify testing agency and Architect at least 48 hours in advance of time required to perform testing services.
3. Notify testing agency and Architect at least 72 hours in advance to inspect concrete reinforcing placement prior to pouring concrete or grouting masonry.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. 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 01 40 00

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 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. "Installer": 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.

J. "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.

K. "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. Conflicting Requirements: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

D. 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) Accessibility Guidelines for Buildings and Facilities	
	Available from Access Board	(800) 872-2253
	www.access-board.gov	(202) 272-5434
CFR	Code of Federal Regulations	
	Available from Government Printing Office	(888) 293-6498
	www.access.gpo.gov/nara/cfr	(202) 512-1530
FED-STD	Federal Standard (See FS)	
FS	Federal Specification	
	Available from National Institute of Building Sciences	(202) 289-7800
	www.nibs.org	

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. 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)	(202) 862-5100
	www.aluminum.org	

AAADM	American Association of Automatic Door Manufacturers www.aaadm.com	(216) 241-7333
AAMA	American Architectural Manufacturers Association www.aamanet.org	(847) 303-5664
ACI	American Concrete Institute/ACI International www.aci-int.org	(248) 848-3700
ACPA	American Concrete Pipe Association www.concrete-pipe.org	(972) 506-7216
AF&PA	American Forest & Paper Association www.afandpa.org	(800) 878-8878 (202) 463-2700
AGC	Associated General Contractors of America (The) www.agc.org	(703) 548-3118
AHA	American Hardboard Association www.ahardbd.org	(847) 934-8800
AI	Asphalt Institute www.asphaltinstitute.org	(859) 288-4960
AIA	American Institute of Architects (The) www.e-architect.com	(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	(301) 972-1700
ANLA	American Nursery & Landscape Association www.anla.org	(202) 789-2900
ANSI	American National Standards Institute www.ansi.org	(202) 293-8020
APA	APA - The Engineered Wood Association www.apawood.org	(253) 565-6600
APA	Architectural Precast Association www.archprecast.org	(941) 454-6989
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
ASTM	American Society for Testing and Materials www.astm.org	(610) 832-9585
AWI	Architectural Woodwork Institute www.awinet.org	(800) 449-8811 (703) 733-0600
AWPA	American Wood-Preservers' Association www.awpa.com	(817) 326-6300
AWS	American Welding Society www.aws.org	(800) 443-9353 (305) 443-9353
BHMA	Builders Hardware Manufacturers Association www.buildershardware.com	(212) 297-2122
BIA	Brick Industry Association (The)	(703) 620-0010

	www.bia.org	
CCFSS	Center for Cold-Formed Steel Structures www.umr.edu/~ccfss	(573) 341-4471
CDA	Copper Development Association Inc. www.copper.org	(800) 232-3282 (212) 251-7200
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 (Formerly: National Particleboard Association) www.pbmdf.com	(301) 670-0604
CPPA	Corrugated Polyethylene Pipe Association www.cppa-info.org	(800) 510-2772 (202) 462-9607
CRSI	Concrete Reinforcing Steel Institute www.crsi.org	(847) 517-1200
CSI	Construction Specifications Institute (The) www.csinet.org	(800) 689-2900 (703) 684-0300
DHI	Door and Hardware Institute www.dhi.org	(703) 222-2010
EIMA	EIFS Industry Members Association www.eifsfacts.com	(800) 294-3462 (770) 968-7945
EJMA	Expansion Joint Manufacturers Association, Inc. www.ejma.org	(914) 332-0040
FMG (FM)	FM Global (Formerly: FM - Factory Mutual System) www.fmglobal.com	(401) 275-3000
GA	Gypsum Association www.gypsum.org	(202) 289-5440
GANA	Glass Association of North America (Formerly: FGMA - Flat Glass Marketing Association) www.glasswebsite.com/gana	(785) 271-0208
HPVA	Hardwood Plywood & Veneer Association www.hpva.org	(703) 435-2900
IGCC	Insulating Glass Certification Council www.igcc.org	(315) 646-2234
KCMA	Kitchen Cabinet Manufacturers Association www.kcma.org	(703) 264-1690
LGSI	Light Gage Structural Institute www.loseke.com	(972) 370-0967
LMA	Laminating Materials Association (Formerly: ALA - American Laminators Association) www.lma.org	(201) 664-2700
MBMA	Metal Building Manufacturers Association www.mbma.com	(216) 241-7333
MCA	Metal Construction Association www.metalconstruction.org	(312) 201-0193
MFMA	Metal Framing Manufacturers Association	(312) 644-6610
MIA	Marble Institute of America www.marble-institute.com	(614) 228-6194
NAAMM	National Association of Architectural Metal Manufacturers	(312) 332-0405

	www.naamm.org	
NAIMA	North American Insulation Manufacturers Association (The) www.naima.org	(703) 684-0084
NCMA	National Concrete Masonry Association www.ncma.org	(703) 713-1900
NCPI	National Clay Pipe Institute www.ncpi.org	(414) 248-9094
NECA	National Electrical Contractors Association www.necanet.org	(301) 657-3110
NEMA	National Electrical Manufacturers Association www.nema.org	(703) 841-3200
NETA	InterNational Electrical Testing Association www.netaworld.org	(303) 697-8441
NFPA	National Fire Protection Association www.nfpa.org	(800) 344-3555 (617) 770-3000
NFRC	National Fenestration Rating Council www.nfrc.org	(301) 589-6372
NGA	National Glass Association www.glass.org	(703) 442-4890
NHLA	National Hardwood Lumber Association www.natlhardwood.org	(800) 933-0318 (901) 377-1818
NLGA	National Lumber Grades Authority www.nlga.org	(604) 524-2393
NPA	National Particleboard Association (See CPA)	
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
NSA	National Stone Association www.aggregates.org	(800) 342-1415 (703) 525-8788
NTMA	National Terrazzo and Mosaic Association, Inc. www.ntma.com	(800) 323-9736 (703) 779-1022
NWWDA	National Wood Window and Door Association (See WDMA)	
PCI	Precast/Prestressed Concrete Institute www.pci.org	(312) 786-0300
PDCA	Painting and Decorating Contractors of America www.pdca.com	(800) 332-7322 (703) 359-0826
PDI	Plumbing & Drainage Institute www.pdionline.org	(800) 589-8956 (508) 230-3516
RCSC	Research Council on Structural Connections www.boltcouncil.org	(800) 644-2400 (312) 670-2400
RMA	Rubber Manufacturers Association www.rma.org	(800) 220-7620 (202) 682-4800
SDI	Steel Deck Institute www.sdi.org	(847) 462-1930
SDI	Steel Door Institute www.steeldoor.org	(440) 899-0010
SGCC	Safety Glazing Certification Council www.sgcc.org	(315) 646-2234
SIGMA	Sealed Insulating Glass Manufacturers Association www.sigmaonline.org/sigma	(312) 644-6610
SJI	Steel Joist Institute	(843) 626-1995

	www.steeljoist.org	
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association www.smacna.org	(703) 803-2980
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
SPI	The Society of the Plastics Industry www.plasticsindustry.org	(202) 974-5200
SPIB	Southern Pine Inspection Bureau (The) www.spib.org	(850) 434-2611
SPRI	SPRI (Single Ply Roofing Institute) www.spri.org	(781) 444-0242
SSINA	Specialty Steel Industry of North America www.ssina.com	(800) 982-0355 (202) 342-8630
SSMA	Steel Stud Manufacturers Association (Formerly: ML/SFA - Metal Lath/Steel Framing Association) www.ssma.com	(312) 456-5590
SSPC	SSPC: The Society for Protective Coatings www.sspc.org	(800) 837-8303 (412) 281-2331
SWI	Steel Window Institute www.steelwindows.com	(216) 241-7333
TCA	Tile Council of America, Inc. www.tileusa.com	(864) 646-8453
TPI	Truss Plate Institute	(608) 833-5900
UL	Underwriters Laboratories Inc. www.ul.com	(800) 704-4050 (847) 272-8800
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association) www.wdma.com	(800) 223-2301 (847) 299-5200
WMMPA	Wood Moulding & Millwork Producers Association www.wmmpa.com	(800) 550-7889 (530) 661-9591
WWPA	Western Wood Products Association www.wwpa.org	(503) 224-3930

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. 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. www.bocai.org	(708) 799-2300
IAPMO	International Association of Plumbing and Mechanical Officials (The) www.iapmo.org	(909) 595-8449
ICBO	International Conference of Building Officials www.icbo.org	(800) 284-4406 (562) 699-0541
ICC	International Code Council (Formerly: CABO - Council of American Building Officials) www.intlcode.org	(703) 931-4533
SBCCI	Southern Building Code Congress International, Inc. www.sbcci.org	(205) 591-1853

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. 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.

CPSC	Consumer Product Safety Commission www.cpsc.gov	(800) 638-2772 (301) 504-0990
EPA	Environmental Protection Agency www.epa.gov	(202) 260-2090
OSHA	Occupational Safety & Health Administration www.osha.gov	(202) 693-1999
USPS	Postal Service www.usps.com	(202) 268-2000

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 42 00

SECTION 01 45 29 - TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 SCOPE:

A. The Owner will employ and pay for the services of an independent testing laboratory to perform specified testing.
   1. Contractor shall cooperate with laboratory to facilitate the execution of its required services.
   2. The Contractor shall be fully responsible for seeing that all materials meet the Project requirements. Failure of the Architect or testing laboratory to detect defective work, workmanship, or materials shall in no way prevent rejection and the Contractor taking approved corrective action when such defects are discovered. The Architect shall not be obligated to make final acceptance.

1.02 LABORATORY DUTIES:

A. Cooperate with Architect and Contractor; provide qualified personnel.

B. Perform specified inspections, sampling and testing of materials and methods of construction. Comply with specified standards and ascertain compliance of materials with requirements of Contract Documents.

C. Promptly notify Architect and Contractor of observed irregularities or deficiencies of the Work or products.
   1. Promptly submit written report of each test and inspection; one copy each to the Architect, Owner, Contractor, and one copy to Record Documents file. Each report shall, at a minimum, include:
      a. Date issued.
      b. Project title and number.
      c. Testing laboratory name, address and telephone number.
      d. Name and signature of laboratory inspector.
      e. Date and time of sampling or inspection.
      f. Record of temperature and weather conditions.
      g. Date of test.
      h. Identification of product and specification section.
      i. Location of sample or test in the Project.
      j. Type of inspection or test.
      k. Results of tests and compliance with Contract Documents.
      l. Interpretations of test results.
   2. Perform additional tests as required by the Architect or the Owner.

1.03 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY:

A. Laboratory
   1. Release, revoke, alter or enlarge on requirements of the Contract Documents.
   2. Approve or accept any portion of the Work.
   3. Perform any duties of the Contractor.
   4. Give instruction to the Contractor’s workman in the field. All contact shall be with the Architect (or his representative) and the Contractor’s Project Manager.

1.04 CONTRACTOR'S RESPONSIBILITIES:

A. Cooperate with laboratory personnel, provide access to Work, to manufacturer's operations.

B. Secure and deliver to the laboratory, adequate quantities of representational samples of materials proposed to be used and which require testing.

C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.

D. Furnish copies of products test reports as required.

E. Furnish incidental labor and facilities:
   1. To provide access to Work to be tested.
   2. To obtain and handle samples at the Project site or at the source of the project to be tested.
   3. To facilitate inspections and tests.
   4. For storage and curing of test samples.

F. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests. When tests or inspections cannot be performed after such notice, reimburse Owner for laboratory personnel and travel expenses incurred due to Contractor's negligence. The contractor shall reimburse the owner if an inspection fails for a second time, the second test and any subsequent tests shall be paid for by the GC.

G. The Contractor may for his own convenience, employ and pay for a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing. This shall be done with the understanding that:
   1. The additional testing shall be accomplished in accordance with the General Conditions;
   2. That the finds of such additional inspections, samplings, and testing shall in no way be binding upon the Owner and the Architect;
   3. That any such additional inspections, samplings and testing shall be performed at no additional cost to the Owner.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

NOT APPLICABLE

END OF SECTION 01 45 29

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.

B. See Division 01 for progress cleaning requirements.

1.2 DEFINITIONS

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

1.3 USE CHARGES

A. General: Cost or use charges for temporary facilities are not chargeable to Owner or Architect and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, occupants of testing and inspecting agencies and personnel of authorities having jurisdiction.

B. Sewer Service: Pay sewer service use charges for sewer usage, by all parties engaged in construction, at Project site.

C. Water Service: Pay water service use charges, whether metered or otherwise, for water used by all entities engaged in construction activities at Project site.

D. Electric Power Service: Pay electric power service use charges, whether metered or otherwise, for electricity used by all entities engaged in construction activities at Project site.

1.4 SUBMITTALS

A. Temporary Utility Reports: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

1.5 QUALITY ASSURANCE

A. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.
   1. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

A. Temporary Utilities: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service.
   1. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service

during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

B. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:
   1. Keep temporary services and facilities clean and neat.
   2. Relocate temporary services and facilities as required by progress of the Work.

C. Parking and Traffic Control: Contractor shall be responsible for obtaining and erecting street/parking lot signage as necessary to divert traffic away from staging areas, etc. Contractor is to coordinate signage requirements with the County and Architect. All associated costs are to be borne by the Contractor. Contractor shall provide area for parking for subcontractors, Architect and Owner representatives.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Architect. Provide materials suitable for use intended.

B. Pavement: Comply with Division 32.

C. Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top rails, with galvanized barbed-wire top strand.

D. Portable Chain-Link Fencing: Minimum 2-inch 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide concrete bases for supporting posts.

E. Wood Enclosure Fence: Plywood, 6 feet high, framed with four 2-by-4-inch rails, with preservative-treated wood posts spaced not more than 8 feet apart.

F. Lumber and Plywood: Comply with requirements in Division 06 Section "General Carpentry."

G. Roofing: Standard-weight, mineral-surfaced, asphalt shingles or asphalt-impregnated and -coated, mineral-surfaced, roll-roofing sheet.

H. Gypsum Board: Minimum 1/2 inch thick by 48 inches wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36.

I. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.

J. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indices of 25 and 50, respectively.

K. Paint: Comply with requirements in Division 9 Section "Painting."

L. Water: Potable.

2.2 EQUIPMENT

A. Field Offices: Prefabricated, mobile units, or job-built construction with lockable entrances, operable windows, and serviceable finishes; heated and air conditioned; on foundations adequate for normal loading.

B. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.
   1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

C. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

D. Drinking-Water Fixtures: Containerized, tap-dispenser, bottled-water, drinking-water units, including paper cup supply.
   1. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F.

E. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
   1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
   2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use for type of fuel being consumed.

F. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.

G. Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

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 or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Engage appropriate local utility company to install temporary service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.
   1. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.
   2. Obtain easements to bring temporary utilities to Project site where Owner's easements cannot be used for that purpose.

B. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.
   1. Filter out excessive soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
   2. Connect temporary sewers to municipal system as directed by sewer department officials.
   3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. After heavy use, restore normal conditions promptly.
   4. Provide temporary filter beds, settlement tanks, separators, and similar devices to purify effluent to levels acceptable to authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction until permanent water service is in use. Sterilize temporary water piping before use.
   1. Provide rubber hoses as necessary to serve Project site.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities. Facilities will be located at sites approved by Owner.
   1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
   2. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy.
   3. Drinking-Water Facilities: Provide bottled-water, drinking-water units.

E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed.
   1. Maintain a minimum temperature of 50 deg F in permanently enclosed portions of building for normal construction activities, and 65 deg F for finishing activities and areas where finished Work has been installed.

F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. 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 disconnecting means, automatic ground-fault interrupters, and main distribution switchgear.
   1. Install electric power service underground, unless overhead service must be used.
   2. Install power distribution wiring overhead and rise vertically where least exposed to damage.

H. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.
   1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions.
   1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
   2. Provide one 100-W incandescent lamp per 500 sq. ft., uniformly distributed, for general lighting, or equivalent illumination.
   3. Provide one 100-W incandescent lamp every 50 feet in traffic areas.
   4. Provide one 100-W incandescent lamp per story in stairways and ladder runs, located to illuminate each landing and flight.
   5. Install exterior-yard site lighting that will provide adequate illumination for construction operations, traffic conditions, and signage visibility when the Work is being performed.

J. Telephone Service: Provide temporary telephone service throughout construction period for common-use facilities used by all personnel engaged in construction activities.
   1. At each telephone, post a list of important telephone numbers, including police and fire departments, ambulance service, Architects' office, Engineers' offices and Owner's office.
   2. Provide an answering machine or voice-mail service and a facsimile machine on superintendent's telephone.
   3. Furnish superintendent with electronic paging device for use when away from field office.
   4. Provide a portable cellular telephone for superintendent's use in making and receiving telephone calls when away from field office.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
   1. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access. Coordinate with Architect on location.
   2. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet of building lines. Comply with NFPA 241.
   3. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate to support loads and to withstand exposure to traffic during construction period. Locate temporary roads and paved areas in same location as permanent roads and paved areas. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
   1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
   2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Division 32.
   3. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Division 32.

C. Traffic Controls: Provide temporary traffic controls at junction of temporary roads with public roads. Include warning signs for public traffic and "STOP" signs for entrance onto public roads. Comply with requirements of authorities having jurisdiction.

D. Dewatering Facilities and Drains: Comply with requirements in applicable Division 31 Sections for temporary drainage and dewatering facilities and operations not directly associated

with construction activities included in individual Sections. Where feasible, use same facilities. Maintain Project site, excavations, and construction free of water.

E. Project Identification and Temporary Signs: Prepare Project identification and other signs in sizes indicated. Install signs where indicated to inform public and persons seeking entrance to Project. Do not permit installation of unauthorized signs.
   1. Project Identification: Provide two (2) project identification signs containing such lettered and graphic data and description relative to the construction as required by the Architect.
      a. Project sign shall be as indicated in Division 01 “Project Identification”.
      b. Engage an experienced sign painter to apply graphics for Project identification signs. Comply with details indicated.
      c. Provide copy of proposed sign to Architect for review prior to fabrication.
      d. **Sign shall be installed no later than 2 weeks after notice to proceed**.
   2. Prepare temporary signs to provide directional information to construction personnel and visitors.

F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Division 01 Section for progress cleaning requirements.
   1. If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material to be deposited.

G. Common-Use Field Office: Provide an insulated, weathertight, heated and air-conditioned field office for use as a common facility by all personnel engaged in construction activities; of sufficient size to accommodate required office personnel and meetings of 10 persons at Project site. Keep office clean and orderly.
   1. Furnish and equip offices as follows:
      a. Desk and four chairs, four-drawer file cabinet, a plan table, a plan rack, and bookcase.
      b. Provide a room of not less than 240 sq. ft. for Project meetings. Furnish room with conference table, 12 folding chairs, and 4-foot- square tack board.
   2. Provide an electric heater with thermostat capable of maintaining a uniform indoor temperature of 68 deg F.
   3. Provide an air-conditioning unit capable of maintaining an indoor temperature of 72 deg F.
   4. Provide fluorescent light fixtures capable of maintaining average illumination of 20 fc at desk height. Provide 110- to 120-V duplex outlets spaced at not more than 12-foot intervals, 1 per wall in each room.

H. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility services. Sheds may be open shelters or fully enclosed spaces within building or elsewhere on-site.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near Project site.

B. Stormwater Control: Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of stormwater from heavy rains.

C. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from construction damage. Protect tree root systems from damage, flooding, and erosion.

D. Pest Control: Before deep foundation work has been completed, retain a local exterminator or pest-control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Engage this pest-control service to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.

E. Material Storage Enclosure Fence: Install enclosure fence with lockable gates to completely enclose and hide the materials storage, or store as much material in locked trailers as practicable.
1. Set fixed 6’-0” high chain-link fence posts in compacted mixture of gravel and earth.

F. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

G. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.

H. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
2. Vertical Openings: Close openings of 25 sq. ft. or less with plywood or similar materials.
3. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
4. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.
5. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
6. Protect air-handling equipment.
7. Weatherstrip openings.

I. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
1. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.
    a. Locate fire extinguishers where convenient and effective for their intended purpose.
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 firefighting. Prohibit smoking in hazardous fire-exposure areas.

4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
5. Permanent Fire Protection: At earliest feasible date in each area of Project, complete installation of permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
6. Develop and supervise an overall fire-prevention and first-aid fire-protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
7. Provide hoses for fire protection of sufficient length to reach construction areas. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION AND REMOVAL

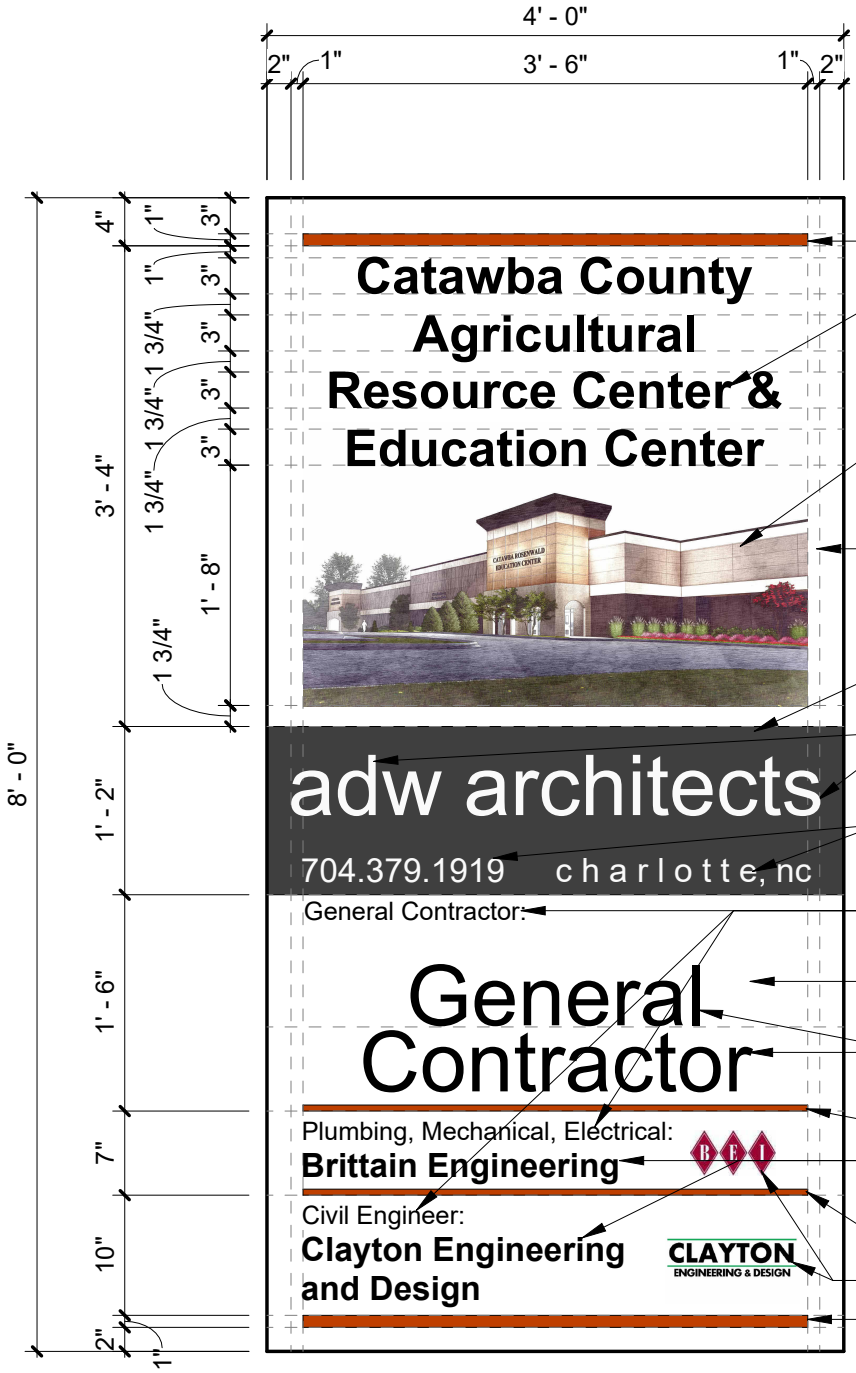
A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.
1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Temporary Facility Changeover: Except for using permanent fire protection as soon as available, do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are the property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Division 01 Section "Closeout Procedures."

END OF SECTION 01 50 00



1" LINE (ORANGE)

CENTER 3" HIGH - BOLD (BLACK) ARIAL

PROJECT GRAPHICS - FILE AVAILABLE FROM ARCHITECT

BACKGROUND TO BE WHITE BY ICI

BLACK RIBBON BACKGROUND

5" HIGH - BOLD (WHITE) SEGOE UI FONT

2" HIGH - NORMAL ALL LETTERS TO BE WHITE

1 1/2" HIGH - NORMAL ALL LETTERS TO BE BLACK

BACKGROUND TO BE WHITE BY ICI

5" HIGH - BOLD (BLACK) SEGOE UI FONT

1/2" LINE (ORANGE)

2" HIGH - NORMAL ALL LETTERS TO BE BLACK

1/2" LINE (ORANGE)

ADD CONSULTANT LOGOS

1" LINE (ORANGE)

NOTES:

1. SIGN TO BE 4' x 8' DURAPLY 3/4" PLYWOOD
2. MOUNT ON 4" x 4" TREATED WOOD POSTS (PAINT WHITE)
3. ALL LETTERS TO BE AMERICO STYLE U.N.O.
4. ALL PAINT NO.TO BE ICI PAINT CO. OR APPROVED SUBSTITUTE
5. BLACK - 1673 DARK SECRET OONN 05/000
6. ORANGE - ICI PAINT COLOR TO MATCH CMYK - CYAN 20, MAGENTA 82, YELOOW 97, BLACK 10

NOTE:
GENERAL CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIALS NECESSARY TO FURNISH AND INSTALL SIGN AS INDICATED ABOVE. COORDINATE LOCATION WITH OWNER AND ARCHITECT
PROVIDE TWO SIGNS AS INDICATED ABOVE AND MOUNT TOGETHER IN A "V" SHAPE

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following administrative and procedural requirements: 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 49 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, except that products consisting of recycled-content materials are allowed, 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.

D. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

E. 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.

1.4 SUBMITTALS

A. Product List: Submit a list, in tabular form, 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:
      a. Specification Section number and title.
      b. Proprietary name, model number, and similar designations
      c. Manufacturer’s name and address.
      d. Supplier’s name and address.
      e. Installer’s name and address.
      f. Identification of items that require early submittal approval for scheduled delivery date.
   3. Completed List: Within sixty (60) days after date of commencement of the Work, submit three (3) copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
   4. Architect's Action: Architect will respond in writing to Contractor within fifteen (15) 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 that products 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. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
      d. Samples, where applicable or requested.
      e. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
      f. Cost information, including a proposal of change, if any, in the Contract Sum.
      g. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
      h. 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 one week of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within fifteen (15) days of receipt of request, or seven (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. 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.
   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.
   5. Store products to allow for inspection and measurement of quantity or counting of units.
   6. Store materials in a manner that will not endanger Project structure.
   7. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
   8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
   9. Protect stored products from damage.

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.

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 forms are included in the Project Manual, prepare a written document, using indicated 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."

D. All warranties/guarantees shall become effective on the date of Substantial Completion as established by the Architect. Written warranties/guarantees shall be signed by the manufacturer or subcontractor and countersigned by the Contractor. All warranties/guarantees shall be addressed to the Owner in care of the Architect.

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

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 “Comparable Products” article to obtain approval for use of an unnamed product.

B. Product Selection Procedures: Procedures for product selection include the following:
   1. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
      a. Substitutions may be considered**,** unless otherwise indicated.

   2. Manufacturers: Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers’ names, provide a product by the manufacturers that complies with requirements.
      a. Substitutions may be considered**,** unless otherwise indicated.
   3. Available Products: Where Specification paragraphs or subparagraphs titled "Available Products" introduce a list of names of both products and manufacturers, provide one of the products listed or another product that complies with requirements. Comply with

provisions in “Comparable Products” article to obtain approval for use of an unnamed product.

4. Available Manufacturers: Where Specification paragraphs or subparagraphs titled "Available Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed or another manufacturer that complies with requirements. Comply with provisions in “Comparable Products” article to obtain approval for use of an unnamed product.
5. Product Options: Where Specification paragraphs titled "Product Options” indicate that size, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide either the specific product or system indicated or a comparable product or system by another manufacturer. Comply with provisions in “Product Substitutions” article.
6. Basis-of-Design Products: Where Specification paragraphs or subparagraphs titled "Basis-of-Design Product" are included and also introduce or refer to a list of manufacturers' names, provide either 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 "Comparable Products" Article to obtain approval for use of an unnamed product.
    a. Substitutions may be considered, unless otherwise indicated.
7. Visual Matching Specification: Where Specifications require matching an established Sample, select a product (and manufacturer) that complies with requirements and matches Architect’s sample. Architect’s decision will be final on whether a proposed product matches satisfactorily.
    a. If no product available within specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents on “substitutions” for selection of a matching product.
8. Visual Selection Specification: Where Specifications include the phrase “as selected from manufacturer’s colors, patterns, textures” or a similar phrase, select a product (and manufacturer) 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, 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, 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 sixty (60) days after 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 must be made in writing directly from the Contractor and not from a subcontractor or material supplier.
3. Requested substitution does not require extensive revisions to the Contract Documents.
4. Requested substitution is consistent with the Contract Documents and will produce indicated results.
5. Substitution request is fully documented and properly submitted.
6. Requested substitution will not adversely affect Contractor's Construction Schedule.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work and that he waives all claims for additional reimbursement related to the substitution which subsequently become apparent.
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.
11. By forwarding a substitution request the Contractor represents that he has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified.

2.3 COMPARABLE PRODUCTS

A. Where products or manufacturers are specified by name, submit the following, in addition to other required submittals, to obtain approval of an unnamed product:
   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 01 60 00

SECTION 01 73 00 – EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes 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 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 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 sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

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. Upon acceptance of surfaces and conditions, any adjustments required for a satisfactory installation shall be made by the Contractor who accepted the Work.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, 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, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
3. Inform installers of lines and levels to which they must comply.
4. Check the location, level and plumb, of every major element as the Work progresses.
5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

B. Benchmarks: Establish and maintain a minimum of two (2) permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

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.

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. 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.

G. 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.

H. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 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.
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

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: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Cutting and Patching: 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 applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

H. 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.

I. 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.

J. 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.

K. 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.

3.7 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."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.9 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 01 73 00

SECTION 01 73 29 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 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 07 Section "Through-Penetration Firestop Systems" for patching fire-rated construction.
   2. Divisions 02 through 49 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
      a. Requirements in this Section apply to mechanical and electrical installations. Refer to Divisions 23 and 26 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.3 DEFINITIONS

A. Cutting: Removal of existing 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 Existing 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. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.

6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
7. 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.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

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 building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

D. Cutting and Patching Conference: If extensive cutting and patching is required, before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.6 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

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 existing 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 existing 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 Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to minimize interruption of services to occupied areas.

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 existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
   1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
   3. Concrete or 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 of these Specifications.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
4. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

END OF SECTION 01 73 29

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Inspection procedures.
   2. Project Record Documents.
   3. Operation and maintenance manuals.
   4. Warranties.
   5. Instruction of Owner's personnel.
   6. Final cleaning.

B. See Division 01 for requirements for Applications for Payment for Substantial and Final Completion.

C. See Divisions 02 through 49 for specific closeout and special cleaning requirements for products of those Sections.

1.2 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, 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 the Work is not complete.
   2. Advise Owner of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
   6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
   7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
   8. Complete startup testing of systems.
   9. Submit test/adjust/balance records.
   10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   11. Advise Owner of changeover in heat and other utilities.
   12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
   13. Complete final cleaning requirements, including touchup painting.
   14. 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. 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.

C. As a further condition of Substantial Completion, the Contractor(s) shall certify that all remaining Work will be completed within 30 consecutive calendar days following the Date of Substantial Completion, and the failure to do so shall automatically reinstate the provisions for damages due the Owner as contained elsewhere in the Agreement or as provided by law for such period of time as may be required by the Contractor to fully complete the Work whether the Owner has occupied the Work or not.

1.3 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.
2. Submit certified copy of 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. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. 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.

1.4 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. Use CSI Form 14.1A.

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.

1.5 PROJECT RECORD DOCUMENTS (submit 2 hard copies and 2 electronic copies on CD of all record documents)

A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

B. Record Drawings: Maintain and submit blue- or black-line white prints of Contract Drawings and Shop Drawings.
   1. 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 cannot be readily identified and recorded later.
      b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
   2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
   3. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
   4. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.

C. Record Specifications: Submit Project's Specifications, including addenda and contract modifications. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
   3. Note related Change Orders and Record Drawings, where applicable.

D. Miscellaneous Record Submittals: Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.6 OPERATION AND MAINTENANCE MANUALS (submit 2 hard copies and 2 electronic copies on CD of all operation and maintenance manuals)

A. Assemble a complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:
   1. Operation Data: Include emergency instructions and procedures, system and equipment descriptions, operating procedures, and sequence of operations.
   2. Maintenance Data: Include manufacturer's information, list of spare parts, maintenance procedures, maintenance and service schedules for preventive and routine maintenance, and copies of warranties and bonds.

B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets.

Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

1.7 WARRANTIES (submit 2 hard copies and 2 electronic copies on CD of all 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. 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.

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 DEMONSTRATION AND TRAINING

A. Instruction: Instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
   1. Provide instructors experienced in operation and maintenance procedures.
   2. Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.
   3. Schedule training with Owner, through Architect, with at least seven days' advance notice.
   4. Coordinate instructors, including providing notification of dates, times, length of instruction, and course content.

B. 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. For each training module, develop a learning objective and teaching outline.
   1. Include instruction for system design and operational philosophy, review of documentation, operations, adjustments, troubleshooting, maintenance, and repair.

3.2 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. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
      b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
      c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
      d. Remove tools, construction equipment, machinery, and surplus material from Project site.
      e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
      f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
      g. Sweep concrete floors broom-clean in unoccupied spaces.
      h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
      i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
      j. Remove labels that are not permanent.
      k. 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.
      l. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
      m. Replace parts subject to unusual operating conditions.
      n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
      o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
      p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
      q. Leave Project clean and ready for occupancy.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.

D. 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 01 77 00

Division 02 – Existing Conditions

SECTION 02 41 13 – SELECTIVE SITE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The provisions of the Contract Documents apply to the work of this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Demolition and removal of existing asphalt and/or concrete pavement, concrete and/or asphalt walks, curbs and gutters, and other exterior site items indicated or not indicated which interfere with the Work.
   2. Removal and/or relocation of existing underground utilities and poles.
   3. Removal and disposal of existing sanitary sewer pipe, water pipe, storm drainage pipe and appurtenances indicated. Filling of existing pipes to be abandoned in place.

1.3 DEFINITIONS

A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner's property.
B. Remove and Salvage: Items indicated to be removed and salvaged remain the Owner's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to Owner's designated storage area.
C. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in the same locations or in locations indicated.
D. Existing to Remain: Protect items indicated to remain against damage and soiling. When permitted by the Architect, items may be removed to a suitable, protected storage location and then cleaned and reinstalled in their original locations.

1.4 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, remove demolished materials from the site with further disposition at the Contractor's option.
B. Storage or sale of removed items or materials on-site will not be permitted.
C. Historical items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to the Owner, which may be encountered, remain the Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to the Owner.

1.5 SUBMITTALS

A. Photographs or videotape, sufficiently detailed, of existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by the Work.
B. Record drawings at Project closeout.
   1. Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions.
C. Proposed dust-control measures.
D. Schedule of selective demolition activities indicating the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
   2. Interruption of utility services.
   3. Coordination for shutoff, capping, and continuation of utility services.

E. Inventory of items to be removed and salvaged or turned over to Owner.
F. Landfill records indicating receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.6 QUALITY ASSURANCE
A. Regulatory Requirements: All work shall comply with Federal, State and Local laws and regulations concerning hauling and disposal of demolition debris.
B. Notify the proper agencies prior to the start of work and obtain all necessary permits for this work.

1.7 PROJECT CONDITIONS
A. Owner assumes no responsibility for actual condition of items or structures to be demolished. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner to the extent practical. However, minor variations may occur due to Owner's removal and salvage operations prior to the start of demolition work.
B. The location of existing underground utilities indicated is approximate only. Field locate all existing underground utilities in the area of work, regardless of whether or not they are indicated. Call NC one call at 1-800632-4949 prior to the start of demolition work for assistance in the location of existing underground utilities.
C. Should charted, uncharted or incorrectly charted utilities be encountered during demolition, contact the Architect immediately for instructions. Cooperate with Owner and utility companies to keep services and facilities in operation.
D. Do not interrupt existing utilities serving facilities occupied and used by the Owner and others, except when permitted in writing by the Owner. Provide acceptable temporary utility service as required to maintain Owner's operations.

1.8 SCHEDULING
A. Owner will occupy portions of the building immediately adjacent to the Work. Conduct selective demolition so that the Owner's operations will not be disrupted. Provide not less than 72 hours notice to Owner of activities that will affect Owner's operations.
B. Arrange selective demolition schedule so as not to interfere with Owner's on-site operations.
C. Notify and coordinate any required relocation and/or removal of existing underground utilities, poles, meters or other above ground appurtenances with the appropriate utility company (i.e. power, telephone, cable and natural gas/propane) prior to the start of selective demolition work.

1.9 USE OF EXPLOSIVES
A. Do not use explosives to perform selective site demolition work.

PART 2 – PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION
A. Call NC one call at 1-800-632-4949 prior to the start of demolition work for assistance in the location of existing underground utilities. Field locate all existing underground utilities in the area of work, regardless of whether or not they are indicated.

B. Should uncharted or incorrectly charted existing utilities be identified, contact the Architect immediately for instructions. Provide a scale drawing with the location of the uncharted or incorrectly charted utilities for use by the Architect in preparing additional direction.
C. Verify that utilities indicated as removed, abandoned and/or relocated have been disconnected and capped.
D. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
E. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged and turned over to the Owner.

3.2 PROTECTION OF PERSONS AND PROPERTY

A. Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
B. Conduct demolition operations and remove debris 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 governing regulations.
C. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around selective demolition area.
    1. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
    2. Protect existing site improvements, appurtenances, and landscaping to remain.
D. Barricade areas of demolition occurring as part of this work, and post with warning lights as required by authorities having jurisdiction.
E. Protect structures, buildings, utilities, walks, pavements, existing vegetation and other facilities to remain from damage caused by settlement, lateral movement, undermining, washout and other hazards created by demolition operations.

3.3 POLLUTION CONTROLS

A. Perform all work in accordance with the requirements of the latest edition of the North Carolina Erosion and Sediment Control Planning and Design Manual and those of the local Erosion Control official.
B. Clean adjacent structures and improvements of dust, dirt, and debris caused by the Work. Return adjacent areas to condition existing before start of selective demolition.

3.4 DEMOLITION OF EXISTING FACILITIES

A. Electric Service
    1. Coordinate the removal and/or relocation of existing utilities with Power Company and Electrial Drawings.
    2. Contact Power Company Representative to arrange for required removal and/or relocation of existing service.
B. Phone Service
    1. Coordinate the removal and/or relocation of existing utilities with Phone Company and Electrial Drawings.
    2. Contact Phone Company Representative to arrange for required removal and/or relocation of existing service.
C. Cable Television
    1. Coordinate the removal and/or relocation of existing utilities with Cable Company and Electrical Drawings.

2. Contact Cable Company Representative to arrange for required removal and/or relocation of existing service.

D. Gas
   1. Coordinate the removal and/or relocation of existing utilities with Gas Company.
   2. Contact Gas Company Representative to arrange for required removal and/or relocation of existing service.

E. Fiber Optic Lines
   1. Coordinate the removal and/or relocation of existing utilities with Fiber Optic Company and Electrical Drawings.
   2. Contact Fiber Optic Company Representative to arrange for required removal and/or relocation of existing service.

F. Utilities
   1. Coordinate the removal and/or relocation of existing utilities with the appropriate utility companies.
   2. Remove existing utilities as indicated and terminate in a manner conforming to the nationally recognized code covering the specific utility and to local jurisdictional codes.
   3. Provide adequate means of support and protection during demolition and other construction operations for existing utilities that are to remain in place. Repair utilities damaged by construction operations to the satisfaction of the utility owner.

G. Asphalt Pavement
   1. Remove asphalt concrete pavement by sawcutting to the full depth of the pavement. Provide neat sawcuts at the limits of pavement removal indicated.

H. Concrete Pavement, Walks and Curbs
   1. Remove concrete pavement and walks to the nearest joint. Sawcut concrete if joints are not present adjacent to the area of demolition.
   2. Sawcut concrete along straight lines to a depth of not less than 2 inches. Break out remainder of concrete, provided that the broken area is concealed in the finished work, and the remaining concrete is sound. At locations where the broken face cannot be concealed, grind smooth or sawcut entirely through concrete.

I. Light & Utility Poles
   1. Remove and relocate light poles as indicated and coordinate with Electrical Drawings. If light poles are owned by a public utility, coordinate the relocation with them.

J. Well Capping

   1. Remove all well pumps, riser piping and electrical cable from wells prior to plugging operations. Verify well is clear of all obstructions by sounding.

   2. Thoroughly chlorinate the well prior to plugging. Chlorinate the well using 2 gallons of liquid chlorine bleach. Chlorine bleach shall remain in well for 24 hours before plugging operations begin.

   3. Provide cement grout or clay slurry from the bottom of the well to the finished ground surface. Provide sealing materials from the bottom upwards utilizing steel or plastic tremie pipe. Raise the tremie pipe slowly as the grout material is introduced and keep full continuously from start to finish. Continuously submerge the discharge end of the tremie in the grout until the well is completely filled.

   4. After the well has been plugged, trim the well casing at a depth that closely matches the top of the grout. Fill in the remainder of the well opening with dirt prior to final grading of the site.

   5. Notify the proper authorities having jurisdiction prior to grouting of well.

6. Comply with all regulations of Forsyth County and NCDEQ Division of Water Quality related to capping the existing well.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
B. Do not burn demolished materials or debris.
C. Transport and legally dispose of demolished materials off of Owner's property.

3.6 CLEANUP AND REPAIR

A. Upon completion of demolition work remove all tools, equipment and demolition materials from site. Remove demolition work area protection and leave areas clean.
B. Repair any demolition performed in excess of that required. Return elements of construction and surfaces to remain to the condition existing prior to the start of construction. Repair adjacent construction or surfaces soiled or damaged by demolition work.

END OF SECTION 024113

SECTION 02 41 19 - SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 SUBMITTALS

A. Schedule of Selective Demolition Activities: Indicate detailed sequence of selective demolition and removal work, with starting and ending dates for each activity, interruption of utility services and locations of temporary partitions and means of egress.

1.4 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Pre-demolition Conference: Conduct conference at Project site.

1.5 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
   1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

   1. Maintain fire-protection facilities in service during selective demolition operations.

1.6 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

D. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.

E. Survey of Existing Conditions: Record existing conditions by use of measured drawings and preconstruction photographs.

F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Arrange to shut off indicated utilities with utility companies.
2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.4 SELECTIVE DEMOLITION

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and

chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.

2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
5. Dispose of demolished items and materials promptly.

B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition, cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.6 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 02 41 19

SECTION 02 80 00 – FACILITY REMEDIATION

The following asbestos report for the existing structures was compiled by:

Affinity Environmental Consulting, LLC
P.O. Box 7153
Asheville, NC 28802

Affinity
Environmental Consulting, LLC

August 17, 2023

Mr. Nick Perkins
DARI
8880 Dietz Avenue
Hickory, NC 28602

RE: Asbestos & Lead-Based Paint Survey
CVCC East Campus
2760 Highway 70 SE
Hickory, NC
AEC Project #23182

Mr. Perkins:

Affinity Environmental Consulting, LLC performed an asbestos and lead-based paint survey at the above referenced site. Please find the final report attached.

Thank you for the opportunity to be of service. If you have any questions or need additional information, please do not hesitate to call.

Sincerely,
Affinity Environmental Consulting, LLC

Mike Cook, CIEC
Principal

Attachment

ASBESTOS
&
LEAD-BASED PAINT SURVEY

for

CVCC East Campus
2760 Highway 70 SE
Hickory, North Carolina

AEC Project #23182

Prepared For:
DARI
8880 Dietz Avenue
Hickory, NC 28602

Prepared By:
Affinity Environmental Consulting, LLC
P.O. Box 7153
Asheville, North Carolina

Report Prepared: August 17, 2023

Asbestos Inspector's:
Mike G. Cook - NC Accreditation #12016
Tim Quint - NC Accreditation #13149
Lead Inspector:
Mike G. Cook – NC Accreditation #120218

Affinity
Environmental Consulting, LLC

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- 2.2 Disclaimer
- 2.3 Results
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APPENDICES

APPENDIX A - Asbestos Survey Homogeneous Areas &Results
APPENDIX B - Asbestos PLM Bulk Sample Laboratory Results
APPENDIX C - Bulk Sample Location Drawing
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1.0 Asbestos Survey

1.1 SUMMARY: Affinity Environmental Consulting, LLC (AEC) performed an asbestos survey of the CVCC East Campus Building located at 2760 Highway 70 SE in Hickory, North Carolina. AEC was retained by Demolition and Asbestos Removal, Inc. (DARI) to perform the survey prior to possible renovations of the building. The survey was performed on August 15th, 2023.

1.2 BUILDING DESCRIPTION: The CVCC East Campus Building located at 2760 Highway 70 SE is a single story, steel framed structure with brick, EFIS, and concrete block exterior. The building contains classrooms and offices. Flooring consists of vinyl floor tile and carpet throughout the classrooms, offices, and corridors. There is ceramic tile in the restrooms and custodial closets. There are vinyl baseboards throughout. Walls consist of drywall throughout. Ceilings consist of suspended ceilings throughout. Piping systems in the building contain fiberglass insulations. The building has a flat roof with a rubber membrane covering. **No roofing or exterior materials were included in this asbestos survey. These materials should be sampled for asbestos content prior to disturbance.**

1.3 SAMPLE COLLECTION: Bulk samples were collected of suspect asbestos-containing materials (ACM) in general accordance with sampling protocols established in US EPA Regulation 40 CFR Part 763 Asbestos Hazard Emergency Response Act (AHERA). The bulk sampling was conducted to fulfill requirements as set forth in EPA's National Emissions Standards for Hazardous Air Pollutants (NESHAPS) asbestos regulation, 40 CFR, Part 61, Subpart M which requires an asbestos evaluation of buildings scheduled for renovation or demolition.

Suspect materials are divided into homogeneous areas for sampling. A homogeneous area is described as a section of material with the same color, texture, age, composition, and other characteristics that indicate a continuity of the material. The bulk samples were taken of non-friable and friable (material, which can be crumbled or reduced to powder by hand pressure). The suspected ACM samples were taken from Miscellaneous Materials (MISC). Attached in **Appendix A** are descriptions of all homogenous areas identified and an estimate of quantity of asbestos, location, and type of asbestos in each homogeneous area. **All quantities are estimates and should be field verified for all other uses by others.** If no asbestos was detected in a sample, it is indicated as None Detected.

1.4 SAMPLE ANALYSIS: The samples were shipped via FedEx to SAI, an NVLAP accredited laboratory, in Greensboro, NC for PLM analysis. PLM is the EPA approved method for analyzing bulk samples for asbestos. This method utilizes a light microscope equipped with polarizing filters. The identification of asbestos fibers is determined by the visual properties displayed when the sample is treated with various dispersion staining liquids. The actual structure of the fiber and the effect of polarized light on the fiber substantiate identification. The limit of detection of asbestos by PLM is about 1 percent by area; thus, samples containing less than 1 percent of asbestos are not reliably detected by this technique. The PLM method does determine both the percent (1% or above) and type of asbestos in the bulk sample.

1.5 RESULTS: Following are the asbestos-containing materials identified during this asbestos inspection of the 2760 Highway 70 SE Building:

TABLE 1 – Asbestos-Containing Materials Identified			
Homogenous Area	Asbestos-Containing Material	Location	Photo #
A-12	Black Floor Mastic	941 Common Area (Carpet Removal Required to Identify Full Extent of Material)	1
A-14	Black Mastic Under Non-ACM Tile	EC917 Closet Under Hot Water Heater (9 SF)	2

Homogeneous area details and results are listed in Appendix A. Laboratory analysis data is attached in Appendix C. Bulk sample location drawing is attached in Appendix B. Photographs are attached in Appendix E.

1.6 RECOMMENDATIONS AND REQUIREMENTS: Recommendations are made with knowledge of how asbestos-containing materials are generally handled during a renovation or demolition. Before proceeding with renovation or demolition of any building or the removal of any asbestos-containing materials, friable or non-friable, contact the regulatory agency with EPA-NESHAPS authority for the area where the work is to occur. In North Carolina, the NC DHHS/Division of Public Health Hazards Control Unit has that authority. Their contact information is:

Health Hazards Control Unit
NC DHHS/Division of Public Health
1912 Mail Service Center
Raleigh, NC 27699-1912
Phone: 919-707-5950
Website: www.epi.state.nc.us/epi/asbestos/demolition.html

Also contact your local city and county governments for any permitting regulations that they may require.

According to current EPA regulations, asbestos-containing materials (ACM) are any materials containing more than 1% by weight of any mixture of asbestos types. The disposed asbestos must be placed in a landfill that is accredited to receive these materials. This landfill must be notified of the presence of ACM debris and waste before disposal. Any asbestos-containing materials identified should be removed by a North Carolina Department of Health and Human Safety (DHHS) Health Hazards Control Unit (HHCU) accredited contractor prior to disturbance.

Additional sampling may be necessary if additional suspect asbestos-containing materials are discovered during the renovation process.

END OF SECTION

2.0 Lead-Based Paint Survey Report

2.1 SUMMARY: Affinity Environmental Consulting, LLC (AEC) performed a lead-based paint survey of the CVCC East Campus Building located at 2760 Highway 70 SE in Hickory, North Carolina. AEC was retained by Demolition and Asbestos Removal, Inc. (DARI) to perform the survey prior to possible renovations of the building. The survey was performed on August 15th, 2023. The LBP survey was performed on interior painted major building components of the building. A Viken Pb200e spectrum XRF analyzer was used for the survey.

2.2 DISCLAIMER: This is our report of X-Ray Fluorescence (XRF) analysis. The presence or absence of lead-based paint or lead-based paint hazards applies only to tested surfaces on the date of the field visit and these conditions may change due to deterioration or maintenance. Ongoing monitoring by the owner is usually necessary. Please review this report fully; including any remarks printed on each page and contact us for an explanation of any aspect of this report, written or printed, which you do not fully understand.

2.3 RESULTS: The XRF survey indicates components with Lead-Based Paint at or above the federal regulatory level of 1.0 mg/cm^2:

TABLE 2 – Lead-Based Painted Components Identified

Substrate	Component	Location	Result mg/cm^2	Photo #
Metal	Ceiling Bar Joists	Throughout Building	1.1 – 1.5	3

All XRF paint testing data is attached in Appendix D and photographs in Appendix E.

2.4 RECOMMENDATIONS: According to the North Carolina Department of Health and Human Services (NCDHHS), any painted building component containing lead levels greater than or equal to 1.0 mg/cm^2 (XRF) or 0.06% by weight (paint chip analysis) must be disposed of in a construction and demolition landfill or municipal solid waste landfill (Subtitle D). It is common knowledge throughout the lead removal industry that the OSHA PEL lead level of 50 ug/m^3 is likely to be exceeded during the disturbance of painted building components with lead levels equal to or greater than 1.0 mg/cm^2 or 0.5% by weight. All other tested building components containing lower lead levels, less than 1.0 mg/cm^2, have less potential for the OSHA PEL level of 50 ug/m^3 to be reached during controlled disturbance. When conducting activities that involve the disturbance of any components containing lead-based paints, OSHA Construction Standard 29 CFR 1926.62 procedures should be implemented. At a minimum, this includes, negative exposure assessments, training, medical surveillance, and personal protection. In addition, lead-based paint and lead-based painted components should be properly disposed in accordance with local, state, and federal regulations and requirements.

END OF SECTION

Affinity
Environmental Consulting, LLC

APPENDIX A

Asbestos Inspection Homogeneous Areas
&
Results

Affinity Environmental Consulting, LLC

Asbestos Inspection Results
2760 Highway 70 SE (CVCC East Campus)
Hickory, NC

Homogeneous Area					Material Description			
Number	Description	Sample #	Sample Location	Total Asbestos % and Type	Location(s)	Estimated Quantity	Condition	Potential for Disturbance
A-01	2' x 2' Ceiling Tile MISC - F	A-01-01	1200	None Detected	Throughout Majority of Building Except Testing Center	Not Quantified	G	LPD
		A-01-02	1122	None Detected				
		A-01-03	Corridor at 1107	None Detected				
		A-01-04	1050	None Detected				
		A-01-05	1052	None Detected				
		A-01-06	Corridor at 1012	None Detected				
A-02	12" x 12" Light Blue & White Floor Tile & Mastic MISC - NF	A-02-01A(tile)	1200	None Detected	Throughout Majority of Building Except Testing Center (Some Under Carpet)	Not Quantified	G	LPD
		A-02-01B(mastic)	1200	None Detected				
		A-02-02A(tile)	1210	None Detected				
		A-02-02B(mastic)	1210	None Detected				
		A-02-03A(tile)	1124	None Detected				
		A-02-03B(mastic)	1124	None Detected				
		A-02-04A(tile)	1110	None Detected				
		A-02-04B(mastic)	1110	None Detected				
		A-02-05AC(2 tile layers)	1050	None Detected				
		A-02-05BD(2 mastic layers)	1050	None Detected				
		A-02-06A(tile)	Corridor at 1047	None Detected				
		A-02-06B(mastic)	Corridor at 1047	None Detected				
		A-02-07A(tile)	1043	None Detected				
		A-02-07B(mastic)	1043	None Detected				
		A-02-08A(tile)	1005	None Detected				
		A-02-08B(mastic)	1005	None Detected				
		A-02-09A(tile)	1013	None Detected				
		A-02-09B(mastic)	1013	None Detected				
A-03	4" Beige Vinyl Cove Base & Adhesive MISC - NF	A-03-01A(vinyl)	1200	None Detected	Various Areas of Building	Not Quantified	G	LPD
		A-03-01B(adhesive)	1200	None Detected				
		A-03-02A(vinyl)	1131	None Detected				
		A-03-02B(adhesive)	1131	None Detected				
A-04	Drywall & Joint Compound Wall System MISC - F	A-04-01	1200	None Detected	Throughout Building	Not Quantified	G	LPD
		A-04-02	1122	None Detected				
		A-04-03	Electrical Room	None Detected				
		A-04-04	Corridor at 1105	None Detected				
		A-04-05	1043	None Detected				
		A-04-06	Corridor at 1033	None Detected				
		A-04-07	1022	None Detected				

***NOTE*: Quantities Listed are for inspection purposes only. Quantities should be field verified for all other uses.**

SURF = Surfacing	F= Friable	SF = Square Feet	G = Good	LPD = Low Potential for Disturbance
MISC = Miscellaneous Material	NF = Non-friable	LF = Linear Feet	D = Damaged	PD = Potential for Disturbance
TSI = Thermal System Insulation	DNA = Did Not Analyze	CF = Cubic Feet	SD = Significantly Damaged	PSD = Potential of Significant Disturbance
	ND = None Detected			

Affinity Environmental Consulting, LLC

Asbestos Inspection Results
2760 Highway 70 SE (CVCC East Campus)
Hickory, NC

Homogeneous Area					Material Description			
Number	Description	Sample #	Sample Location	Total Asbestos % and Type	Location(s)	Estimated Quantity	Condition	Potential for Disturbance
A-05	4" Black Vinyl Cove Base & Adhesive MISC - NF	A-05-01A(vinyl)	1201	None Detected	Various Areas of Building	Not Quantified	G	LPD
		A-05-01B(adhesive)	1201	None Detected				
		A-05-02A(vinyl)	1124	None Detected				
		A-05-02B(adhesive)	1124	None Detected				
		A-05-03A(vinyl)	1110	None Detected				
		A-05-03B(adhesive)	1110	None Detected				
A-06	Gray HVAC Duct Sealant MISC - NF	A-06-01	Men's Restroom	None Detected	On Metal HVAC Ducts in Various Areas Above Ceiling	Not Quantified	G	LPD
		A-06-02	Men's Restroom	None Detected				
A-07	Carpet Glue MISC - NF	A-07-01	1131	None Detected	Various Offices of Building	Not Quantified	G	LPD
		A-07-02	1139	None Detected				
		A-07-03	Lobby	None Detected				
		A-07-04	1013	None Detected				
A-08	CMU Wall Coating SURF - NF	A-08-01	1081	None Detected	Various CMU Walls in Rear of Building	Not Quantified	G	LPD
		A-08-02	978	None Detected				
A-09	4" Green Vinyl Cove Base & Adhesive MISC - NF	A-09-01A(vinyl)	1013	None Detected	Various Areas of Building	Not Quantified	G	LPD
		A-09-01B(adhesive)	1013	None Detected				
		A-09-02A(vinyl)	1013	None Detected				
		A-09-02B(adhesive)	1013	None Detected				
A-10	2' x 2' Drywall Ceiling Tile MISC - F	A-10-01	995	None Detected	995 Area Rear of Building	Not Quantified	G	LPD
		A-10-02	995	None Detected				
A-11	2' x 4' Ceiling Tile MISC - F	A-11-01	978	None Detected	Theater 978 Area	Not Quantified	G	LPD
		A-11-02	978	None Detected				
A-12	**Black Floor Mastic** **MISC - NF**	**A-12-01**	**941 Common Area**	**4% Chrysotile**	**941 Common Area (Carpet Removal Required to Identify Full Extent of Material)**	**Not Quantified**	**G**	**LPD**
		A-12-02	**941 Common Area**	**4% Chrysotile**				
A-13	2' x 2' Ceiling Tile w/Raised Edges MISC - F	A-13-01	Corridor at 910	None Detected	Throughout Testing Center	Not Quantified	G	LPD
		A-13-02	Corridor at 910	None Detected				

***NOTE*: Quantities Listed are for inspection purposes only. Quantities should be field verified for all other uses.**

SURF = Surfacing	F= Friable	SF = Square Feet	G = Good	LPD = Low Potential for Disturbance
MISC = Miscellaneous Material	NF = Non-friable	LF = Linear Feet	D = Damaged	PD = Potential for Disturbance
TSI = Thermal System Insulation	DNA = Did Not Analyze	CF = Cubic Feet	SD = Significantly Damaged	PSD = Potential of Significant Disturbance
	ND = None Detected			

Affinity Environmental Consulting, LLC

Asbestos Inspection Results
2760 Highway 70 SE (CVCC East Campus)
Hickory, NC

Homogeneous Area					Material Description			
Number	Description	Sample #	Sample Location	Total Asbestos % and Type	Location(s)	Estimated Quantity	Condition	Potential for Disturbance
A-14	12" x 12" Floor Tile & Black Mastic MISC - NF	A-14-01A(tile)	EC917 Closet	None Detected	EC917 Closet Under Hot Water Heater	9 SF	G	LPD
		A-14-01B(black mastic)	EC917 Closet	2% Chrysotile				
A-15	Drywall & Joint Compound Wall System MISC - F	A-15-01	EC917 Closet	None Detected	Throughout Testing Center	Not Quantified	G	LPD
		A-15-02	Corridor at 913	None Detected				

***NOTE*: Quantities Listed are for inspection purposes only. Quantities should be field verified for all other uses.**

SURF = Surfacing	F= Friable	SF = Square Feet	G = Good	LPD = Low Potential for Disturbance
MISC = Miscellaneous Material	NF = Non-friable	LF = Linear Feet	D = Damaged	PD = Potential for Disturbance
TSI = Thermal System Insulation	DNA = Did Not Analyze	CF = Cubic Feet	SD = Significantly Damaged	PSD = Potential of Significant Disturbance
	ND = None Detected			

Affinity
Environmental Consulting, LLC

APPENDIX B

Asbestos PLM Bulk Sample Laboratory Results

AEC Project #23182
August 17, 2023

Asbestos & LBP Survey
CVCC East Campus Building
2760 Highway 70 SE
Hickory, NC

Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Affinity Environmental Consulting, LLC
P.O. Box 7153
Asheville, NC 28802

Attn: Mike Cook

Project: 2760 US HWY 70 SE

Lab Order ID: 10030325
Analysis: PLM
Date Received: 08/16/2023
Date Reported: 08/17/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
A-01-01		None Detected	35% Cellulose 35% Mineral Wool	30% Other	White Fibrous Homogeneous
10030325_0001					Teased
A-01-02		None Detected	35% Mineral Wool 35% Cellulose	30% Other	White Fibrous Homogeneous
10030325_0002					Teased
A-01-03		None Detected	35% Cellulose 35% Mineral Wool	30% Other	White Fibrous Homogeneous
10030325_0003					Teased
A-01-04		None Detected	35% Cellulose 35% Mineral Wool	30% Other	White Fibrous Homogeneous
10030325_0004					Teased
A-01-05		None Detected	35% Cellulose 35% Mineral Wool	30% Other	White Fibrous Homogeneous
10030325_0005					Teased
A-01-06		None Detected	35% Cellulose 35% Mineral Wool	30% Other	White Fibrous Homogeneous
10030325_0006					Teased
A-02-01 - A		None Detected		100% Other	Black Non-Fibrous Homogeneous
10030325_0007	*tile*				Dissolved
A-02-01 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0049	*mastic*				Dissolved

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogenous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Analytical uncertainty available upon request. Scientific Analytical Institute participates in the NVLAP Proficiency Testing program. Unless otherwise noted blank sample correction was not performed. Estimated MDL is 0.1%.

Charmel Dozier (67)
Analyst

Approved Signatory

Scientific Analytical Institute, Inc. 4604 Dundas Dr. Greensboro, NC 27407 (336) 292-3888

Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Affinity Environmental Consulting, LLC
P.O. Box 7153
Asheville, NC 28802

Attn: Mike Cook

Project: 2760 US HWY 70 SE

Lab Order ID: 10030325
Analysis: PLM
Date Received: 08/16/2023
Date Reported: 08/17/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
A-02-02 - A		None Detected		100% Other	Blue Non-Fibrous Homogeneous
10030325_0008	*tile*				Dissolved
A-02-02 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0050	*mastic*				Dissolved
A-02-03 - A		None Detected		100% Other	Black Non-Fibrous Homogeneous
10030325_0009	*tile*				Dissolved
A-02-03 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0051	*mastic*				Dissolved
A-02-04 - A		None Detected		100% Other	Blue Non-Fibrous Homogeneous
10030325_0010	*tile*				Dissolved
A-02-04 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0052	*mastic*				Dissolved
A-02-05 - A		None Detected		100% Other	Blue Non-Fibrous Homogeneous
10030325_0011	*tile 1*				Dissolved
A-02-05 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0053	*mastic 1*				Dissolved

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Charmel Dozier (67)
Analyst

Approved Signatory

Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Affinity Environmental Consulting, LLC
P.O. Box 7153
Asheville, NC 28802

Attn: Mike Cook

Project: 2760 US HWY 70 SE

Lab Order ID: 10030325
Analysis: PLM
Date Received: 08/16/2023
Date Reported: 08/17/2023

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes / Treatment
A-02-05 - C		None Detected		100% Other	Blue Non-Fibrous Homogeneous
10030325_0068	*tile 2*				Dissolved
A-02-05 - D		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0069	*mastic 2*				Dissolved
A-02-06 - A		None Detected		100% Other	Blue Non-Fibrous Homogeneous
10030325_0012	*tile*				Dissolved
A-02-06 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0054	*mastic*				Dissolved
A-02-07 - A		None Detected		100% Other	Blue Non-Fibrous Homogeneous
10030325_0013	*tile*				Dissolved
A-02-07 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0055	*mastic*				Dissolved
A-02-08 - A		None Detected		100% Other	Blue Non-Fibrous Homogeneous
10030325_0014	*tile*				Dissolved
A-02-08 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0056	*mastic*				Dissolved

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogenous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Analytical uncertainty available upon request. Scientific Analytical Institute participates in the NVLAP Proficiency Testing program. Unless otherwise noted blank sample correction was not performed. Estimated MDL is 0.1%.

Charmel Dozier (67)
Analyst

Approved Signatory

Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Affinity Environmental Consulting, LLC
P.O. Box 7153
Asheville, NC 28802

Attn: Mike Cook

Project: 2760 US HWY 70 SE

Lab Order ID: 10030325
Analysis: PLM
Date Received: 08/16/2023
Date Reported: 08/17/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
A-02-09 - A		None Detected		100% Other	Blue Non-Fibrous Homogeneous
10030325_0015	*tile*				Dissolved
A-02-09 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0057	*mastic*				Dissolved
A-03-01 - A		None Detected		100% Other	Gray Non-Fibrous Homogeneous
10030325_0016	*covebase*				Dissolved
A-03-01 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0058	*mastic*				Dissolved
A-03-02 - A		None Detected		100% Other	Gray Non-Fibrous Homogeneous
10030325_0017	*covebase*				Dissolved
A-03-02 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0059	*mastic*				Dissolved
A-04-01		None Detected	10% Cellulose	90% Other	White Fibrous Homogeneous
10030325_0018	*drywall: none detect; joint compound: none detect*				Crushed
A-04-02		None Detected	10% Cellulose	90% Other	White Fibrous Homogeneous
10030325_0019	*drywall: none detect; joint compound: none detect*				Crushed

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogenous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Analytical uncertainty available upon request. Scientific Analytical Institute participates in the NVLAP Proficiency Testing program. Unless otherwise noted blank sample correction was not performed. Estimated MDL is 0.1%.

Charmel Dozier (67)
Analyst

Approved Signatory

Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Affinity Environmental Consulting, LLC
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Attn: Mike Cook

Project: 2760 US HWY 70 SE

Lab Order ID: 10030325
Analysis: PLM
Date Received: 08/16/2023
Date Reported: 08/17/2023

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes / Treatment
A-04-03		None Detected	10% Cellulose	90% Other	White Fibrous Homogeneous
10030325_0020	*drywall: none detect; joint compound: none detect*				Crushed
A-04-04		None Detected	10% Cellulose	90% Other	White Fibrous Homogeneous
10030325_0021	*drywall: none detect; joint compound: none detect*				Crushed
A-04-05		None Detected	10% Cellulose	90% Other	White Fibrous Homogeneous
10030325_0022	*drywall: none detect; joint compound: none detect*				Crushed
A-04-06		None Detected	10% Cellulose	90% Other	White Fibrous Homogeneous
10030325_0023	*drywall: none detect; joint compound: none detect*				Crushed
A-04-07		None Detected	10% Cellulose	90% Other	White Fibrous Homogeneous
10030325_0024	*drywall: none detect; joint compound: none detect*				Crushed
A-05-01 - A		None Detected		100% Other	Black Non-Fibrous Homogeneous
10030325_0025	*covebase*				Dissolved
A-05-01 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0060	*mastic*				Dissolved
A-05-02 - A		None Detected		100% Other	Black Non-Fibrous Homogeneous
10030325_0026	*covebase*				Dissolved

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Charmel Dozier (67)
Analyst

Approved Signatory

Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Affinity Environmental Consulting, LLC
P.O. Box 7153
Asheville, NC 28802

Attn: Mike Cook

Project: 2760 US HWY 70 SE

Lab Order ID: **10030325**
Analysis: PLM
Date Received: 08/16/2023
Date Reported: 08/17/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
A-05-02 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0061	*mastic*				Dissolved
A-05-03 - A		None Detected		100% Other	Black Non-Fibrous Homogeneous
10030325_0027	*covebase*				Dissolved
A-05-03 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0062	*mastic*				Dissolved
A-06-01		None Detected		100% Other	Gray Non-Fibrous Homogeneous
10030325_0028					Dissolved
A-06-02		None Detected		100% Other	Gray Non-Fibrous Homogeneous
10030325_0029					Dissolved
A-07-01		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0030					Dissolved
A-07-02		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0031					Dissolved
A-07-03		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0032					Dissolved

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Analyst

Approved Signatory

Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Affinity Environmental Consulting, LLC
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Asheville, NC 28802

Attn: Mike Cook

Project: 2760 US HWY 70 SE

Lab Order ID: 10030325
Analysis: PLM
Date Received: 08/16/2023
Date Reported: 08/17/2023

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes / Treatment
A-07-04		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0033					Dissolved
A-08-01		None Detected		100% Other	White Non-Fibrous Homogeneous
10030325_0034					Dissolved
A-08-02		None Detected		100% Other	White Non-Fibrous Homogeneous
10030325_0035					Dissolved
A-09-01 - A		None Detected		100% Other	Green Non-Fibrous Homogeneous
10030325_0036	*covebase*				Dissolved
A-09-01 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0063	*mastic*				Dissolved
A-09-02 - A		None Detected		100% Other	Green Non-Fibrous Homogeneous
10030325_0037	*covebase*				Dissolved
A-09-02 - B		None Detected		100% Other	Yellow Non-Fibrous Homogeneous
10030325_0064	*mastic*				Dissolved
A-10-01		None Detected	10% Cellulose 2% Fiber Glass	88% Other	White Fibrous Homogeneous
10030325_0038					Crushed

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Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Affinity Environmental Consulting, LLC
P.O. Box 7153
Asheville, NC 28802

Attn: Mike Cook

Project: 2760 US HWY 70 SE

Lab Order ID: 10030325
Analysis: PLM
Date Received: 08/16/2023
Date Reported: 08/17/2023

Sample ID / *Lab Sample ID*	Description / *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes / Treatment
A-10-02		None Detected	10% Cellulose 2% Fiber Glass	88% Other	White Fibrous Homogeneous
10030325_0039					Crushed
A-11-01		None Detected	40% Cellulose 30% Mineral Wool	30% Other	White Fibrous Homogeneous
10030325_0040					Teased
A-11-01		None Detected	40% Cellulose 30% Mineral Wool	30% Other	White Fibrous Homogeneous
10030325_0041					Teased
A-12-01		4% Chrysotile		96% Other	Black, Yellow Non-Fibrous Homogeneous
10030325_0042					Dissolved
A-12-02		4% Chrysotile		96% Other	Yellow, Black Non-Fibrous Homogeneous
10030325_0043					Dissolved
A-13-01		None Detected	45% Mineral Wool 30% Cellulose	25% Other	White Fibrous Homogeneous
10030325_0044					Teased
A-13-02		None Detected	45% Mineral Wool 30% Cellulose	25% Other	White Fibrous Homogeneous
10030325_0045					Teased
A-14-01 - A		None Detected		100% Other	White Non-Fibrous Homogeneous
10030325_0046	*tile*				Dissolved

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Charmel Dozier (67)
Analyst

Approved Signatory

Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E

NVLAP LAB CODE 200664-0

Lab ID # 173190

Customer: Affinity Environmental Consulting, LLC
P.O. Box 7153
Asheville, NC 28802

Attn: Mike Cook

Project: 2760 US HWY 70 SE

Lab Order ID: 10030325
Analysis: PLM
Date Received: 08/16/2023
Date Reported: 08/17/2023

Sample ID *Lab Sample ID*	Description *Lab Notes*	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes Treatment
A-14-01 - B		2% Chrysotile	3% Cellulose	95% Other	Black Non-Fibrous Homogeneous
10030325_0065	*mastic*				Dissolved
A-15-01		None Detected	10% Cellulose	90% Other	White Fibrous Homogeneous
10030325_0047	*drywall: none detect; joint compound: none detect*				Crushed
A-15-02		None Detected	10% Cellulose	90% Other	White Fibrous Homogeneous
10030325_0048	*drywall: none detect; joint compound: none detect*				Crushed

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Charmel Dozier (67)
Analyst

Approved Signatory

Scientific Analytical Institute
4604 Dundas Dr. Greensboro, NC 27407
Phone: 336.292.3888 Fax: 336.292.3313
www.sailab.com lab@sailab.com

Lab Use Only
Lab Order ID: 10030325
Client Code: _____

Company Contact Information	
Company: Affinity Environmental Consulting, LLC	Contact: Mike Cook
Address: P.O. Box 7153	Phone ☐: (828) 508-3812
Ashville, NC 28802	Fax ☐:
	Email ■: mcook@affinityenv.com

Billing/Invoice Information	Turn Around Times	
Company: SAME	90 Min. ☐	48 Hours ☐
Contact:	3 Hours ☐	72 Hours ☐
Address:	6 Hours ☐	96 Hours ☐
	12 Hours ☐	120 Hours ☐
	24 Hours ☒	144+Hours ☐

PO Number:
Project Name/Number: 2760 US HWY 70 SE

Asbestos Test Types	
PLM EPA 600/R-93/116 (PLM)	☒
Positive stop ☐	
PLM Point Count 400 (PT4)	☐
PLM Point Count 1000 (PTM)	☐
PCM NIOSH 7400-A Rules (PCM)	☐
B Rules (PCB) ☐ TWA (PTA) ☐	
TEM AHERA (AHE)	☐
TEM Level II (LII)	☐
TEM NIOSH 7402 (TNI)	☐
TEM Bulk Qualitative (TBL)	☐
TEM Bulk Chatfield (TBS)	☐
TEM Bulk Quantitative (TBQ)	☐
TEM Wipe ASTM D6480-05	☐
TEM Microvac ASTM D5755-02	☐
TEM Water EPA 100.2 (TWI)	☐
Other: _____	☐

Sample ID #	Description/Location	Volume/Area	Comments
A-01-01			
A-01-02			
A-01-03			
A-01-04			
A-01-05			
A-01-06			
A-02-01			
A-02-02			
A-02-03			
A-02-04			
A-02-05			

Total # of Samples 48

Relinquished by	Date/Time	Received by	Date/Time
[signature]	8/15/23	CS	8/16 1pm

Accepted ☑
Rejected ☐

A-F-017 EXP: 2/4/2021

Scientific Analytical Institute
4604 Dundas Dr. Greensboro, NC 27407
Phone: 336.292.3888 Fax: 336.292.3313
www.sailab.com lab@sailab.com

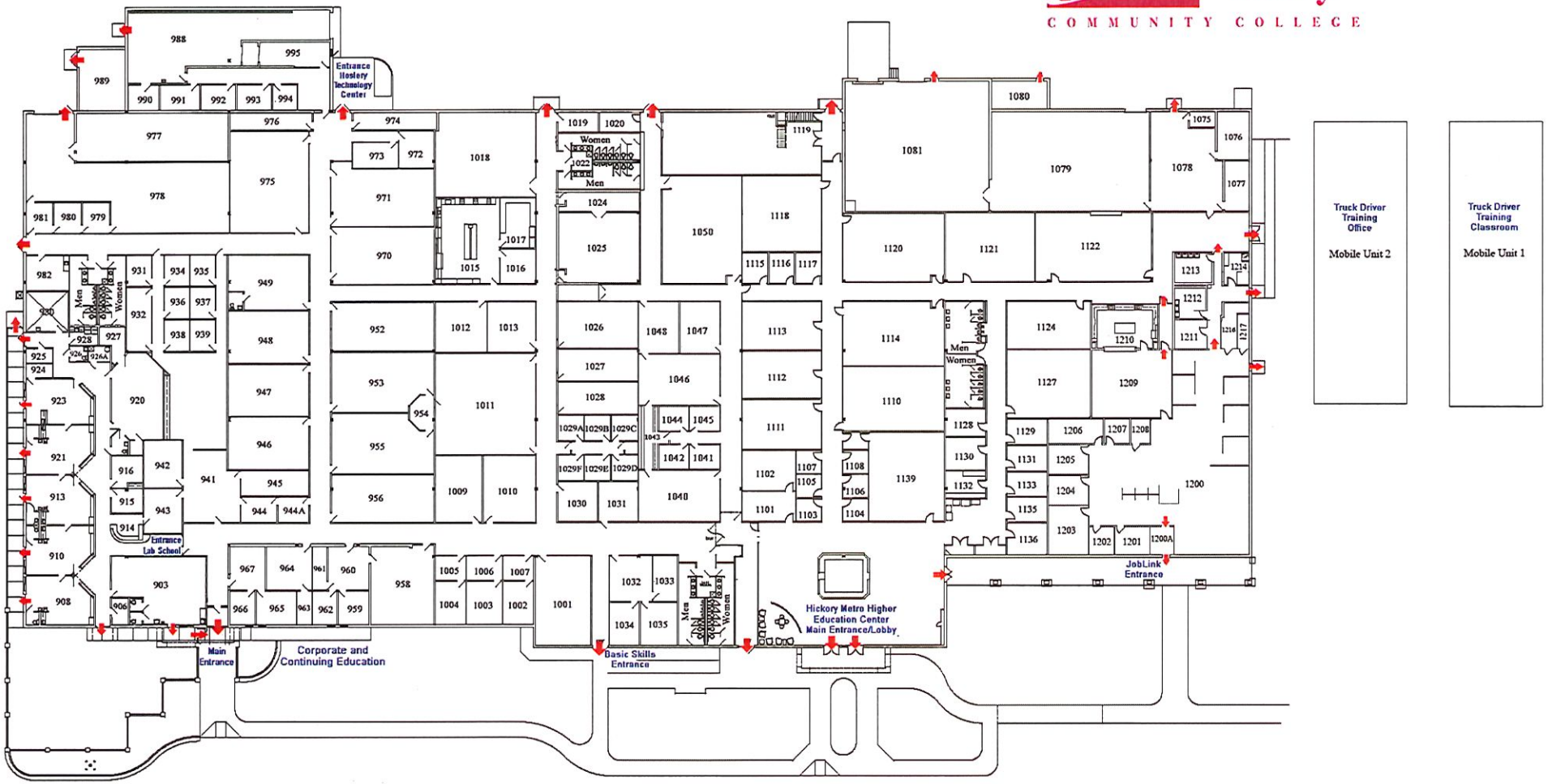
Lab Use Only
Lab Order ID: 10030325
Client Code: _____

Sample ID #	Description/Location	Volume/Area	Comments
A-02-06			
A-02-07			
A-02-08			
A-02-09			
A-03-01			
A-03-02			
A-04-01			
A-04-02			
A-04-03			
A-04-04			
A-04-05			
A-04-06			
A-04-07			
A-05-01			
A-05-02			
A-05-03			
A-06-01			
A-06-02			
A-07-01			
A-07-02			
A-07-03			
A-07-04			
A-08-01			
A-08-02			
A-09-01			
A-09-02			
A-10-01			
A-10-02			
A-11-01			
A-11-02			
A-12-01			
A-12-02			
A-13-01			
A-13-02			
A-14-01			
A-15-01			
A-15-02			

Affinity
Environmental Consulting, LLC

APPENDIX C

Bulk Sample Location Drawing



Catawba Valley Community College

Emergency Exits

CVCC East Campus

2760 Highway 70 SE
Hickory, NC 28602

Revised--11/20/2008

Affinity
Environmental Consulting, LLC

APPENDIX D

Lead Survey XRF Results

XRF PAINT TESTING DATA
2760 Highway 70 SE
Hickory, NC

TEST #	DATE	TIME	COLOR	SUBSTRATE	COMPONENT	LOCATION	PbC mg/cm²	RESULT
1	8/15/2023	11:05:06	WHITE	DRYWALL	WALL	1200	0	Negative
2	8/15/2023	11:05:47	WHITE	DRYWALL	WALL	1200	0	Negative
3	8/15/2023	11:06:54	BLUE	METAL	DOOR CASE	1200	0	Negative
4	8/15/2023	11:07:37	GREEN	METAL	DOOR CASE	1200	0.4	Negative
5	8/15/2023	11:07:58	GREEN	METAL	DOOR	1200	0	Negative
6	8/15/2023	11:09:31	WHITE	CMU	WALL	1216	0	Negative
7	8/15/2023	11:11:02	BLUE	CMU	WINDOW CASE	1201	0	Negative
8	8/15/2023	11:11:37	BLUE	METAL	WINDOW SILL	1201	0	Negative
9	8/15/2023	11:15:26	GREEN	METAL	DOOR	CORRIDOR @ 1122	0	Negative
10	8/15/2023	11:15:46	GREEN	METAL	DOOR CASE	CORRIDOR @ 1122	0	Negative
11	8/15/2023	11:16:27	WHITE	DRYWALL	WALL	CORRIDOR @ 1122	0.1	Negative
12	8/15/2023	11:17:03	BLUE	METAL	DOOR CASE	CORRIDOR @ 1122	0.4	Negative
13	8/15/2023	11:20:24	WHITE	DRYWALL	WALL	1122	0	Negative
14	8/15/2023	11:22:36	RED	METAL	I-BEAM	1122	0	Negative
15	8/15/2023	11:33:32	BLUE	CERAMIC	WALL	MEN's RESTROOM	0.2	Negative
16	8/15/2023	11:34:22	BLUE	CERAMIC	CEILING	MEN's RESTROOM	0.1	Negative
17	8/15/2023	11:35:12	WHITE	CERAMIC	SINK	MEN's RESTROOM	0.1	Negative
18	8/15/2023	11:45:32	BLUE	METAL	DOOR CASE	1131	0	Negative
19	8/15/2023	11:46:28	WHITE	DRYWALL	WALL	1131	0.1	Negative
20	8/15/2023	11:56:18	GRAY	CERAMIC	FLOOR	LOBBY	0.2	Negative
21	8/15/2023	11:57:04	GREEN	METAL	DOOR	LOBBY	0	Negative
22	8/15/2023	11:57:24	GREEN	METAL	DOOR CASE	LOBBY	0	Negative
23	8/15/2023	11:57:56	WHITE	DRYWALL	WALL	LOBBY	0.1	Negative
24	8/15/2023	12:03:44	BLUE	METAL	WINDOW CASE	LOBBY	0	Negative
25	8/15/2023	12:04:05	BLUE	METAL	WINDOW SILL	LOBBY	0	Negative
26	8/15/2023	12:18:01	BEIGE	DRYWALL	WALL	1120	0.1	Negative
27	8/15/2023	12:18:38	BLACK	METAL	CEILING	1120	0	Negative
28	8/15/2023	12:21:21	GRAY	METAL	I-BEAM	1120	0.1	Negative
29	8/15/2023	12:23:12	GRAY	METAL	I-BEAM	1119	0	Negative
30	8/15/2023	12:23:41	GRAY	METAL	STAIR RAILING	1119	0	Negative
31	8/15/2023	12:24:23	GRAY	METAL	STAIR TREAD	1119	0.1	Negative
32	8/15/2023	12:25:48	WHITE	CMU	WALL	1081	0	Negative
33	8/15/2023	12:40:54	BEIGE	METAL	DOOR CASE	1047	0	Negative
34	8/15/2023	12:42:20	WHITE	DRYWALL	WALL	1043	0	Negative
35	8/15/2023	12:57:51	WHITE	CERAMIC	WALL	MEN's RESTROOM	0.1	Negative
36	8/15/2023	12:58:21	WHITE	CERAMIC	FLOOR	MEN's RESTROOM	0	Negative
37	8/15/2023	12:58:53	WHITE	PORCELAIN	SINK	MEN's RESTROOM	0	Negative
38	8/15/2023	12:59:31	BLUE	METAL	DOOR CASE	MEN's RESTROOM	0.1	Negative
39	8/15/2023	13:05:09	RED	METAL	I-BEAM	CORRIDOR @ 1032	0	Negative
40	8/15/2023	13:10:09	WHITE	DRYWALL	WALL	CORRIDOR @ 1032	0.1	Negative
41	8/15/2023	13:10:40	BEIGE	METAL	DOOR CASE	CORRIDOR @ 1032	0	Negative
42	8/15/2023	13:18:47	BLUE	METAL	DOOR CASE	1013	0	Negative
43	8/15/2023	13:19:25	WHITE	DRYWALL	WALL	1013	0	Negative
44	8/15/2023	13:25:15	GRAY	CERAMIC	FLOOR	MEN's RESTROOM	0	Negative
45	8/15/2023	13:31:23	GREEN	CONCRETE	FLOOR	974	0.1	Negative
46	8/15/2023	13:32:03	GRAY	METAL	STAIR RAILING	974	0	Negative

XRF PAINT TESTING DATA
2760 Highway 70 SE
Hickory, NC

TEST #	DATE	TIME	COLOR	SUBSTRATE	COMPONENT	LOCATION	PbC mg/cm²	RESULT
47	8/15/2023	13:33:22	GREEN	METAL	DOOR	CORRIDOR @ 974	0	Negative
48	8/15/2023	13:33:55	GREEN	METAL	DOOR CASE	CORRIDOR @ 974	0.6	Negative
49	8/15/2023	14:47:11	BLACK	DRYWALL	WALL	THEATER 978	0	Negative
50	8/15/2023	14:47:42	BLACK	CMU	WALL	THEATER 978	0	Negative
51	8/15/2023	14:48:19	BLACK	METAL	WINDOW SILL	THEATER 978	0	Negative
52	8/15/2023	14:48:40	BLACK	METAL	WINDOW CASE	THEATER 978	0	Negative
53	8/15/2023	14:49:21	BLACK	CONCRETE	FLOOR	THEATER 978	0	Negative
54	8/15/2023	14:50:03	BLACK	METAL	DOOR CASE	THEATER 978	0.1	Negative
55	8/15/2023	14:50:39	WHITE	CMU	WALL	THEATER 978	0	Negative
56	8/15/2023	14:51:31	BLUE	METAL	DOOR CASE	THEATER 978	0.1	Negative
57	8/15/2023	14:53:50	WHITE	METAL	CEILING JOIST	THEATER 977	1.1	Positive
58	8/15/2023	14:56:07	WHITE	METAL	CEILING JOIST	THEATER 978	1.5	Positive
59	8/15/2023	14:59:53	GRAY	CERAMIC	FLOOR	MEN's RESTROOM	0.2	Negative
60	8/15/2023	15:02:44	BLUE	METAL	WINDOW CASE	941	0.1	Negative
61	8/15/2023	15:03:09	BLUE	METAL	WINDOW SILL	941	0.1	Negative
62	8/15/2023	15:03:32	BLUE	METAL	DOOR CASE	941	0	Negative
63	8/15/2023	15:09:06	WHITE	DRYWALL	WALL	941	0.1	Negative
64	8/15/2023	15:11:29	BEIGE	DRYWALL	WALL	903	0	Negative
65	8/15/2023	15:11:57	BLUE	DRYWALL	WALL	903	0	Negative
66	8/15/2023	15:12:44	BROWN	WOOD	BASEBOARD	903	0	Negative
67	8/15/2023	15:13:28	BLACK	METAL	DOOR CASE	903	0	Negative
68	8/15/2023	15:16:31	BLACK	METAL	WINDOW CASE	903	0	Negative
69	8/15/2023	15:16:57	BLACK	METAL	WINDOW SILL	903	0	Negative
70	8/15/2023	15:18:43	YELLOW	DRYWALL	CEILING	903	0.1	Negative
71	8/15/2023	15:19:34	BLUE	DRYWALL	CEILING	903	0	Negative
72	8/15/2023	15:22:50	BEIGE	DRYWALL	WALL	930	0.1	Negative
73	8/15/2023	15:23:15	BLUE	DRYWALL	WALL	930	0.1	Negative
74	8/15/2023	15:24:09	BLACK	METAL	DOOR CASE	930	0	Negative
75	8/15/2023	15:26:44	WHITE	DRYWALL	WALL	CORRIDOR @ 920	0	Negative
76	8/15/2023	15:27:25	BLACK	METAL	DOOR CASE	CORRIDOR @ 920	0.1	Negative
77	8/15/2023	15:28:01	BROWN	WOOD	BASEBOARD	CORRIDOR @ 920	0	Negative
78	8/15/2023	15:29:15	BEIGE	DRYWALL	CEILING	CORRIDOR @ 920	0.1	Negative

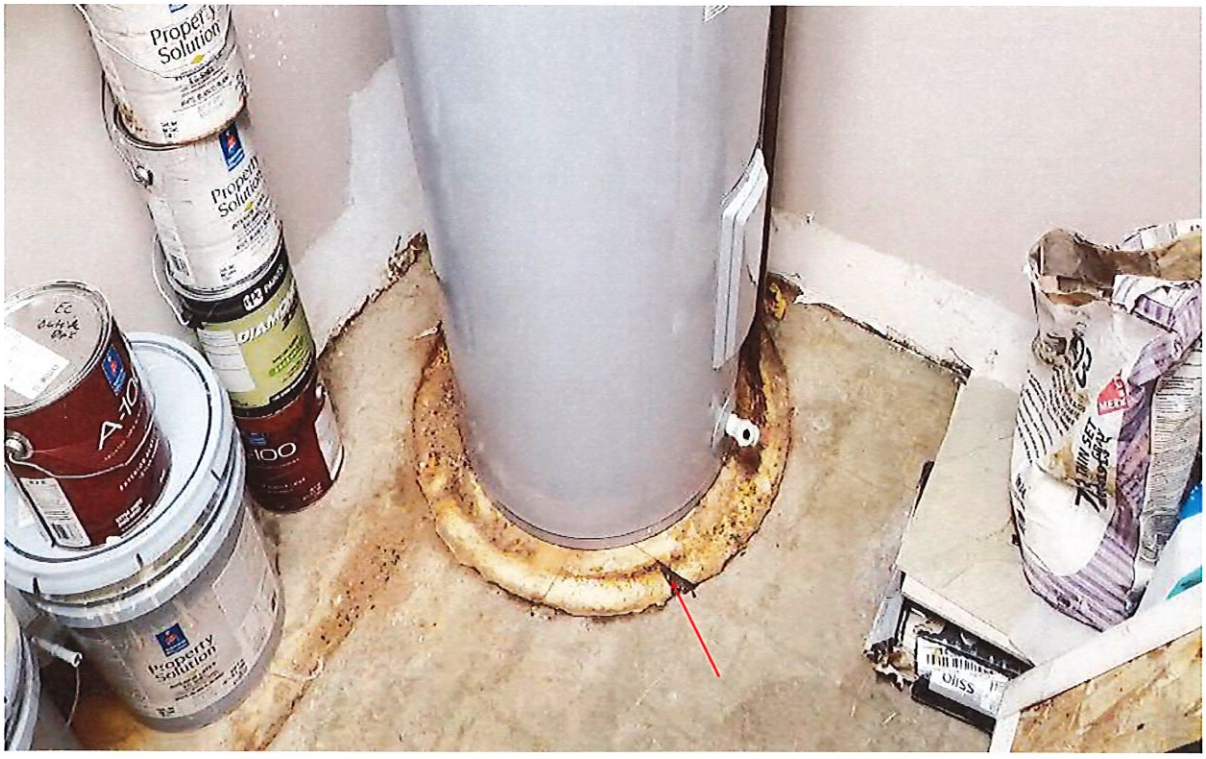
Affinity
Environmental Consulting, LLC

APPENDIX E

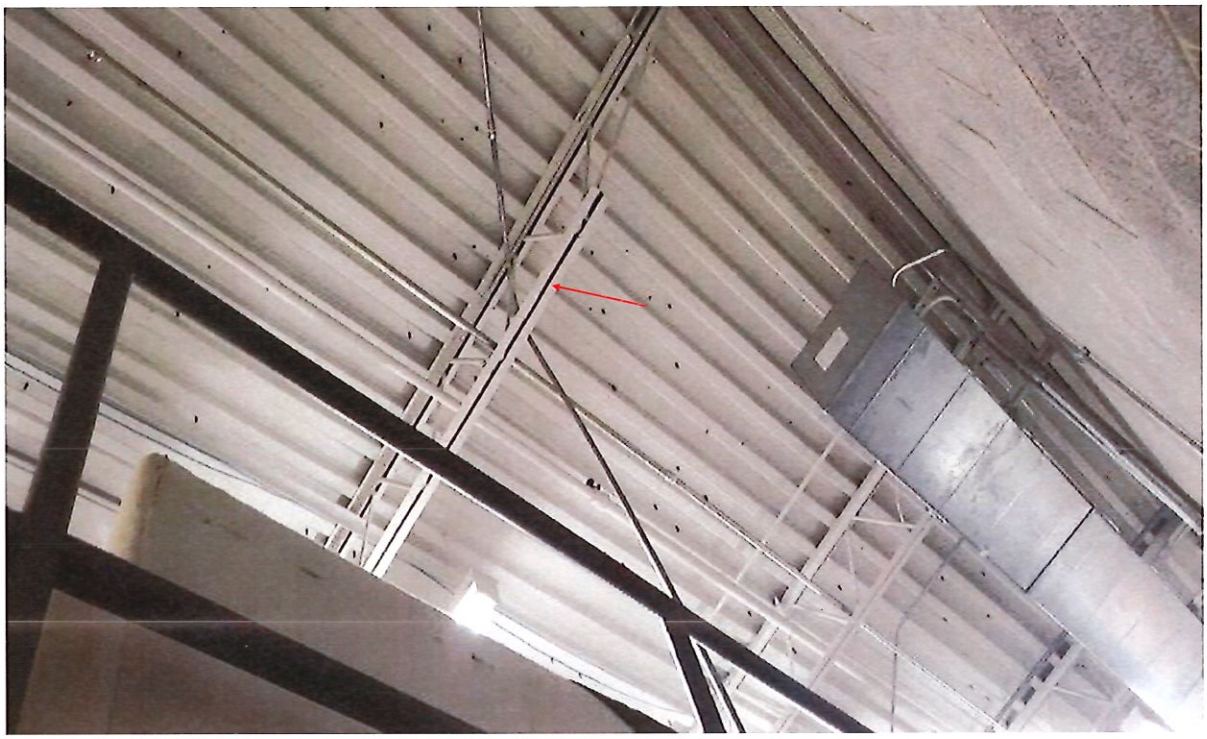
Photographs



Photograph 1 - Homogeneous Area A-12—Typical Asbestos-Containing Black Mastic Located Under Carpet in the 941 Common Area. Carpet Removal Required to Identify Full Extent of Material)



Photograph 2 - Homogeneous Area A-14—Asbestos-Containing Mastic Under Non-Asbestos Floor Tile Located in EC917 Closet Under Hot Water Heater. (9 SF)



Photograph 3 - Typical Lead-Based Coating on Metal Bar Joists Located Throughout Building.

Division 03 – Concrete

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes cast-in-place concrete, including reinforcement, concrete materials, mix design, placement procedures, and finishes.

1.2 SUBMITTALS

A. Product Data: For each manufactured material and product indicated.

B. Design Mixes: For each concrete mix indicated.

C. Shop Drawings: Include details of steel reinforcement placement including material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports.

D. Material certificates.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

B. Comply with ACI 301, "Specification for Structural Concrete," including the following, unless modified by the requirements of the Contract Documents:
   1. General requirements, including submittals, quality assurance, acceptance of structure, and protection of in-place concrete.
   2. Formwork and form accessories.
   3. Steel reinforcement and supports.
   4. Concrete mixtures.
   5. Handling, placing, and constructing concrete.

C. Once all submittals have been submitted, reviewed and approved, the contractor shall schedule a pre-installation meeting on-site with the subcontractor, Architect, Engineer and Special Inspector in attendance.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Formwork: Furnish formwork and form accessories according to ACI 301.

B. Steel Reinforcement:
   1. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
   2. Plain-Steel Wire: ASTM A 82, as drawn.

3. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
4. Deformed-Steel Welded Wire Fabric: ASTM A 497, flat sheet.

C. Concrete Materials:
1. Portland Cement: ASTM C 150, Type I.
2. Normal-Weight Aggregate: ASTM C 33, uniformly graded, not exceeding 1-1/2-inch nominal size.
3. Lightweight Aggregate: ASTM C 330.
4. Water: Complying with ASTM C 94.

D. Admixtures:
1. Air-Entraining Admixture: ASTM C 260.
2. Water-Reducing Admixture: ASTM C 494, Type A.
3. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
4. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
5. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

E. Vapor Retarder: Multi-ply reinforced polyethylene sheet, ASTM E 1745 (latest edition), meets or exceeds Class A, not less than 10 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive joint tape. Install granular bentonite around pipe bank penetrations per manufacturer’s recommendations. Install per ASTM E 1643 (latest edition).
1. Class A Products:
a. Fortifiber Corporation; Moistop Ultra 10 mils.
b. Raven Industries Inc.; Vapor Block 10 mils.
c. Inteplast Group, LTD.; Barrier-Bac VB-250 Vapor Retarder 11 mils.
d. Stego Industries, LLC; Stego Wrap, 10 mils.
e. Viper; Vapor Check II, 10 mils.
f. W.R. Meadows Sealtight; Perminator 10 mils
g. Poly-America; Husky Yellow Guard 10 mils

G. Waterstops:

1. Provide rigid waterstops made of rubber, PVC, copper, or stainless steel. Water stop shall be minimum 6” high and have bulbs on each end. Install as per manufacturers recommendations.

H. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

I. Curing Materials:
2. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
3. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf.
4. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
5. Water: Potable.
6. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

J. Granular Fill: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D448, size 57, with 100% passing a 1 ½ inch sieve and 0 to 5% passing a No. 8 sieve.

K. Sealing Materials

7. (SC-1) Sealer and Dustproofer: A heavy duty, water base acrylic emulsion sealer containing a minimum of 20 percent solids and that is v.o.c. compliant. See A700 for color selection.

2.2 CONCRETE MIXES

A. Comply with ACI 301 requirements for concrete mixtures.

B. Prepare design mixes, proportioned according to ACI 301, for normal-weight and light-weight concrete determined by either laboratory trial mix or field test data bases, as follows:
1. Compressive Strength (28 Days): As indicated on structural drawings.
2. Slump: As indicated on structural drawings.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content of 6.0 percent within a tolerance of plus 1.0 or minus 1.5 percent at exposed formed concrete.
1. Air content of trowel-finished interior concrete floors shall not exceed 2.0 percent.

D. CONCRETE MIXING

D. Ready-Mixed Concrete: Comply with ASTM C 94.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

E. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Formwork: Design, construct, erect, shore, brace, and maintain formwork according to ACI 301.

B. Vapor Retarder: Install, protect, and repair vapor-retarder sheets according to ASTM E 1643 and manufacturer’s instructions.
1. Place sheets in position with longest dimension parallel with direction of the pour.
2. Lap vapor retarder over footings and seal to foundation walls.
3. Lap joints 6 inches and seal with manufacturer's recommended tape.
4. Seal all penetrations as per manufacturer’s instructions.
5. To repair damaged areas: Cut patches of vapor retarder, overlap damaged area 6 inches and tape all sides with manufacturer's recommended tape.

C. Steel Reinforcement: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

D. Joints: Construct joints true to line with faces perpendicular to surface plane of concrete.

1. Construction Joints: Locate and install so as not to impair strength or appearance of concrete, at locations indicated or as approved by Architect.
2. Isolation Joints: Install joint-filler strips at junctions of slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
   a. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
3. 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 the concrete thickness, as follows:
   a. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

E. Tolerances: Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

3.2 CONCRETE PLACEMENT

A. Comply with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete.

B. Do not add water to concrete during delivery, at Project site, or during placement.

C. Consolidate concrete with mechanical vibrating equipment.

D. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placing, and curing.
1. In cold weather comply with ACI 306.
2. In hot weather comply with ACI 305.

3.3 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched, and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.
1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Completely remove fins and other projections.
1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, damp-proofing, veneer plaster, or painting.
2. Do not apply rubbed finish to smooth-formed finish.
3. Apply smooth-rubbed finish, defined in ACI 301, to smooth-formed finished concrete.

C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.4 FINISHING UNFORMED SURFACES.

A. General: Comply with ACI 302.1R for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleed water appears on the surface.
   1. Do not further disturb surfaces before starting finishing operations.

C. Scratch Finish: Apply scratch finish to surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finish, unless otherwise indicated.

D. Float Finish: Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

E. Trowel Finish: Apply a hard trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.

F. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set methods. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.

G. Nonslip Broom Finish: Apply a nonslip broom finish to surfaces indicated and to exterior concrete platforms, steps, and ramps. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.

3.5 CONCRETE PROTECTION 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 follow recommendations in ACI 305R for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions occur 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. Begin curing after finishing concrete, but not before free water has disappeared from concrete surface.

D. Cure formed and unformed concrete for at least seven days as follows:
   1. Moisture Curing: Keep surfaces continuously moist with absorptive cover, water saturated and kept continuously wet.
   2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
   3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall

within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.6 LIQUID FLOOR TREATMENTS

A. Sealing and Dustproofing Coats: Provide two coats of sealer over all interior floor slabs to be left exposed to view per manufacturer's recommendations. Apply the first coat after minimum curing time recommended by the manufacturer, but no later than three weeks after that curing time ends. Apply the second coat after all painting has been completed and the floors cleaned as outlined below.

1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
2. Do not apply to concrete that is less than 7 days old.
3. Apply liquid cleaner until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water and remove excess material until surface is dry. Repeat application if surface is rough or porous.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement. Tests will be performed according to ACI 301.
   1. Testing Frequency: At least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mix placed each day.

END OF SECTION 03 30 00

1.1 SUMMARY

A. Section Includes:
   1. Concrete floor topping for standard applications.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 CONCRETE FLOOR TOPPINGS

A. Concrete Floor Topping for Standard Applications: Non-industrial, cement-based self-leveling interior concrete topping or resurfacing.
   1. Compressive Strength (28 Days): Minimum 4,000 psi

2.2 RELATED MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or II.

B. Sand: ASTM C404, fine aggregate passing No. 16 sieve.

C. Water: Potable.

D. Acrylic-Bonding Agent: ASTM C1059/C1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

E. Cement Binder: ASTM C150/C150M, portland cement or hydraulic or blended hydraulic cement as defined by ASTM C219.

F. Bond-Breaker Membrane: ASTM D2178/D2178M, asphalt glass felt, Type III, standard ply sheet.

G. Crack and Joint Repair:

   1. Crack repair materials as recommended in writing by concrete topping manufacturer.
   2. Joint sealant materials as recommended in writing by concrete topping manufacturer.

H. Epoxy Adhesive: ASTM C881/C881M, Type V, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class and grade to suit requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for conditions affecting performance of the Work.

3.2 PREPARATION

A. Existing Concrete: Remove existing surface treatments and deteriorated and unsound concrete. Mechanically abrade base slabs to produce a heavily scarified surface profile with an amplitude of 1/4 inch.

1. Prepare and clean existing base slabs in accordance with concrete floor topping manufacturer's written instructions. Fill voids, cracks, and cavities in base slabs.
2. Saw cut contraction and construction joints in existing concrete to a depth of 1/2 inch and fill with semirigid joint filler.

B. Install joint-filler strips where topping abuts vertical surfaces.

3.3 APPLICATION OF FLOOR TOPPING

A. Existing Concrete: Apply epoxy-bonding adhesive, mixed in accordance with manufacturer's written instructions, and scrub into dry base slabs to a thickness of 1/16 to 1/8 inch, without puddling. Place floor topping while adhesive is still tacky.

B. Aggregate Concrete Topping: Place concrete floor topping continuously in a single layer, tamping and consolidating to achieve tight contact with bonding surface. Do not permit cold joints or seams to develop within pour strip.

1. Screed surface with a straightedge and strike off to correct elevations.
2. Slope surfaces uniformly where indicated.
3. Begin initial floating, using bull floats to form a uniform and open-textured surface plane free of humps or hollows.

C. Overlay or Micro-Topping: Apply in strict compliance with manufacturer's written installation instructions. Mix and spread material on to the surface with recommended squeegees and trowels.

D. Finishing: Consolidate surface with power-driven floats as soon as concrete floor topping can support equipment and operator. Restraighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until concrete floor topping surface has a uniform, smooth, granular texture.

1. Hard Trowel Finish: After floating surface, apply first trowel finish and consolidate concrete floor topping by power-driven trowel without allowing blisters to develop. Continue troweling passes and restraighten until surface is smooth and uniform in texture.

E. Construction Joints: Construct joints true to line with faces perpendicular to surface plane of concrete floor topping, at locations indicated or as approved by Architect.

1. Coat face of construction joint with epoxy adhesive at locations where concrete floor topping is placed against hardened or partially hardened concrete floor topping.

F. Contraction Joints: Form weakened-plane contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete floor topping when cutting action will not tear, abrade, or otherwise damage surface and before random contraction cracks develop.

1. Form joints in concrete floor topping over contraction joints in base slabs unless otherwise indicated.
2. Construct contraction joints for a depth equal to one-half of concrete floor topping thickness, but not less than 1/2 inch deep.

3.4 PROTECTING AND CURING

A. General: Protect freshly placed concrete floor topping from premature drying and excessive cold or hot temperatures.

B. Evaporation Retarder: Apply evaporation retarder to concrete floor topping surfaces in hot, dry, or windy conditions before and during finishing operations. Apply in accordance with manufacturer's written instructions after placing, screeding, and bull floating or darbying floor topping, but before float finishing.

C. Begin curing immediately after finishing concrete floor topping. Cure by one or a combination of the following methods, in accordance with concrete floor topping manufacturer's written instructions:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for not less than seven days.

3.5 JOINT FILLING

A. Prepare and clean contraction joints and install semirigid joint filler, in accordance with manufacturer's written instructions, once topping has fully cured.

B. Install semirigid joint filler full depth of contraction joints. Overfill joint and trim semirigid joint filler flush with top of joint after hardening.

3.6 REPAIR

A. Defective Topping: Repair and patch defective concrete floor topping areas, including areas that have not bonded to concrete substrate.

END OF SECTION 035300

Division 04 - Masonry

SECTION 04 20 00 - UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes unit masonry assemblies consisting of the following:
   1. Concrete masonry units.
   2. Mortar and grout.
   3. Reinforcing steel.
   4. Masonry joint reinforcement.
   5. Ties and anchors.
   6. Embedded flashing.
   7. Miscellaneous masonry accessories.

B. Related Sections include the following:
   1. Division 07 Section "Sheet Metal Flashing and Trim" for exposed sheet metal flashing.

C. Products installed, but not furnished, under this Section include the following:
   1. Steel lintels and shelf angles for unit masonry, furnished under Division 05.
   2. Manufactured reglets in masonry joints for metal flashing, furnished under Division 07.
   3. Hollow-metal frames in unit masonry openings, furnished under Division 08.

1.3 DEFINITIONS

A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 PERFORMANCE REQUIREMENTS

A. Product Data: For each different masonry unit, accessory, and other manufactured product specified.

B. Shop Drawings: Show fabrication and installation details for the following:
   1. 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.
   2. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

C. Samples for Verification: For the following:
   1. Accessories embedded in the masonry.

D. Qualification Data: For firms and persons specified in "Quality Assurance" Article.

E. Material Test Reports: From a qualified testing agency indicating and interpreting test results of the following for compliance with requirements indicated:
   1. Each type of masonry unit required.
      a. Include test results, measurements, and calculations establishing net-area compressive strength of masonry units.

2. Mortar complying with ASTM C 270.
3. Grout mixes complying with compressive strength requirements of ASTM C 476. Include description of type and proportions of grout ingredients.

F. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
1. Each cement product required for mortar and grout, including name of manufacturer, brand, type, and weight slips at time of delivery.
2. Each material and grade indicated for reinforcing bars.
3. Each type and size of joint reinforcement.
4. Each type and size of anchor, tie, and metal accessory.

G. Job Site Testing: The general contractor shall test three masonry units from two random loads of masonry block with an independent testing facility for compliance of the aggregate materials and mix.

1.5 QUALITY ASSURANCE

A. Source Limitations for Masonry Units: Obtain masonry units through one source from a single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

C. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by another means, as acceptable to authorities having jurisdiction.

1.6 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. 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.

C. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.7 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. Protect exposed exterior finished materials from mud and dirt splatters with sand or straw.

B. Do not apply uniform floor or roof loads for at least 24 hours and concentrated loads for at least 3 days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
1. Protect base of walls from rain-splashed mud and from mortar splatter by coverings spread on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

E. Hot-Weather Requirements: Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required.
1. When ambient temperature exceeds 100 deg F, or 90 deg F with a wind velocity greater than 8 mph, do not spread mortar beds more than 48 inches ahead of masonry. Set masonry units within one minute of spreading mortar.

PART 2 - PRODUCTS

2.1 CONCRETE MASONRY UNITS

A. General: Provide shapes indicated and as follows:
1. Provide special shapes for lintels, corners, jambs, sash, control joints, headers, bonding, and other special conditions.
2. Provide square-edged units for outside corners, unless indicated as bullnose or other special shape.

B. Concrete Masonry Units: ASTM C 90 (latest revision) and as follows:
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2000 psi.
2. Weight Classification: Light weight meeting max. 105 pcf density.
3. Size (Width): Manufactured to the following dimensions:
   a. 4 inches nominal; 3-5/8 inches actual.
   b. 6 inches nominal; 5-5/8 inches actual.
   c. 8 inches nominal; 7-5/8 inches actual.
   d. 12 inches nominal; 11-5/8 inches actual.
   e. 16 inches nominal; 15-5/8 inches actual.
4. Exposed Faces: Manufacturer's standard color and texture, unless otherwise indicated.

5. Units shall be free of organic impurities that will cause rusting, staining or pop outs, and shall contain no combustible matter. The use of coal cinder aggregate/bottom ash, or similar waste products WILL NOT be allowed.
6. Job Site Testing: Per the request of the Architect, a random sample of the concrete masonry units may be taken from the job site to be tested for compliance with the specifications.
7. All lightweight aggregates used in the concrete units shall be expanded shale, clay or slate stalite materials, produced by the rotary Kiln process, shall conform to ASTM C331, C330 and shall be graded to assure constant texture. Aggregates shall have a maximum absorption rate of 10%.

2.2 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or II. 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.

D. Aggregate for Mortar: ASTM C 144; except for joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.

E. Aggregate for Grout: ASTM C 404.

F. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494, Type C, and recommended by the manufacturer for use in masonry mortar of composition indicated.

G. Water: Potable (low chlorine content).

2.3 REINFORCING STEEL

A. Uncoated Steel Reinforcing Bars: ASTM A 615, Grade 60.

2.4 MASONRY JOINT REINFORCEMENT

A. General: ASTM A 951 and as follows:
1. Hot-dip galvanized, carbon-steel wire for both interior and exterior walls.
2. Wire Size for Side Rods: 9 gage U.N.O.
3. Wire Size for Cross Rods: 9 gage U.N.O.
4. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units where indicated.

B. For single-wythe masonry, provide either ladder or truss type with single pair of side rods and cross rods spaced not more than 16 inches o.c.

C. For multiwythe masonry, provide types as follows:
1. Ladder type with perpendicular cross rods spaced not more than 16 inches o.c. and 1 side rod for each face shell of hollow masonry units more than 4 inches in width, plus 1 side rod for each wythe of masonry 4 inches or less in width.

2. Adjustable (2-piece) type with single pair of side rods and cross ties spaced not more than 16 inches o.c. and with separate adjustable veneer ties engaging the cross ties. Cross ties are either U-shaped with eyes or rectangular. Space side rods for embedment within each face shell of backup wythe and size adjustable ties to extend at least halfway through outer wythe but with at least 5/8-inch cover on outside face.
   a. Use where indicated and where horizontal joints of facing wythe do not align with those of backup wythe.

2.5 TIES AND ANCHORS, GENERAL

A. General: Provide ties and anchors, specified in subsequent articles, made from materials that comply with this Article, unless otherwise indicated.

B. Hot-Dip Galvanized Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating.

C. Galvanized Steel Sheet: ASTM A 653/A 653M, G60, commercial-quality, steel sheet zinc coated by hot-dip process on continuous lines before fabrication.

D. Steel Sheet, Galvanized after Fabrication: ASTM A 366/A 366M cold-rolled, carbon-steel sheet hot-dip galvanized after fabrication to comply with ASTM A 153.

E. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.6 BENT WIRE TIES

A. General: Rectangular units with closed ends and not less than 4 inches wide. Z-shaped ties with ends bent 90 degrees to provide hooks not less than 2 inches long may be used for masonry constructed from solid units or hollow units laid with cells horizontal.
   1. Where coursing between wythes does not align, use adjustable ties composed of 2 parts; 1 with pintles, the other with eyes; with maximum misalignment of 1-1/4 inches.

B. Wire: Fabricate from hot-dip galvanized steel wire.

2.7 ADJUSTABLE ANCHORS FOR CONNECTING TO STEEL FRAME

A. General: Provide two-piece hot-dip galvanized steel assemblies that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
   1. For anchorage to steel framing: provide manufacturer's standard anchors with crimped ¼"-inch-diameter wire anchor section for welding to steel and triangular-shaped section 0.1875-inch diameter sized to extend within 1 inch of masonry face

2.8 RIGID ANCHORS

A. General: Fabricate from steel bars as follows:
   1. 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins.
   2. Finish: Hot-dip galvanized to comply with ASTM A 153.

2.9 MISCELLANEOUS ANCHORS

A. Anchor Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153, Class C; of diameter and length indicated and in the following configurations:

1. Headed bolts.
2. Nonheaded bolts, bent or straight in manner indicated.

2.10 EMBEDDED FLASHING MATERIALS

A. Metal Flashing: Provide metal flashing**,** where flashing is exposed or partly exposed and where indicated, complying with Division 07 Section "Sheet Metal Flashing and Trim."

1. Metal Drip Edges: Fabricate from stainless steel, prefinished aluminum or as indicated on Drawings. Extend at least 3 inches into wall and 1/4 inch out from wall, with outer edge bent down 30 degrees.
2. Metal Flashing Terminations: Fabricate from stainless steel, prefinished aluminum or as indicated on Drawings. Extend at least 3 inches into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch and down into joint 3/8 inch to form a stop for retaining sealant backer rod.

B. For flashing partly exposed to the exterior, use metal flashing specified above. For flashing not exposed to the exterior, use one of the following flexible flashings, unless otherwise indicated:

1. Copper Fabric Flashing (Asphalt Free): Manufacturer's standard laminated flashing consisting of 5-oz./sq. ft. sheet copper bonded between 2 layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry or cut flush with face of joint.
2. Stainless Steel Fabric Flashing (Asphalt Free): 304 Stainless steel core, ASTM A167, with polymer fabric laminated to one stainless steel face with non-asphalt adhesive and polyether sealant.
    a. Products of manufacturers listed below meeting indicated standards and specified manufacturer's product data characteristics, are acceptable for use, subject to compliance with specified requirements.
        1) York Manufacturing, Inc.; Multi-Flash SS
        2) STS Coatings, Inc.; Gorilla Flash Stainless Fabric
        3) Wire-Bond #4160 Bond-N-Flash Stainless Steel S.A. Flashing
        4) TK Products, Inc.; TK TWF
        5) GE: Elemax SS Flashing

C. Solder and Sealants for Sheet Metal Flashings: As recommended by flashing manufacturer and compatible with insulations and other substrates.

D. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer and compatible with insulations and other substrates.

E. Provide preformed corners and end-dams. Use minimum 26 gauge stainless steel pre-manufactured corners. Adhere and seal to flashing per manufacturers recommendations.

F. Termination bar: Rigid PVC or stainless steel termination bar with sealant catch lip.

2.11 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.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall.

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. Mesh Weep/Vent: Provide free-draining mesh, made from polyethylene strands. At all flashing conditions, provide weep vents that are full height and width of head joint and depth 1/8 inch less than depth of outer wythe; in color selected from manufacturer's standard to match mortar.

E. Cavity Drainage Material: 1-inch thick, reticulated, non-absorbent mesh, made from polyethylene strands and shaped to maintain drainage at weep holes without being clogged by mortar droppings.
1. Product: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following products:
a. Advanced Building Products Inc.; Mortar Break
b. Archovations, Inc.; CavClear Masonry Mat
c. Dayton Superior Construction, Dur-O-Wal Division; Polytite MortarStop
d. Mortar Net USA, Ltd.; Mortar Net

2.12 MASONRY CLEANERS

A. Job-Mixed Detergent Solution: Solution of 1/2-cup dry measure tetrasodium polyphosphate and 1/2-cup dry measure laundry detergent dissolved in 1 gal. of water.

B. 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. For masonry not subject to metallic oxidation stains, use formulation consisting of a concentrated blend of surface-acting acids, chelating, and wetting agents.
2. For masonry subject to metallic oxidation stains, use formulation consisting of a liquid blend of organic and inorganic acids, and special inhibitors.

2.13 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
1. Do not use calcium chloride in mortar or grout.
2. Use integral water repellant for color integral CMU as noted in 2.1-D previously.

B. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification.

C. 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) at time of placement that will completely fill spaces intended to receive grout.
2. Use fine grout in grout spaces less than 2 inches in horizontal dimension, unless otherwise indicated.
3. Use course grout in grout spaces 2 inches or more in horizontal dimension, unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
   1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.

B. Before installation, examine rough-in and built-in construction to verify actual locations of piping connections.

3.2 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to the full thickness shown. Build single-wythe walls to the actual widths of masonry units, using units of widths indicated.

B. Build chases and recesses to accommodate items specified in this Section and in other Sections of the Specifications.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to the opening.

D. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide a continuous pattern and to fit adjoining construction. Where possible, use full-size units without cutting. Allow units cut with water-cooled saws to dry before placing, 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.

3.3 CONSTRUCTION TOLERANCES

A. Comply with tolerances in ACI 530.1/ASCE 6/TMS 602 and the following:

B. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/4 inch in 20 feet, nor 1/2 inch maximum.

C. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, nor 1/2 inch maximum.

D. For conspicuous horizontal lines, such as exposed lintels, sills, parapets, and reveals, do not vary from level by more than 1/4 inch in 20 feet, nor 1/2 inch maximum.

E. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch. Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.

F. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Lay exposed masonry in the following bond pattern; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
1. One-half running bond with vertical joint in each course centered on units in courses above and below.
2. Or as indicated on Drawings.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: In each course, rack back one-half-unit length for one-half running bond or one-third-unit length for one-third running bond; do not tooth. Clean exposed surfaces of set masonry, wet clay masonry units lightly if required, and remove loose masonry units and mortar before laying fresh masonry.

E. Built-in Work: As construction progresses, build in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in items.

F. Fill space between hollow-metal frames and masonry solidly with mortar, unless otherwise indicated.

G. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.

H. 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. At fire-rated partitions, install firestopping in joint between top of partition and underside of structure above to comply with Division 07.

I. Cover all masonry walls at the end of each work day per TMS 402.

3.5 MORTAR BEDDING AND JOINTING

A. Lay hollow masonry units as follows:
1. With full mortar coverage on horizontal and vertical face shells.
2. Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.
3. For starting course on footings where cells are not grouted, spread out full mortar bed, including areas under cells.

B. Lay solid brick-size 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.

1. At cavity walls, bevel beds away from cavity, to minimize mortar protrusions into cavity. As work progresses, trowel mortar fins protruding into cavity flat against the cavity face of the brick.

C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than the joint thickness, unless otherwise indicated.

D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint), unless otherwise indicated.

3.6 BONDING OF MULTIWYTHE MASONRY

A. Use continuous horizontal-joint reinforcement installed in horizontal mortar joints to bond wythes together. Stagger ties in alternate courses.

B. Use bonding system indicated on Drawings.

C. Corners: Provide interlocking masonry unit bond in each wythe and course at corners, unless otherwise indicated.
1. Provide continuity with masonry joint reinforcement at corners by using prefabricated "L" units as well as masonry bonding.

D. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, bond walls together as follows:
1. Provide individual metal ties not more than 16 inches o.c.
2. Provide continuity with masonry joint reinforcement by using prefabricated "T" units.
3. Provide rigid metal anchors not more than 24 inches o.c. If used with hollow masonry units, embed ends in mortar-filled cores.

3.7 CAVITIES

A. **Keep cavities clean of mortar droppings and other materials during construction**.
1. Use wood strips temporarily placed in cavity to collect mortar droppings. As work progresses, remove strips, clean off mortar droppings, and replace in cavity.

3.8 HORIZONTAL MASONRY JOINT REINFORCEMENT

A. General: Provide continuous masonry joint reinforcement as indicated. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches. This reinforcement is in addition to continuous reinforcement.
1. Space reinforcement not more than 16 inches o.c.
2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings.

B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

C. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.9 ANCHORING MASONRY TO STRUCTURAL MEMBERS

A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
   1. Provide an open space not less than 1 inch in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar or other rigid materials.
   2. Anchor masonry to structural members with flexible anchors embedded in masonry joints and attached to structure.
   3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.10 CONTROL AND EXPANSION JOINTS

A. General: Install control and expansion joints in unit masonry where indicated. Build-in related items as masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement. If joints are not indicated, install them as per National Concrete Masonry Association (NCMA) and Brick Industry Association (BIA) recommendations.

B. Form control joints in concrete masonry as follows:
   1. Install preformed control-joint gaskets designed to fit standard sash block.
   2. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake joint.

C. Form expansion joints in brick made from clay or shale as follows:
   1. Where indicated on drawings, build flanges of metal expansion strips into masonry. Lap each joint 4 inches in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints, if any.
   2. Form open joint of width indicated, but not less than 3/8 inch for installation of sealant and backer rod specified in Division 07 Section "Sealants." Keep joint free and clear of mortar.

D. Build in horizontal, pressure-relieving joints where indicated; construct 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 "Sealants."
   1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry veneer and attached to structure behind masonry veneer.

E. See quality assurance, 1.5-E, control joint placement.

3.11 LINTELS

A. Install steel lintels where indicated.

B. Provide masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.

C. Provide minimum bearing of 8 inches at each jamb, unless otherwise indicated.

3.12 FLASHING, WEEP HOLES, AND VENTS

A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.

B. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Unless otherwise indicated, place through-wall flashing on sloping bed of mortar and apply sealant under flashing. Cover flashing with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.

C. Install flashing as follows:
1. At multiwythe masonry walls, including cavity walls, extend flashing from exterior face of outer wythe of masonry, through outer wythe, turned up a minimum of 8 inches, and through inner wythe to within 1/2 inch of the interior face of the wall in exposed masonry. Where interior surface of inner wythe is concealed by furring, carry flashing completely through inner wythe and turn flashing up approximately 2 inches, unless otherwise indicated.
2. At masonry-veneer walls, extend flashing from exterior face of veneer, through veneer, up face of sheathing at least 8 inches, and behind air-infiltration barrier or building paper. Terminate flashing with a non-corrosive termination bar per manufacturer's recommendations.
3. At lintels and shelf angles, extend flashing a minimum of 4 inches into masonry at each end. At heads and sills, extend flashing 4 inches at ends and seal into preformed end-dams per manufacturer's recommendations.
4. Cut flashing off flush with face of wall after masonry wall construction is completed.

D. Install weep holes in the head joints in exterior wythes of the first course of masonry immediately above embedded flashing and as follows:
1. Use specified weep/vent products to form weep holes.
2. Space weep holes 24 inches o.c. in brick veneer and 32 inches o.c. in CMU veneer, unless otherwise indicated.

E. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

F. Install preformed flashing corners per manufacturer's recommendations.

G. Install all laps of flashing with minimum 6" lap. Adhere/seal laps per manufacturer's recommendations.

3.13 REINFORCED UNIT MASONRY INSTALLATION

A. Temporary Formwork and Shores: Construct formwork and shores to support reinforced masonry elements during construction.
1. Construct formwork to conform to shape, line, and dimensions shown. Make it sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements of ACI 530.1/ASCE 6/TMS 602.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.

1. Comply with requirements of ACI 530.1/ASCE 6/TM for cleanouts and for grout placement, including minimum grout space and maximum pour height

3.14 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.

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, polyethylene film, or waterproof masking tape.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing the surfaces thoroughly with clear water.
5. Clean brick by the bucket-and-brush hand-cleaning method described in BIA Technical Notes No. 20, using job-mixed detergent solution.
6. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2 applicable to type of stain on exposed surfaces.

3.15 MASONRY WASTE DISPOSAL

A. Recycling: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Disposal as Fill Material: Dispose of clean masonry waste, including broken masonry units, waste mortar, and excess or soil-contaminated sand, by crushing and mixing with fill material as fill is placed.
1. Crush masonry waste to less than 4 inches in each dimension.
2. Mix masonry waste with at least two parts of fill material for each part of masonry waste.
3. Do not dispose of masonry waste as fill within 18 inches 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 waste off Owner's property.

END OF SECTION 04 20 00

Division 05 - Metals

SECTION 05 12 00 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes structural steel and grout.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication of structural-steel components.

C. Welding certificates.

D. Mill test reports.

E. Source quality-control test reports.

1.3 QUALITY ASSURANCE

A. Fabricator Qualifications (The contractor must meet one of the two following requirements):
   1. A qualified fabricator who participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD, or
   2. A qualified fabricator with a minimum of 5 years experience in fabricating structural steel similar to that indicated for this project and with a record of successful in-service performance, as well as sufficient production capacity to fabricate structural steel without delaying the work. The fabricator shall retain, at no cost to the owner, a structural engineer to oversee an inspection process as directed by the engineer of record. The structural engineer shall submit a summary letter and all supporting documentation to the engineer of record for approval. The letter shall be signed and sealed with an engineering seal for the same state where the project is located and must be approved by the engineer of record prior to fabrication.
      a. Fully comply with exception of AISC Certification as provided by NCBC Part 1704.2.2 at the fabricator’s expense.

B. Installer Qualifications: A qualified installer and experienced installer who has completed structural steel work similar in material, design, and extent to that indicated for the project and with a record of successful in-service performance for a minimum of 5 years.

C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
   1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8/D1.8M. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.

D. Comply with applicable provisions of the following specifications and documents:
   1. AISC 303.
   2. AISC 341 and AISC 341s1.
   3. AISC 360.
   4. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

E. Comply with applicable provisions of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

F. Preinstallation Conference: Conduct conference at Project site.

1.4 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 anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment Drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
5. Identify members and connections of the Seismic-Load-Resisting System.
6. Indicate locations and dimensions of protected zones.
7. Identify demand critical welds.

C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each welded joint whether prequalified or qualified by testing, including the following:

1. Power source (constant current or constant voltage).
2. Electrode manufacturer and trade name, for demand critical welds.

D. Delegated-Design Submittal: For structural-steel connections indicated to comply with design loads, include analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, fabricator, professional engineer.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

D. Mill test reports for structural steel, including chemical and physical properties.

E. Product Test Reports: For the following:

1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
2. Tension-control, high-strength, bolt-nut-washer assemblies.
3. Shear stud connectors.
4. Shop primers.
5. Nonshrink grout.

F. Survey of existing conditions.

G. Source quality-control reports.

H. Field quality-control and special inspection reports.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A 992/A 992M.

B. Channels, Angles, M, S-Shapes: ASTM A 36/A 36M.

C. Plate and Bar: ASTM A 36/A 36M.

D. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.

E. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.

F. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.
1. Finish: Plain.

B. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B.

C. Unheaded Anchor Rods: ASTM F 1554, Grade 36.
   1. Configuration: Hooked.
   2. Finish: Plain.

D. Threaded Rods: ASTM A 36/A 36M.
   1. Finish: Plain.

2.3 PRIMER

A. Primer: Provide primer paint of one of the following types with surface preparation in accordance with manufacturer's recommendations and instructions:

1. Steel Spec Fast Dry Universal Metal Primer by Sherwin Williams
2. PorterPrime 2.8 Low VOC Universal Primer by Porter Coatings
3. Modified Alkyd Series 10 Primer by Tnemec Company

2.4 GROUT

A. Metallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.

B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."

B. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's written instructions.

2.6 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
   1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.

2.7 SHOP PRIMING

A. Shop prime steel surfaces except the following:
   1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
   2. Surfaces to be field welded.
   3. Surfaces to be high-strength bolted with slip-critical connections.
   4. **Surfaces to receive sprayed fire-resistive materials or acoustical sprayed on materials**.
   5. Galvanized surfaces.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
   1. SSPC-SP 2, "Hand Tool Cleaning."
   2. SSPC-SP 3, "Power Tool Cleaning."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

PART 3 - EXECUTION

3.1 ERECTION

A. Examination: Verify elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments, with steel erector present, for compliance with requirements.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Set structural steel accurately in locations and to elevations indicated and according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."

C. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting base and bearing plates. Clean bottom surface of base and bearing plates.
   1. Set base and bearing plates for structural members on wedges, shims, or setting nuts as required.
   2. Weld plate washers to top of base plate.
   3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base or bearing plate before packing with grout.
   4. Promptly pack grout solidly between bearing surfaces and base or bearing plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

D. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.2 FIELD CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
   1. Joint Type: Snug tightened.
   2. Bracing requires slip critical connections.

B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.
   1. Comply with AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic

Design" for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

B. Bolted Connections: Ten percent of field-bolted connections will be visually inspected for snug-tightness.

C. Welded Connections: Field welds will be visually inspected according to AWS D1.1.
   1. In addition to visual inspection, field welds will be tested according to AWS D1.1 and the following inspection procedures, if found deficient by visual inspection:
      a. Liquid Penetrant Inspection: ASTM E 165.
      b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
      c. Ultrasonic Inspection: ASTM E 164.
      d. Radiographic Inspection: ASTM E 94.

D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

END OF SECTION 05 12 00

SECTION 05 31 00 - STEEL DECKING

PART 1 - GENERAL

1.01 SCOPE:

A. Provide all labor, materials, equipment and services required to furnish and install the steel decking.

1.02 QUALITY ASSURANCE:

A. Welders, tackers, and welding operations: Qualified in accordance with Code for Welding in Building Construction, AWS D1.3 “Structural Welding Code – Sheet Steel” to perform type of work required.

B. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

C. The deck shall have been tested and approved as a component for Class 1 roofs by Factory Mutual.

1.03 SUBMITTALS:

A. Prior to installation, submit to the Architect for review the following:
   1. Indicate sizes and location of deck units. Indicate welding pattern.
   2. Indicate sizes and locations of holes to be cut in shop.
   3. Placement drawings shall be prepared and submitted for approval. The drawings shall show deck type, finish, decimal thickness of steel, the location and length of the sheets, field cutting, the method of fastening and other information as required for a thorough review and installation.
   4. The deck manufacturer shall certify that all materials will be in full compliance with this specification. The Letter of Certification shall accompany the design computations when submitting placement drawings for approval. When completed, 3 copies of certified mill reports shall be furnished to the Architect.

1.04 PRODUCT HANDLING:

A. Deliver materials, in manufacturer’s bundles, to project site and store in designated areas.

B. Store decking above ground on platforms or other supports. Protect from corrosion. Keep materials clean.

C. Store other materials in a weather tight, dry place until ready for use.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Consolidated Systems, Inc.
2. DACS, Inc.
3. New Millennium Building Systems, LLC.
4. Nucor Corp.; Vulcraft Division.
5. United Steel Deck, Inc.
6. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

2.02 STEEL DECKING - GENERAL REQUIREMENTS:

A. Primed painted deck to be used only when final surface is to be painted: The steel shall be ASTM designation A611 (latest edition) Grade C cold-rolled structural quality steel.

B. Galvanized deck: The steel shall be ASTM A 653/A 653M, Structural Steel (SS), Grade 33.

C. **Do not paint or prime surfaces scheduled to receive fireproofing.**

D. For primed painted deck, a phosphatized type cleaner shall be used to remove all grease, oil and other foreign matter to prepare the steel surface for further treatment. A stabilized vinyl wash primer shall then be applied to phosphatize the surface and provide a chemically bonded chromated pigmented vinyl coating. After this initial prime coating has been heat-dried, a second light gray flexible, thermosetting, rust inhibiting prime paint shall then be roller applied and cured in a catenary oven at temperatures in excess of 400 degrees F before forming.

E. Galvanized deck shall be roll-formed from steel sheet (hot dip galvanized) conforming to ASTM Designation A446-76, and ASTM A525-81 or Fed. Spec. Q-S-775e.

F. For galvanized and painted deck, the steel shall be galvanized by the hot dip method followed by an organic chromate finish, then further treated with a clear vinyl epoxy preparation. A light gray thermosetting, rust inhibiting prime paint shall then be roller coated and cured in a catenary oven at temperatures in excess of 400 degrees F before forming.

G. Accessories such as ridge and valley plates, cant strips, sump pans and other accessories which must be attached directly to the steel deck in order to provide a finished surface for the application of insulation and roofing, shall be supplied where shown on the Drawings.

H. The minimum uncoated steel thickness as delivered to the job site shall not at any location be less than the following decimal thicknesses: Design Uncoated-Steel Thickness: As indicated on structural drawings.

2.03 STEEL ROOF DECK:

A. Steel Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 30, and with the following:

1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 50, G60 zinc coating.
2. Deck Profile: As indicated.
3. Profile Depth: As indicated.
4. Design Uncoated-Steel Thickness: As indicated.

2.04 ACCESSORIES:

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

D. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

E. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.01 METHODS OF ATTACHMENT:

A. 5/8" diameter welds at each support, for all sheet widths except where otherwise noted.
B. Self-tapping screws as permitted by Structural Drawings, as attachment to cold formed metal framing.

3.02 FABRICATING:

A. Do not use a cutting torch for cutting deck or holes in deck. Abrasive saws may be used for cutting holes in sump pans provided that cuts are cleaned and painted with a zinc base paint.

B. Cut holes for openings in deck indicated on Drawings. Locations of other holes will be furnished by trades requiring them.

3.03 SUMP PLATES:

A. Flat plate, 14 gauge galvanized steel 30" square.

B. All deck is to be installed in accordance with manufacturer’s recommendations and these Contract Documents.

C. Deck with thickness less than 22 gauge shall be attached by means of welding through 16 gauge welding washers.

D. Provide a side lap screw as noted on structural drawings.

E. Place sump pans for roof drains and weld or bolt them to deck to reinforce openings as shown on Drawings.

3.04 CUTTING:

A. Cut required openings or lengths neatly with sheet metal tools. No cutting with welding equipment will be allowed.

B. Where deck warps up at edges, and cutting is the only way to correct the warping, the underside of the deck may be cut to facilitate bending. Cutting shall be centered over supports and should not extend up to the bottom of the top part of the flute. If necessary to maintain structural integrity, the Contractor shall provide for additional strength where deck is cut. Weld to support along each side of cut and paint over cut areas.

3.05 CLEAN-UP AND TOUCH-UP:

A. After inspection, remove debris, welding splatter, and other foreign matter.

B. Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions. Use rust-inhibiting paint to touch up wherever painted metal is scratched, scarred, abraded or welded.

C. Leave surfaces clean and ready for application of surfacing material.

END OF SECTION 05 31 00

SECTION 05 40 00 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Exterior load-bearing wall framing.
   2. Exterior non-load-bearing, curtain-wall framing.
   3. Joist framing.
   4. Exterior soffit framing

1.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads without deflections greater than the following:
   1. Exterior Load-Bearing Wall Framing: Horizontal deflection of **1/360** of the wall height.
   2. Exterior Non-Load-Bearing, Curtain-Wall Framing: Horizontal deflection of **1/360** of the wall height.
   3. Joist Framing: Vertical deflection of **1/360** of the span.
   4. Exterior Soffit Framing: Vertical deflection of **1/360** of the span.

1.3 SUBMITTALS

A. Product Data: For each product indicated.

B. Shop Drawings: Include layout, spacing, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
   1. Include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Delegated Design by Specialty Structural Engineer (SSE):
   1. SSE is the design professional, individual, or organization having the responsibility for the design of the specialty items.
   2. The design responsibility shall be in accordance with the state’s statues and regulations governing the professional registration and certification of architects or engineers.

D. Mill certificates.

E. Welder certificates.

1.4 QUALITY ASSURANCE

A. Comply with AISI's "Specification for the Design of Cold-Formed Steel Structural Members" for calculating structural characteristics of cold-formed metal framing.
   1. Engineering Responsibility: Engage a qualified professional engineer to prepare design calculations, Shop Drawings, and other structural data.

B. Mill certificates signed by steel sheet producer or test reports from a qualified independent testing agency.

C. Product test reports: For each listed, for tests performed by manufacturer and witnessed by a qualified testing agency.
   1. Sheet Steel
   2. Expansion Anchors
   3. Powder-actuated anchors
   4. Mechanical fasteners
   5. Vertical deflection clips
   6. Horizontal drift deflection clips
   7. Miscellaneous structural clips and accessories.

D. Research reports: For non-standard cold-formed steel framing, submit evaluation reports certified under an independent third-party inspection program administered by an agency accredited by IAS to ICC-ES AC-98, IAS Accreditation Criteria for Inspection Agencies.

E. Provide certification to code compliance with the “Code Compliance Certification Program” implemented by the Steel Framing Industry Association (SFIA).

F. Provide certification of ISO 9001 “Quality Management System” for a manufacturing facility of cold-formed steel framing and connections.

G. Provide certification that cold-formed steel framing and connectors were manufactured in the USA.

H. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."

I. Fire-Test-Response Characteristics: Where metal framing is part of a fire-resistance-rated assembly, provide framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing agency acceptable to authorities having jurisdiction.
   1. Fire-Resistance Ratings: Indicated by GA File Numbers in GA-600, "Fire Resistance Design Manual," or by design designations from UL's "Fire Resistance Directory" or from the listings of another testing agency.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Clark-Dietrich Industries, Inc.
   2. Consolidated Systems, Inc.
   3. Dale Industries, Inc.
   4. MarinoWare; Div. of Ware Industries, Inc.
   5. Steel Construction Systems.
   6. Super Stud Building Products, Inc.
   7. Unimast, Inc.
   8. Telling Industries LLC

2.2 MATERIALS

A. Steel Sheet: ASTM A 653/A 653M, structural steel, G60 zinc coating, Grade 33 for minimum uncoated steel thickness of 0.0428 inch and less; Grade 50 for minimum uncoated steel thickness of 0.0538 inch and greater.

B. Wall Framing: Manufacturer's standard steel studs, of web depths indicated, with stiffened flanges, complying with ASTM C 955, and as follows:
   1. Minimum Uncoated-Steel Thickness: As noted on Structural Drawings.
   2. Flange Width: As noted on Structural Drawings.
   3. Coatings: Standard coating of G60 (Z180).
   4. Track: Manufacturer's standard U-shaped steel track, unpunched, with straight flanges, complying with ASTM C 955, manufacturer's standard flange width, and minimum uncoated-steel thickness matching steel studs.

C. Load Bearing Wall Framing: SigmaStud®by the Steel Network, Inc., of web depths indicated, with stiffened flanges, complying with ASTM C955, and as follows:
   1. Minimum Uncoated-Steel Thickness: As noted on Structural Drawings
   2. Flange Width: As noted on Structural Drawings.
   3. Coatings: Standard coating of G60 (Z180).
   4. TrackL SigmaTrak® by the Steel Network, Inc., unpunched, with straight flanges, complying with ASTM C955, manufacturer’s standard flange width, and minimum uncoated-steel thickness matching steel studs.

D. Joist Framing: Manufacturer's standard C-shaped steel joists, of web depths indicated, unpunched, with stiffened flanges, complying with ASTM C 955, and as follows:
   1. Minimum Uncoated-Steel Thickness: As noted on Structural Drawings.
   2. Flange Width: As noted on Structural Drawings.
   3. Track: Manufacturer's standard U-shaped steel joist track, of web depths indicated, unpunched, with unstiffened flanges, complying with ASTM C 955, and as follows:
      a. Minimum Uncoated-Steel Thickness: As noted on Structural Drawings.
      b. Flange Width: As noted on Structural Drawings.

2.3 ACCESSORIES AND MISCELLANEOUS MATERIALS

A. Fabricate steel-framing accessories of the same material and finish used for framing members, with a minimum yield strength of 33,000 psi, of manufacturer's standard thickness and configuration, unless otherwise indicated.

B. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123.

C. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers.

D. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

E. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.

F. Mechanical Fasteners: Corrosion-resistant-coated, self-drilling, self-threading steel drill screws.

G. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

H. Thermal Insulation: As specified in Section 07 21 16 Blanket Insulation.

I. Single Deflection Track: Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal and lateral loads.

J. Sill Seal: Provide flexible polyethylene foam gasketing strip between concrete foundation and sill plate. Strip shall be .25" x 5.5" for 6" metal stud walls. Provide "Weathermate Sill Seal" by Dow Building Solutions or equal.

K. Galvanizing Repair Paint: ASTM A780.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Preparation: Grout bearing surfaces uniform and level to ensure full contact of bearing flanges or track webs on supporting concrete or masonry construction.

B. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to ASTM C 1007, manufacturer's written recommendations, and requirements in this Section.
1. Cut framing members by sawing or shearing; do not torch cut.
2. Fasten cold-formed metal framing members by welding or screw fastening, as standard with fabricator. Wire tying of framing members is not permitted.
3. Install framing members in one-piece lengths.
4. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed.
5. Install insulation in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
6. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.

C. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

D. Load-Bearing Wall Installation: Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends. Squarely seat studs against webs of top and bottom tracks. Space studs as indicated, set plumb, align, and fasten both flanges of studs to top and bottom tracks.
1. Align studs vertically where wall-framing continuity is interrupted by floor framing. Where studs cannot be aligned, continuously reinforce track to transfer loads.
2. Align floor and roof framing over studs. Where framing cannot be aligned, continuously reinforce track to transfer loads.

3. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure as indicated.
4. Install headers over wall openings wider than stud spacing. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.
5. Frame wall openings with not less than a double stud at each jamb of frame as indicated on Shop Drawings.
6. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.
7. Install horizontal bridging in stud system, spaced as indicated on Shop Drawings. Fasten at each stud intersection.
8. Install miscellaneous framing and connections, including supplementary framing, blocking, bracing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

E. Non-Load-Bearing, Curtain-Wall Installation: Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure. Space studs as indicated; set plumb, align, and fasten both flanges of studs to track, unless otherwise indicated.
1. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support using single deflection track at top of wall.
2. Install horizontal bridging in curtain-wall studs, spaced in rows indicated on Shop Drawings but not more than 54 inches apart. Fasten at each stud intersection.
3. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable curtain-wall-framing system.

F. Joist Installation: Install, align, and securely anchor perimeter joist track sized to match joists as indicated on Shop Drawings. Install joists bearing on supporting frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten to both flanges of joist track.
1. Install joists over supporting frame with a minimum end bearing of 1-1/2 inches. Reinforce ends and bearing points of joists as indicated on Shop Drawings.
2. Space joists not more than 2 inches from abutting walls and at spacings indicated.
3. Frame openings with built-up joist headers consisting of joist and joist track, nesting joists, or another combination of connected joists if indicated.
4. Install joist reinforcement at interior supports with single, short length of joist section located directly over interior support, with lapped joists of equal length to joist reinforcement, or as indicated. Install web stiffeners to transfer axial loads of walls above.
5. Install bridging at each end of joists and at intervals indicated. Fasten bridging at each joist intersection as indicated.
6. Secure joists to load-bearing interior walls to prevent lateral movement of bottom flange.
7. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors, and fasteners, to provide a complete and stable joist-framing assembly.

END OF SECTION 05 40 00

SECTION 05 50 00 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:
   1. Loose bearing and leveling plates.
   2. Loose steel lintels.
   3. Shelf angles.
   4. Miscellaneous framing and supports.
   5. Metal edgings.
   6. Pipe bollards.

B. Related Sections include the following:

   1. Division 05 Section "Structural Steel Framing" for structural-steel framing system components.
   2. Division 05 Section "Pipe and Tube Railing" for metal pipe and tube handrails and railings.
   3. Division 06 Section “General Carpentry” for metal framing anchors and other rough hardware.

1.3 SUBMITTALS

A. Product Data: For the following:
   1. Grout.

B. Shop Drawings: Detail fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
   1. Provide templates for anchors and bolts specified for installation under other Sections.

C. Welding Certificates: Copies of certificates for welding procedures and personnel.

D. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing metal fabrications 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.

B. Welding: Qualify procedures and personnel according to the following:
   1. AWS D1.1, "Structural Welding Code--Steel."
   2. AWS D1.2, "Structural Welding Code--Aluminum."
   3. AWS D1.3, "Structural Welding Code--Sheet Steel."
   4. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

1.5 PROJECT CONDITIONS

A. Field Measurements: Where metal fabrications are indicated to fit walls and other construction, verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.6 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.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: For metal fabrications exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

2.2 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.

C. Steel Tubing: Cold-formed steel tubing complying with ASTM A 500.

D. Steel Pipe: ASTM A 53, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.

E. Slotted Channel Framing: Cold-formed metal channels with flange edges returned toward web and with 9/16-inch wide slotted holes in webs at 2 inches on center.
   1. Width of Channels: 1-5/8 inches.
   2. Depth of Channels: As indicated.

3. Metal and Thickness: Galvanized steel complying with ASTM A 653/ A 653M, structural quality, Grade 33, with G90 coating; 0.108-inch, 0.079-inch or 0.064-inch nominal thickness (as required for load imposed).
4. Metal and Thickness: Cold rolled steel complying with ASTM A 1008/ A 1008M, Grade 33; 0.0966-inch, 0.0677-inch or 0.0528-inch minimum thickness (as required for load imposed).
5. Finish: Unfinished where not exposed.
6. Finish: Rust-inhibitive, baked-on, acrylic enamel finish where exposed to view or to the exterior.

F. Malleable-Iron Castings: ASTM A 47, Grade 32510.

G. Gray-Iron Castings: ASTM A 48, Class 30, unless another class is indicated or required by structural loads.

H. Cast-in-Place Anchors in Concrete: Anchors of type indicated below, fabricated from corrosion-resistant materials capable of sustaining, without failure, the load imposed within a safety factor of 4, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.
1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47 malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.

I. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

2.3 ALUMINUM

A. Aluminum Extrusions: ASTM B 221, alloy 6063-T6.

2.4 PAINT

A. Shop Primers: Provide primers that comply with Division 9 Section "Painting."

B. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

C. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers, or cold-applied asphalt emulsion complying with ASTM D 1187.

2.5 FASTENERS

A. General: Provide Type 304 or 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, where built into exterior walls. Select fasteners for type, grade, and class required.

B. Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.

C. Anchor Bolts: ASTM F 1554, Grade 36.

D. Machine Screws: ASME B18.6.3.

E. Lag Bolts: ASME B18.2.1.

F. Wood Screws: Flat head, carbon steel, ASME B18.6.1.

G. Plain Washers: Round, carbon steel, ASME B18.22.1.

H. Lock Washers: Helical, spring type, carbon steel, ASME B18.21.1.

I. 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 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.

J. Toggle Bolts: FS FF-B-588, tumble-wing type, class and style as needed.

2.6 GROUT

A. Nonshrink, Metallic Grout: Factory-packaged, ferrous-aggregate grout complying with ASTM C 1107, specifically recommended by manufacturer for heavy-duty loading applications.

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.

2.7 CONCRETE FILL FOR BOLLARDS

A. Concrete Materials and Properties: Comply with requirements in Division 3 Section "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 3000 psi, unless otherwise indicated.

2.8 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Shear and punch metals cleanly and accurately. Remove burrs.

C. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Weld corners and seams continuously to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

E. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

F. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

G. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

H. Allow for thermal movement resulting from the maximum change in ambient and surface temperatures (temperature range) by preventing buckling, opening up of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and night-time sky heat loss.

I. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.

J. Remove sharp or rough areas on exposed traffic surfaces.

K. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.

2.9 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

B. Galvanize plates after fabrication.

2.10 LOOSE STEEL LINTELS

A. Fabricate loose structural-steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.

B. Weld adjoining members together to form a single unit where indicated.

C. Size loose lintels to provide bearing length at each side of openings equal to one-twelfth of clear span, but not less than 8 inches, unless otherwise indicated.

D. Shop prime loose steel lintels located in exterior walls.

2.11 SHELF ANGLES

A. Fabricate shelf angles from steel angles of sizes indicated.

B. For cavity walls, provide vertical channel brackets to support angles from backup masonry and concrete. Align expansion joints in angles with indicated control and expansion joints in cavity-wall exterior wythe.

C. Furnish wedge-type concrete inserts, complete with fasteners, to attach shelf angles to cast-in-place concrete.

2.12 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from structural-steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.
   1. Fabricate units from slotted channel framing where indicated.
   2. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors 1-1/4 inches wide by 1/4 inch thick by 8 inches long at 24 inches on center, unless otherwise indicated.
   3. Furnish inserts if units must be installed after concrete is placed.

C. Galvanize miscellaneous framing and supports where indicated.

2.13 PIPE BOLLARDS

A. Fabricate pipe bollards from Schedule 40 steel pipe.

2.14 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

2.15 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:
   1. ASTM A 123, for galvanizing steel and iron products.
   2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.

B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface-preparation specifications and environmental exposure conditions of installed metal fabrications:
   1. Exteriors (SSPC Zone 1B): SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
   2. Interiors (SSPC Zone 1A): SSPC-SP 3, "Power Tool Cleaning."

C. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1," for shop painting.

2.16 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. As-Fabricated Finish: AA-M10 (Mechanical Finish: as fabricated, unspecified).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal fabrications to in-place construction. Include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

E. Field Welding: Comply with the following requirements:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

3.2 SETTING BEARING AND LEVELING PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.
   1. Use nonshrink grout, either metallic or nonmetallic, in concealed locations where not exposed to moisture; use nonshrink, nonmetallic grout in exposed locations, unless otherwise indicated.
   2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.3 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings, if any.

3.4 INSTALLING PIPE BOLLARDS

A. Anchor bollards in place with concrete footings. Support and brace bollards in position in footing excavations until concrete has been placed and cured.

3.5 ADJUSTING AND CLEANING

A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 9 Section "Painting."

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 05 50 00

Division 06 – Wood, Plastics, & Composites

SECTION 06 20 00 - GENERAL CARPENTRY

PART 1 - GENERAL

1.1 SCOPE:

A. Provide all labor, materials, equipment and services required to complete the general carpentry work, miscellaneous equipment and material installation.

1.2 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.
   1. Include data for **wood-preservative and fire-retardant** treatment from chemical treatment manufacturer and certification by treating plant that the treated materials comply with requirements.

1.3 QUALITY ASSURANCE:

A. Lumber standards: Comply with DOC PS 20 and with applicable rules of the respective agencies for species and products specified.

B. Plywood product standards: Comply with DOC PS 1 (ANSI A199.1) or, for products not manufactured under DOC PS 1 provisions, with applicable APA Performance Standard for type of panel indicated. Reference DOC PS 2 for OSB.

1.4 PRODUCT HANDLING:

A. Do not deliver shop fabricated carpentry items until site conditions are adequate to receive the work. Protect items from weather while in transit.

B. Store indoors, in ventilated area with a constant, minimum temperature of 60 degrees F, maximum humidity of 25 to 55 percent.

PART 2 - PRODUCTS

2.1 LUMBER:

A. Dimensions: Conform to standards established by the American Lumber Standards Committee.

B. Moisture content: Unseasoned or 19% maximum at the time of permanent closing in of the structure.

C. Surfacing: S4S.

D. Miscellaneous lumber: Provide wood for support or attachment of other work including, but not limited to, cant strips, bucks, nailers, plates, blocking, bracing, furring, grounds, stripping and similar members. Provide lumber of sizes indicated, worked into shapes shown. Shall be #2, GM, SYP, KDAT (Kiln Dried After Treatment).

2.2 PLYWOOD - GENERAL:

A. Identify each panel with the appropriate grade APA trademark and shall meet the requirements of the latest edition of U.S. Product Standard PSI or one of APA's Performance Standards.

B. All plywood which has an edge or surface permanently exposed to the weather shall be classed Exterior.

C. Panel thickness, grade, and Group or Identification Index shall be at least equal to that shown on the Drawings. Installation shall be in accordance with the APA recommendations.

2.3 WOOD TREATMENT - PRESERVATIVE:

A. Lumber or plywood shall be preservative treated in the following instances.
1. Whenever wood is placed in the ground;
2. Whenever wood is placed in water;
3. Whenever wood comes in contact with masonry or concrete;
4. Wherever wood is exposed to wetting and corrosive environments;
5. Whenever wood would be susceptible to decay organisms or insects.

B. Comply with applicable requirements of AWPA Standards U1. Mark each treated item with the AWPA Quality Mark Requirements.

C. Water-borne preservatives shall comply with AWPA T1 applicable. After treatment, kiln-dry to a maximum moisture content of 15%.

D. Complete fabrication of treated items prior to treatment, where possible. If cut after treatment, coat cut surfaces with heavy brush coat of same chemical used for treatment. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

2.4 FIRE-RETARDANT-TREATED MATERIALS

A. General: Comply with performance requirements in AWPA U1.
1. Where indicated, use type USFB for exterior locations.
2. Where indicated, use type USFB for interior locations.

B. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.

C. Application: Treat items where indicated on Drawings.

2.5 FASTENERS AND ANCHORAGE:

A. Provide size, type, material and finish as indicated and as recommended by applicable standards, complying with Federal Specifications for nails, staples, screws, bolts, nuts, washers and anchoring devices. Provide metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommending nails.

B. Where rough carpentry work is exposed to weather, in ground contact, or in area of high humidity, provide fasteners and anchorages with hot-dip zinc coating (ASTM A 153).

2.6 MISCELLANEOUS MATERIALS

A. Fasteners for Interior Finish Carpentry: Nails, screws, and other anchoring devices if type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible.

PART 3 - EXECUTION

3.1 GENERAL:

A. Discard units of material with defects, which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement.

B. Set carpentry work accurately to required levels and lines, with members plumb, true and accurately cut and fitted.

C. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards. Countersink nail heads on exposed carpentry work and fill holes.

D. Use common wire nails, except as otherwise noted. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

3.2 WOOD GROUNDS, NAILERS, BLOCKING AND SLEEPERS:

A. Provide for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.

B. Attach to substrates to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise shown. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.

C. Provide permanent grounds of dressed, preservative treated, key-beveled lumber not less than 1-1/2" wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

END OF SECTION 06 20 00

SECTION 06 22 00 – MILLWORK

PART 1 - GENERAL

1.1 SCOPE:

A. Provide all of the labor, materials, equipment and services required to furnish and install the millwork.

1.2 QUALITY ASSURANCE:

A. In addition to complying with all pertinent codes and regulations, the latest edition "Architectural Woodwork Standards" of the Architectural Woodwork Institute shall apply and by reference are hereby made a part of these Contract Documents. Any reference to "premium", "custom", or "economy" shall be defined in the latest edition of AWI "Architectural Woodwork Standards".

1.3 SUBMITTALS:

A. Prior to fabrication, submit to the Architect for review the following:
   1. Shop drawings that at a minimum shall show the following:
      a. All materials (solid wood, plywood, fiberwood board, plastic laminate, solid surface, and hardware).
      b. All thicknesses and dimensions.
      c. Specie, grade and cut of woods and veneers.
      d. Jointing and bolting.
      e. The name of the manufacturer and the model number of all factory fabricated items.
      f. Full size details drawn in related and dimensioned positions to facilitate checking of intersecting and string dimensions.
      g. Clear description of work to be done in the shop and work to be done in the field.
   2. Manufacturer's literature of specialty items not manufactured by the architectural woodworker.
   3. Physical samples:
      a. Plastic laminate in all colors and patterns for the Architect's selection.
      b. Upon request, provide one unit of each type and finish of hardware

B. Certification: Submit copies of certificate signed by woodwork shop certifying that millwork complies with quality grades and other requirements indicated. Form of certificate shall be approved by the Architect.

1.4 PRODUCT HANDLING:

A. Millwork shall not be delivered until the building and storage areas are sufficiently conditioned so that the millwork will not be damaged by excessive changes in moisture content.

PART 2 - PRODUCTS

2.1 CASEWORK, SHELVES AND COUNTERTOPS - PLASTIC LAMINATE FINISH: (PL-1 & PL-2)

A. AWI quality grade:
1. Acceptable Manufacturers:
a. See Finish Schedule A700 for (basis of design) pattern, color and finish.
b. Polilam
c. Wilsonart
d. Formica

B. Exposed surfaces – general purpose plastic laminate: 0.048 inches (1.2mm) nominal approximately 1/16" thick high-pressure plastic laminate; Vertical Surface Laminate Product 0.028 inch (0.7 mm) nominal and High Definition Laminate 0.039 inch (1.0 mm) nominal as required by AWI quality grade and conforming to NEMA LD 3, Grade HGS, VGS, VGP & HGP and ISO 4586, Grade HGS, VGS, VGP & HGP. Abrasion Class I.

C. All plastic laminate countertops in which sinks occur shall have a core of exterior grade hardwood faced plywood. See Sheet A700 for countertop edge profile.

D. Casework body members (ends, divisions, fixed shelves, bottoms, tops, face frames, bases, rails, toe kicks, backs, drawer sides, drawer bottoms) to be made of cabinet grade plywood per AWI standards.

E. Drawer fronts and cabinet doors with dimensions up to 30” width x 80” height shall be constructed from 3/4” minimum MDF or panel product.

F. **NO PARTICLE BOARD IS ALLOWED ON SITE.**

G. Provide all vertical and horizontal filler material required for a complete installation

H. Edgebanding shall be HPDL or .03 mm flat PVC color to coordinate with face laminate.

I. Provide laminate on toekicks that matches the base cabinet laminate.

J. Grain pattern of laminate shall be in the same direction on all components, doors face, cabinet frame, drawer face, toekick.

2.2 SOLID SURFACE COUNTER: (SSF-1 & SSF-2)

A. Non-porous solid surface 1/2" thickness unless otherwise noted on drawings.
1. Acceptable products:
a. As scheduled on finish legend A700.
b. Hanex
c. Corian
d. Wilsonart

2. Finish: as scheduled on finish legend A700.
3. See drawings for locations of solid surface and profile trim where applicable.
4. See sheet A700 for countertop edge profile.

B. Solid Surface Counter support where applicable:
1. Counter to be installed on square tube stock or angle iron support framing when not over cabinetry or casework. Support framing to include perimeter supports, perimeter supports at cutouts, and cross supports where necessary.
a. Maximum deflection of solid surface to be 1/8" (3 mm) over 10 feet (3 m)
2. Where underlayment is indicated, install solid surface over ¾" plywood underlayment. If spacers are required, they are to be moisture-resistant MDF or moisture-resistant plywood.
3. All counter surfaces that do not have cabinets below require a ¾" plywood substrate underlayment to avoid future cracking of the solid surface counter.
4. Solid surface counter edges at overhangs to be built-up construction unless noted otherwise.

2.3 CASEWORK HARDWARE:

A. All cabinet hardware shall be furnished and installed by the casework manufacturer.
1. Drawer slides:
a. Full extension slides for file drawers
b. White Euroslides for typical drawers
c. Manufacturers: Accuride, Mepla, Hafele, or Knape & Vogt.
2. Line boring with metal shelf clips.
3. Hinges: 120-degree concealed casework hinges with self-closing feature.
a. Provide number of hinges per manufacturer's recommendations. In no case less than:
i. Three (3) hinges per door with a height 40" or greater or a weight between 15-30 lbs
ii. Four (4) hinges per door with a height 60" or greater or a weight between 30-45 lbs
iii. Five (5) hinges per door with a height of 80" or greater or a weight between 45-60 lbs
b. Where wheelchair accessibility is required for base cabinets with sink, provide 170-degree concealed casework hinges with magnetic catches.
c. Manufacturers: Blum, Salice, Hafele or Grass.
4. Pulls: Richelieu; 7516192170AB 7 9/16" width, in stainless steel finish.
5. Locks: Cam locks where noted on drawings.
a. All locks to be separately keyed with a master key provided.
b. Manufacturers: National or approved equal
6. Silencers: Provide a minimum of 2 silencers for each cabinet door and drawer.

PART 3 - EXECUTION

3.1 PREPARATION FOR FINISHING:

A. Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing of concealed surfaces and similar preparations for finishing of millwork as applicable to each unit of work.

B. Shop Finishing: to the greatest extent possible, finish millwork at shop or factory. Defer only

final touch-up, cleaning and polishing for times after delivery and installation.

3.2 PREPARATION FOR INSTALLATION:

A. Condition millwork to average prevailing humidity conditions in installation areas prior to installing.

B. Coordinate installation of backing for support, before walls are built.

3.3 INSTALLATION:

A. 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; and with 1/16" maximum offset in flush adjoining surfaces, 1/8" maximum offsets in revealed adjoining surfaces.

B. Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

C. Anchor millwork to anchors or built-in blocking. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fastener heads are required, use fine finishing nails for exposed nailing, countersunk and filled flush with millwork, and matching final finish where transparent finish is indicated.

3.5 CASEWORK:

A. Set and secure casework in place rigid, plumb and square.

B. Use purpose designed fixture attachments for wall-mounted components. Attach wall-mounted cabinets in order that they can withstand all superimposed loading.

C. Use thread steel concealed joint fasteners to align and secure adjoining cabinet units and counter tops.

D. Permanently fix cabinet and counter bases to floor using appropriate angles and anchorages.

E. Counter-sink semi-concealed anchorage devices used to wall mount components, and conceal with solid plugs of species to match surrounding wood. Place flush with surrounding surfaces.

F. Carefully scribe cabinetwork which is against other building materials leaving gaps of 1/32" maximum. Seal gaps with sealant tinted to match adjacent surfaces. Do not use additional overlay trim for this purpose.

G. Install and adjust cabinet hardware to ensure smooth and correct operation.

3.6 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION:

A. Repair damaged and defective millwork wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace millwork. Adjust joinery for uniform appearance.

B. Clean hardware, lubricate and make final adjustments for proper operation.

C. Clean millwork on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas.

D. Provide final protection and maintain conditions, in a manner acceptable to fabricator and installer, which ensures millwork being without damage or deterioration at time of Substantial Completion.

END OF SECTION 06 22 00

Division 07 - Thermal & Moisture Protection

SECTION 07 21 16 - BLANKET INSULATION

PART 1 - GENERAL

1.1 SCOPE:

A. Provide all of the labor, materials, equipment, and services to furnish and install the blanket insulation.

1.2 SUBMITTALS:

A. Prior to installation, submit to the Architect for review the following:
   1. Manufacturer's catalog data fully describing the product and indicating installation recommendations.

1.3 DELIVERY:

A. Deliver materials in original packages, containers, or bundles bearing manufacturer's labels. Labels shall indicate brand name and descriptive data confirming compliance with requirements herein specified.

1.4 PROTECTION:

A. Keep materials dry, protected against moisture, weather, and damage.

PART 2 - PRODUCTS

2.1 UN-FACED BATT INSULATION:

A. Mineral or fiberglass composition conforming to ASTM C665, Type I. Produce insulation by combining thermosetting resins with mineral fibers manufactured from glass, slag wool or rock wool.

B. Thickness: See Drawings.
   1. 3 ½" = R-11
   2. 6" = R-19
   3. 3 ½" = R-11 for sound attenuation batts, see wall types for requirements.
   4. 6" = R-19 for sound attenuation batts, see wall types for requirements.

C. When used in fire-resistance-rated assemblies, comply with mineral-fiber requirements of assembly.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Install insulation in accordance with the manufacturer's printed instructions without gaps or voids.

B. Trim insulation to neatly and tightly fit spaces. Use batts free of damage.

C Install in the number of layers necessary to achieve the required thickness.

D. Physically and permanently attach batts to framing so as to prevent downward slippage of batt. Support relying on friction alone will not be allowed.

E. Back-fill above suspended ceiling systems (where indicated):
1. Install insulation between wire rods, perpendicular to ceiling system main tees. Batts should fit tightly together.
2. Wire rod, chicken wire, or wire may be needed to hold insulation in place.
3. Do not install insulation on top of, or within 3 inches of recessed light fixtures unless the fixtures are approved for such use.
4. Refer to ceiling system manufacturer's recommendations on maximum back-loading recommendations and to ensure proper installation.

3.2 CLEAN UP:

A. When work is completed in each area, remove debris, equipment, and excess material and leave area broom clean.

END OF SECTION 07 21 16

SECTION 07 24 13 – POLYMER BASED EXTERIOR INSULATION AND FINISH 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. This Section includes the following:
   1. Exterior insulation and finish system (EIFS) applied over the following:
      a. Concrete surfaces.
      b. Masonry surfaces.
      c. Exterior cement board.
      d. Gypsum glass mat

B. Related Sections include the following:
   1. Division 05 Section "Cold-Formed Metal Framing" for metal framing where applicable.
   2. Division 07 Section " Sealants" for sealing joints in EIFS with elastomeric joint sealants.
   3. Division 09 Section "Gypsum Wallboard Assemblies" for sheathing substrate.

1.3 DEFINITIONS

A. EIFS: Exterior insulation and finish system(s).

B. Class PB EIFS: A "non-load bearing, exterior wall cladding system that consists of an insulation board attached either adhesively, mechanically, or both to the substrate; an integrally reinforced base coat; and a textured protective finish coat," polymer based, as defined by ASTM C 1397.

1.4 PERFORMANCE REQUIREMENTS

A. EIFS Performance: Comply with the following:
   1. Bond Integrity: Free from bond failure within EIFS components or between system and supporting wall construction, resulting from exposure to fire, wind loads, weather, or other in-service conditions.
   2. Weathertightness: Resistant to water penetration from exterior into EIFS and assemblies behind it or through them into interior of building that results in deterioration of thermal-insulating effectiveness or other degradation of EIFS and assemblies behind it, including substrates, supporting wall construction, and interior finish.

B. Class PB EIFS: Provide EIFS having physical properties and structural performance that comply with the following when tested per methods referenced:
   1. Abrasion Resistance: Sample consisting of 1-inch- thick EIFS mounted on 1/2-inch-thick gypsum board; cured for a minimum of 28 days; and showing no cracking, checking, or loss of film integrity after exposure to 528 quarts of sand when tested per ASTM D 968, Method A.

2. Accelerated Weathering Characteristics: Sample of size suitable for test equipment and consisting of 1-inch- thick EIFS mounted on 1/2-inch- thick gypsum board; cured for 28 days; and showing no cracking, checking, crazing, erosion, rusting, blistering, peeling, or delamination after testing for 2000 hours when viewed under 5 times magnification per ASTM G 23, Method 1, or ASTM G 53.
3. Absorption-Freeze Resistance: No visible deleterious effects and negligible weight loss after 60 cycles per EIMA 101.01.
4. Mildew Resistance of Finish Coat: Sample applied to 2-by-2-inch clean glass substrate, cured for 28 days, and showing no growth when tested per ASTM D 3273.
5. Salt-Spray Resistance: Sample consisting of 1-inch-thick EIFS mounted on 1/2-inch-thick gypsum board; cured for 28 days; and showing no cracking, checking, crazing, erosion, rusting, blistering, peeling, or delamination after testing for 300 hours per ASTM B 117.
6. Tensile Adhesion: No failure in the adhesive, base coat, or finish coat. Minimum 5-psi tensile strength before and after freeze-thaw and accelerated weathering tests per EIMA 101.03.
7. Water Penetration: Sample consisting of 1-inch- thick EIFS mounted on 1/2-inch- thick gypsum board, cured for 28 days, and showing no water penetration into the plane of the base coat to expanded polystyrene board interface of the test specimen after 15 minutes at 6.24 lbf/sq. ft. of air pressure difference or 20 percent of positive design wind pressure, whichever is greater, across the specimen during a test period when tested per EIMA 101.02.
8. Water Resistance: Sample consisting of 1-inch-thick EIFS mounted on 1/2-inch-thick gypsum board; cured for 28 days; and showing no cracking, checking, crazing, erosion, rusting, blistering, peeling, or delamination after testing for 14 days per ASTM D 2247.
9. Impact Resistance: Sample consisting of 1-inch-thick EIFS when constructed, conditioned, and tested per EIMA 101.86; and meeting or exceeding the following impact classification and range:
   a. Standard Impact Resistance: 25 to 49 inch-lb.
   b. High Impact Resistance: 90 to 150 inch-lb.
   c. Ultra-High Impact Resistance: More than 150 inch-lb
10. Positive and Negative Wind-Load Performance: Sample assembly, 48 by 48 inches in size, consisting of studs, sheathing, and 1-inch-thick EIFS; and showing capability to withstand wind loads indicated when tested per ASTM E 330.

1.5 SUBMITTALS

A. Product Data: For each product indicated.

B. Shop Drawings: Include plans, elevations, sections, details, penetrations, terminations, fasteners, and attachments to other work.

C. Samples: For each EIFS and for each color and texture required.

D. Field quality-control test reports.

E. Product certificates and test reports.

F. Research/evaluation reports.

G. Maintenance data.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An installer who is certified in writing by EIFS manufacturer as qualified to install manufacturer's system using trained workers.

B. Source Limitations: Obtain EIFS through one source from a single EIFS manufacturer and from sources approved by EIFS manufacturer as compatible with system components.

C. Fire-Test-Response Characteristics: Provide EIFS and system components with the following fire-test-response characteristics as determined by testing identical EIFS and system components per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing and inspecting agency. Provide only where fire resistance-rated wall construction is required.
   1. Fire-Resistance Characteristics: Provide materials and construction tested for fire resistance per ASTM E 119.
   2. Full-Scale, Multistory Fire Test: Tested mockup, representative of completed multistory wall assembly of which EIFS is a part, complies with UBC Standard 26-4 or UBC Standard 26-9 for test method and required fire-test-response characteristics of exterior non-load-bearing wall panel assemblies containing foam-plastic insulation.
   3. Full-Scale Fire Test: Tested mockup, in form indicated below, that represents completed wall assembly of which EIFS is a part, shows no tendency to propagate flame over the surface or through finish to core, or to cause delamination of finish when vertically mounted exterior face is exposed 15 minutes to a fire source using flame-spread test per ASTM E 108 modified for testing vertical walls as indicated below:
   4. Radiant Heat Exposure: No ignition of EIFS when tested according to NFPA 268.
   5. Surface-Burning Characteristics: Provide insulation board, adhesives, base coats, and finish coats with flame-spread index of 25 or less and smoke-developed index of 450 or less, per ASTM E 84.

Mockups: Build a mockup (for larger more complex EIFS projects) to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution and set quality standards for fabrication and installation.

D. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original, unopened packages with manufacturers' labels intact and clearly identifying products.

B. Store materials inside and under cover; keep them dry and protected from weather, direct sunlight, surface contamination, aging, corrosion, damaging temperatures, construction traffic, and other causes.
   1. Stack insulation board flat and off the ground.

1.8 PROJECT CONDITIONS

A. Weather Limitations: Maintain ambient temperatures above 40 deg F for a minimum of 24 hours before, during, and after adhesives or coatings are applied. Do not apply EIFS adhesives or coatings during rainfall. Proceed with installation only when existing and forecasted weather

conditions and ambient outdoor air and substrate temperatures permit EIFS to be applied, dried, and cured according to manufacturers' written instructions and warranty requirements.

1.9 COORDINATION

A. Coordinate installation of EIFS with related Work specified in other Sections to ensure that wall assemblies, including sheathing, flashing, trim, joint sealants, windows, and doors, are protected against damage from the effects of weather, age, corrosion, moisture, and other causes. Do not allow water to penetrate behind flashing.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Class PB EIFS:
      a. Dryvit Systems, Inc.
      b. Senergy Inc.
      c. Sto Corp.
      d. Master Wall Inc.

2.2 MATERIALS

A. Compatibility: Provide substrates, adhesive, fasteners, board insulation, reinforcing meshes, base- and finish-coat systems, sealants, and accessories that are compatible with one another and approved for use by EIFS manufacturer for Project.

B. Colors and Textures of Finish Coat: Texture to be one of the following as selected by Architect from manufacturer's full range of colors. **Match existing building for texture.**
   1. Dryvit Systems, Inc. -Sand Pebble
   2. Senergy Inc. -Sahara
   3. Sto Corp. –Sto Lit 1.5 or Sto Medieval Sand

C. Primer/Sealer: EIFS manufacturer's standard substrate conditioner[**with VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24),**] designed to seal substrates from moisture penetration and to improve the bond between substrate of type indicated and adhesive used for application of insulation.

D. Substrates for non-masonry applications
   1. Exterior Cement Board: Not less than 1/2-inch thick, fiber cement board complying with ASTM C 1186, Type A, for exterior applications.
   2. Gypsum Glass-mat Board: Dens Glass Gold by Georgia Pacific Gypsum Corporation not less than 1/2-inch thick, Dens Glass Gold is a paperless sheathing panel made of a patented water resistant and silicone treated core, surfaced with glass mat facing and a "gold" colored alkali-resistant coating fiber cement board complying with ASTM C 1186, Type A, for exterior applications.

   3. Fasteners: Wafer-head or hard-roc steel drill screws complying with ASTM C 954, with an organic-polymer coating or other corrosion-protective coating having a salt-spray resistance of more than 500 hours per ASTM B 117.

a. Size and Length: As recommended by sheathing manufacturer for type and thickness of sheathing board to be attached.

E. Flexible-Membrane Flashing: Cold-applied, fully self-adhering, self-healing, rubberized-asphalt and polyethylene-film composite sheet or tape and primer; EIFS manufacturer's standard or product recommended in writing by EIFS manufacturer.

F. Adhesive for Application of Insulation: EIFS manufacturer's standard formulation designed for indicated use, compatible with substrate, and complying with the following requirements:
1. Factory-blended dry formulation of portland cement, dry polymer admixture, and fillers specified for base coat.
2. VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

G. Molded, Rigid Cellular Polystyrene Board Insulation: Comply with EIFS manufacturer's requirements, ASTM C 578 for Type I, and EIMA's "EIMA Guideline Specification for Expanded Polystyrene (EPS) Insulation Board" for more stringent requirements for material performance and qualities of insulation, including dimensions and permissible variations, and the following:
1. Aging: Before cutting and shipping, age insulation in block form by air drying for not less than six weeks or by another method approved by EIMA that produces equivalent results.
2. Flame-Spread and Smoke-Developed Indexes: 25 and 450 or less, respectively, per ASTM E 84.
3. Dimensions: Provide insulation boards not more than 24 by 48 inches and in thickness indicated with a minimum of 1” thick but not more than 4 inches thick or thickness allowed by ASTM C 1397.

H. Reinforcing Mesh: Balanced, alkali-resistant, open-weave glass-fiber mesh treated for compatibility with other EIFS materials, made from continuous multi-end strands with retained mesh tensile strength of not less than 120 lbf/in. per EIMA 105.01, complying with ASTM D 578 and the following requirements for minimum weight:
1. Standard-Impact Reinforcing Mesh: Not less than 4.0 oz./sq. yd. over entire surface
2. High-Impact Reinforcing Mesh: Not less than 14 oz./sq. yd from 6’-0” to grade level termination below.
3. Heavy-Duty Reinforcing Mesh: Not less than 20 oz./sq. yd. ***– Delete if not required***

I. Base-Coat Materials: EIFS manufacturer's standard mixture complying with the following requirements for material composition and method of combining materials:
1. Factory-blended dry formulation of portland cement, dry polymer admixture, and inert fillers to which only water is added at Project site.
2. For applications from six inches above grade to below grade, use manufacturer’s recommended base coat pro

J. Primer: EIFS manufacturer's standard factory-mixed elastomeric-polymer primer for preparing base-coat surface for application of finish coat.

K. Finish-Coat Materials: EIFS manufacturer's standard acrylic-based coating complying with the following requirements for material composition and method of combining materials:
1. Factory-mixed formulation of polymer-emulsion binder, colorfast mineral pigments, sound stone particles, and fillers.

L. Water: Potable.

M. Elastomeric Sealant Products: Provide EIFS manufacturer's listed and recommended chemically curing, low-modulus silicone elastomeric sealant that is compatible with joint fillers, joint substrates, and other related materials, and complies with requirements for products and testing indicated in EIMA's "EIMA Guide for Use of Sealants with Exterior Insulation and Finish Systems, Class PB" and with requirements in Division 7 Section "Joint Sealants" for products.
   1. Sealant Color: As selected by Architect from manufacturer's full range.

2.3 MIXING

A. General: Comply with EIFS manufacturer's requirements for combining and mixing materials. Do not introduce admixtures, water, or other materials except as recommended by EIFS manufacturer. Mix materials in clean containers. Use materials within time period specified by EIFS manufacturer or discard.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of EIFS.

B. Examine roof edges, wall framing, flashings, openings, substrates, and junctures at other construction for suitable conditions where EIFS will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect contiguous work from moisture deterioration and soiling caused by application of EIFS. Provide temporary covering and other protection needed to prevent spattering of exterior finish coats on other work.

B. Prepare and clean substrates to comply with EIFS manufacturer's written requirements to obtain optimum bond between substrate and adhesive for insulation.
   1. Concrete Substrates: Provide clean, dry, neutral-pH substrate for insulation installation. Verify suitability of substrate by performing bond and moisture tests recommended by EIFS manufacturer.

C. Flexible-Membrane Flashing: Install over weather-resistive barrier, applied and lapped to shed water; seal at openings, penetrations, terminations, and where indicated by EIFS manufacturer's written instructions to protect wall assembly from degradation. Prime substrates, if required, and install flashing to comply with EIFS manufacturer's written instructions and details.

3.3 SUBSTRATE INSTALLATION

A. Gypsum Glass-mat Board: Install on metal framing to comply with substrate manufacturer's written instructions and research/evaluation report acceptable to authorities having jurisdiction.

Install board with steel drill screws spaced no more than 8 inches o.c. along framing with perimeter fasteners at least 3/8 inch but less than 5/8 inch from edges of boards.

3.4 EIFS INSTALLATION

A. General: Comply with ASTM C 1397 and EIFS manufacturer's written instructions for installation of EIFS as applicable to each type of substrate indicated.

B. Board Insulation: Adhesively attach insulation to substrate in compliance with ASTM C 1397, EIFS manufacturer's written requirements, and the following:
1. Apply adhesive to insulation by notched-trowel method in a manner that results in coating the entire surface of sheathing substrate with adhesive once insulation is adhered to sheathing unless EIFS manufacturer's written instructions specify using primer/sealer with ribbon-and-dab method. Apply adhesive to a thickness of not less than 1/4 inch for factory mixed and not less than 3/8 inch for field mixed, measured from surface of insulation before placement.
2. Press and slide insulation into place. Apply pressure over the entire surface of insulation to accomplish uniform contact, high initial grab, and overall level surface.
3. Allow adhered insulation to remain undisturbed for period recommended by EIFS manufacturer, but not less than 24 hours, before beginning rasping and sanding insulation, or applying base coat and reinforcing mesh.
4. Apply insulation over dry substrates in courses with long edges of boards oriented horizontally.
5. Begin first course of insulation from a level base line and work upward.
6. Stagger vertical joints of insulation boards in successive courses to produce running bond pattern. Locate joints so no piece of insulation is less than 12 inches wide or 6 inches high. Offset joints not less than 6 inches from corners of window and door openings and not less than 4 inches from aesthetic reveals.
    a. Adhesive Attachment: Offset joints of insulation not less than 6 inches from horizontal and 4 inches from vertical joints in sheathing.
7. Interlock ends at internal and external corners.
8. Abut insulation tightly at joints within and between each course to produce flush, continuously even surfaces without gaps or raised edges between boards. If gaps greater than 1/16 inch occur, fill with insulation cut to fit gaps exactly; insert insulation without using adhesive or other material.
9. Cut insulation to fit openings, corners, and projections precisely and to produce edges and shapes complying with details indicated.
10. Rasp or sand flush entire surface of insulation to remove irregularities projecting more than 1/32 inch from surface of insulation and to remove yellowed areas due to sun exposure; do not create depressions deeper than 1/16 inch.
11. Cut aesthetic reveals in outside face of insulation with high-speed router and bit configured to produce grooves, rabbets, and other features that comply with profiles and locations indicated. Do not reduce insulation thickness at aesthetic reveals to less than 3/4 inch.
12. Install foam shapes attached to supporting substrate where indicated.
13. Interrupt insulation for expansion joints where indicated.
14. Form joints for sealant application by leaving gaps between adjoining insulation edges and between insulation edges and dissimilar adjoining surfaces. Make gaps wide enough to produce joint widths indicated after encapsulating joint substrates with base coat and reinforcing mesh.
15. Treat exposed edges of insulation as follows:

a. Except for edges forming substrates of sealant joints, encapsulate with base coat, reinforcing mesh, and finish coat.
b. Encapsulate edges forming substrates of sealant joints within EIFS or between EIFS and other work with base coat and reinforcing mesh.

16. Coordinate installation of flashing and insulation to produce wall assembly that does not allow water to penetrate behind flashing and EIFS protective coating lamina.

C. Expansion Joints: Install at locations indicated, where required by EIFS manufacturer, and as follows:
1. Where expansion joints are indicated in substrates behind EIFS.
2. Where EIFS adjoin dissimilar substrates, materials, and construction.
3. At floor lines in multilevel wood-framed construction.
4. Where wall height changes.

D. Base Coat: Apply to exposed surfaces of insulation in minimum thickness recommended in writing by EIFS manufacturer, but not less than 1/16-inch dry-coat thickness.

E. Reinforcing Mesh: Embed type indicated below in wet base coat to produce wrinkle-free installation with mesh continuous at corners and overlapped not less than 2-1/2 inches or otherwise treated at joints to comply with ASTM C 1397 and EIFS manufacturer's written requirements. Do not lap reinforcing mesh within 8 inches of corners. Completely embed mesh, applying additional base-coat material if necessary, so reinforcing-mesh color and pattern are not visible.
1. Standard-impact reinforcing mesh unless otherwise indicated.
2. High-impact reinforcing mesh in addition to standard at 6’-0” above floor level to grade termination typical.
3. Heavy-duty reinforcing mesh where indicated

F. Double-Layer Reinforcing Mesh Application: Where indicated, apply second base coat and second layer of reinforcing mesh, overlapped not less than 2-1/2 inches or otherwise treated at joints to comply with ASTM C 1397 and EIFS manufacturer's written requirements in same manner as first application. Do not apply until first base coat has cured.

G. Additional Reinforcing Mesh: Apply strip reinforcing mesh around openings extending 4 inches beyond perimeter. Apply additional 9-by-12-inch strip reinforcing mesh diagonally at corners of openings (re-entrant corners). Apply 8-inch- wide strip reinforcing mesh at both inside and outside corners unless base layer of mesh is lapped not less than 4 inches on each side of corners.
1. At aesthetic reveals, apply strip-reinforcing mesh not less than 8 inches wide.
2. Embed strip-reinforcing mesh in base coat before applying first layer of reinforcing mesh.

H. Shapes: Fully embed reinforcing mesh in base coat.

I. Double Base-Coat Application: Where indicated, apply second base coat in same manner and thickness as first application except without reinforcing mesh. Do not apply until first base coat has cured.

J. Finish Coat: Apply over dry base coat, maintaining a wet edge at all times for uniform appearance, in thickness required by EIFS manufacturer to produce a uniform finish of color and texture matching approved sample and free of cold joints, shadow lines, and texture variations.

3.5 INSTALLATION OF JOINT SEALANTS

A. Prepare joints and apply sealants, of type and at locations indicated, to comply with applicable requirements in Division 07 Section "Sealants" and in EIMA's "EIMA Guide for Use of Sealants with Exterior Insulation and Finish Systems, Class PB."

3.6 CLEANING AND PROTECTION

A. Remove temporary covering and protection of other work. Promptly remove coating materials from window and door frames and other surfaces outside areas indicated to receive EIFS coatings.

B. Provide final protection and maintain conditions, in a manner acceptable to Installer and EIFS manufacturer, that ensure that EIFS are without damage or deterioration at time of Substantial Completion.

END OF SECTION 07 24 13

SECTION 07 54 19 - POLYVINYL-CHLORIDE (PVC) ROOFING –FULLY ADHERED

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fully Adhered polyvinyl-chloride (PVC) roofing system.
2. Roof insulation.

1.2 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

B. LTTR: Long Term Thermal Resistance value in accordance with ASTM C1289-11 2014 for Polyisocyanurate Thermal Insulation Board.

1.3 PREINSTALLATION MEETINGS

A. Pre-installation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's technical representative, [deck Installer], and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Contractor to examine substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
   1. Provide manufacturer recommended membrane fastening patterns for the wind speed specified in the documents.

C. Samples for Verification: For the following products:

   1. Sheet roofing, of color required.
   2. Walkway pads or rolls, of color required.

D. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install specified roofing system.

E. Manufacturer Certificates: Signed by roofing manufacturer certifying that the roofing system complies with requirements specified in the "Performance Requirements" Article. Upon request, submit evidence of meeting requirements.

F. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

G. Product Test Reports: Based on evaluation of tests performed by manufacturer and witnessed by a qualified independent testing agency, indicate compliance of components of roofing system with requirements based on comprehensive testing of current product compositions.

H. Warranty: Sample copy of roofing system manufacturer's warranty stating obligations, remedies, limitations, and exclusions of warranty. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

1.5 INFORMATIONAL SUBMITTALS

A. Research/Evaluation Reports: For components of roofing system, from ICC-ES.

B. Sample Warranties: For manufacturer's special warranties. All items listed under the Article1.8 “Warranty” shall also be addressed.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in the maintenance manuals specified in Division 01. Include the following:

   1. Roofing manufacturer’s recommendations for preventive and routine maintenance.
   2. A schedule for periodic roof inspections and repair, including:

      a. Inspection at least twice a year, preferably in the spring and fall.
      b. Inspection after severe weather or storms and removal of all debris from roof.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer to perform work of this Section who has specialized in installing roofing similar to that required for this Project and who is approved, authorized, or licensed by the roofing system manufacturer to install manufacturer's product.

B. Source Limitations: Obtain components including roof membrane, substrate board, cover board, roof insulation, metal edging, fastener assemblies, flashings, counter-flashings, adhesives, sealants and all other products required for a complete membrane roofing system from same manufacturer as membrane roofing or as approved by membrane roofing manufacturer.

C. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

D. Coated Fabric Dimension and Mass: ASTM D 751; for measured membrane thickness, not labeled membrane thickness, as specified and no less than as required by roofing manufacturer for Warranty period indicated. ASTM D 7635; for measured thickness over scrim.

1.8 WARRANTY

A. General Warranty: The warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents, Uniform Commercial Code regulations or applicable state statutes of limitations. This warranty shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

A. Special Total Roofing System Warranty: Submit a written warranty, without deductible and without monetary limitation, signed by roofing system manufacturer agreeing to promptly repair leaks in the roofing system resulting from defects in materials or workmanship within the specified warranty period.

1. The Contractor shall warrant the materials and workmanship of the roofing system against leakage and against defects to faulty materials, workmanship and contract negligence for a period of five (5) years following acceptance of the project by the Owner. Warranty shall not be limited to only those components by the manufacturer but for the complete roof system.
2. Warranty Period: **20 years from date of Substantial Completion (no dollar limit) and or into the existing current roofing warranty by Sika Sarnafil and Carlisle Roofing Systems, Inc.**
3. Warranty shall include the roof membrane, substrate board, cover board, roof insulation, metal edging, fastener assemblies, flashings, counter-flashings, adhesives, sealants, and all other components, down to metal deck, required for a complete membrane roofing system installation.
4. Warranty shall include roofing system installer’s agreement to perform emergency repairs within 24 hours notice of an observed leak and to perform permanent repairs within 30 days thereafter.
5. Warranty shall cover all damages resulting from calculated maximum wind speeds based on ASCE 7 and requirements of building Code having jurisdiction over Project. Warranty

to remain in effect for wind speeds up to 72 mph or as noted in the design criteria of the Structural Design; whichever is greater.

6. This warranty shall be non-prorated and fully transferable to new building Owner within the original warranty period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain components including roof insulation, fasteners for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.

B. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

C. Roofing System Design: Provide a membrane roofing system that is identical to systems that have been successfully tested by a qualified testing agency to resist the uplift pressures calculated to ASCE 7 or as noted in the Design Criteria of the Structural design; whichever is greater.

D. Energy Star Listing: Roofing system shall be listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

E. Energy Performance: Roofing system shall have an initial solar reflectance of not less than 0.78 and an emissivity of not less than 0.75 when tested according to CRRC-1.

F. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

G. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.3 PVC ROOFING

A. PVC Sheet: ASTM D 4434/D 4434M, Type III, fabric reinforced internally.

1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Sika Sarnafil (Existing Roofing by Triad Roofing Co. Inc., 3920 N. Liberty Street, Winston-Salem, NC 27105 (336)-767-9087) dated 08/20/2020 & Carlisle Roofing Systems, Inc. dated 05/26/2011.
   b. Or Approved Equal
2. Thickness: 60 mils (1.5 mm), measured.

3. Thickness over Scrim: 25 mils minimum
4. Exposed Face Color: White.

2.4 COVER BOARD

A. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 5/8 inch thickness.
   1. DensDeck Prime roof board; Georgia-Pacific Gypsum
   2. Securock Glass-Mat roof board; USG
   3. DEXcell Glass-Mat roof board; National Gypsum Company

2.5 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.

   1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
   2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

      a. Plastic Foam Adhesives: 50 g/L.
      b. Gypsum Board and Panel Adhesives: 50 g/L.
      c. Multipurpose Construction Adhesives: 70 g/L.
      d. Fiberglass Adhesives: 80 g/L.
      e. Contact Adhesive: 80 g/L.
      f. Other Adhesives: 250 g/L.
      g. PVC Welding Compounds: 510 g/L.
      h. Adhesive Primer for Plastic: 650 g/L
      i. Single-Ply Roof Membrane Sealants: 450 g/L.
      j. Nonmembrane Roof Sealants: 300 g/L.
      k. Sealant Primers for Nonporous Substrates: 250 g/L.
      l. Sealant Primers for Porous Substrates: 775 g/L.

B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet, including PVC clad metal.

C. Bonding Adhesive: Manufacturer's standard.

D. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roofing to substrate, and acceptable to roofing system manufacturer.

E. Miscellaneous Accessories: Provide metal termination bars, metal battens, pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.6 ROOF INSULATION

A. Polyisocyanurate Board Insulation with Fiber Reinforced Facers: ASTM C 1289, Type II, Class 1, Grade 3 felt or glass-fiber mat facer on both major surfaces. **Match Existing Thickness.**

1. Insulation shall comply with FM 4450, Class 1 Fire Rating
2. Compressive strength 25 psi, grade 3
3. Provide insulation with minimum LTTR Value of R-5.7 per inch.

B. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48) unless otherwise indicated.

C. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slope of 1/2 inch per 12 inches (1:24) unless otherwise indicated.

2.7 INSULATION ACCESSORIES

A. Fasteners: Factory-coated steel fasteners and metal complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.

B. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer.

2.8 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads approximately 3/16 inch (5 mm) thick and acceptable to roofing system manufacturer.

PART 3 - EXECUTION

3.1 ROOFING INSTALLATION, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

C. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.

D. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.

1. Fasten insulation according to requirements of all applicable codes and the roofing system manufacturer’s written instructions.
2. Fasten insulation according to requirements of FM's "Approval Guide" for specified Windstorm Resistance Classification.

3.2 INSULATION INSTALLATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:

1. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches (68 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
2. Install insulation at minimum overall thickness as indicated in the drawings and as required to achieve no less than the Thermal Insulation Value defined in the documents.
3. Install tapered insulation under area of roofing to conform to slopes indicated.
4. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
    a. Fasten insulation according to requirements of all applicable codes and the roofing system manufacturer’s written instructions.
    b. Fasten insulation according to requirements of FM's "Approval Guide" for specified Windstorm Resistance Classification.

3.3 ADHERED ROOFING INSTALLATION

A. Adhere roofing over area to receive roofing according to roofing system manufacturer's written instructions. Unroll roofing and allow to relax before retaining.

1. Install sheet according to ASTM D 5036.
2. Ensure substrate is clean prior to adhering.

B. Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

C. Bonding Adhesive: Apply to substrate and underside of roofing at rate required by manufacturer, and allow to partially dry before installing roofing. Do not apply to splice area of roofing.

D. In addition to adhering, mechanically fasten roofing securely at terminations, penetrations, and perimeter of roofing.

E. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roofing and sheet flashings according to manufacturer's written instructions, to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet.
2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.
4. Position adjoining sheets to allow a minimum of 2” overlap to provide a minimum 1 ½” hot air weld.

F. Spread sealant bed over deck-drain flange at roof drains, and securely seal roofing in place with clamping ring.

3.4 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing. Water-based adhesive shall not be used on vertical surfaces.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars. Apply water cut-off mastic behind the membrane prior to fastening.

3.5 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

1. Install walkway materials around major rooftop mechanical equipment, at roof hatches, and at bottom / top of roof ladders, and as additionally indicated on Drawings.
2. Walkway pads shall be spaced 4 inches to allow for adequate drainage.
3. Walkway rolls shall be installed at no greater than 8’-0” continuous lengths with 4” spacing between runs.

3.6 FIELD QUALITY CONTROL

A. Preliminary Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on initial completion. Provide copy of report for Owner and Architect review. This letter should address any items needing to be fixed in order for the warranty to be issued.

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion. This letter should indicate that the warranty will be issued for the Project based on their inspection.

C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

3.7 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 54 19

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Manufactured reglets with counterflashing.
2. Formed roof-drainage sheet metal fabrications.
3. Formed low-slope roof sheet metal fabrications.
4. Formed steep-slope roof sheet metal fabrications.
5. Formed wall sheet metal fabrications.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Distinguish between shop- and field-assembled work.
3. Include identification of finish for each item.
4. Include pattern of seams and details of termination points, expansion joints and expansion-joint covers, direction of expansion, roof-penetration flashing, and connections to adjoining work.

C. Samples: For each exposed product and for each color and texture specified.

1.4 INFORMATIONAL SUBMITTALS

A. Product certificates.

B. Product test reports.

C. Sample warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1. General: Install flashing and trim to withstand windloads, thermally induced movement and exposure to weather without failing, rattling, leaking and fastener displacement.
2. For copings and roof edge flashings that are SPRI ES-1 tested, shop shall be listed as able to fabricate required details as tested and approved.
3. Roof Edge systems shall be designed and tested in accordance with ANSI/SPRI ES-1.
4. SPRI Single Ply Roofing Industry Standards.

1.7 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. Sheet Metal Standard for Copper: Comply with CDA's "Copper in Architecture Handbook." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

D. SPRI Wind Design Standard: Manufacture and install copings, roof edge flashings tested according to SPRI ES-1 and capable of resisting the following design pressure:

1. Design Pressure: As indicated on Drawings or if not indicated as required by local code.

E. Recycled Content of Copper-Sheet Flashing and Trim: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 40 percent.

F. Recycled Content of Steel-Sheet Flashing and Trim: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

G. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Manufacturers for sheet metal fabrications:
1. OMG Roofing Products
2. The Garland Company
3. Peterson Aluminum
4. Metal-Era
5. Carlisle

C. Copper Sheet: ASTM B 370, cold-rolled copper sheet, H00 or H01 temper.

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. Hussey Copper Ltd.
b. Revere Copper Products, Inc.

2. Nonpatinated Exposed Finish: Mill.

D. Aluminum Sheet: ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.

1. As-Milled Finish: Standard one-side bright.
2. Alclad Finish: Metallurgically bonded surfacing alloy on both sides, forming aluminum sheet with reflective luster.
3. Factory Prime Coating: Where painting after installation is required, pretreat metal with white or light-colored, factory-applied, baked-on epoxy primer coat; minimum dry film thickness of 0.2 mil.
4. Clear Anodic Finish, Coil Coated: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.
5. Color Anodic Finish, Coil Coated: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.

a. Color: Dark bronze

6. Exposed Coil-Coated Finish:

a. 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 manufacturers' written instructions.

b. Three-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
c. Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with dry film thickness of not less than 0.2 mil for primer and 0.8 mil for topcoat.

7. Color: As indicated on drawings or if not indicated as selected by Architect from manufacturer's full range.

E. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, dead soft, fully annealed; 2D dull, cold rolled finish.

F. Metallic-Coated Steel Sheet: Provide aluminum-zinc alloy-coated steel sheet according to ASTM A 792/A 792M, Class AZ50 coating designation, Grade 40; prepainted by coil-coating process to comply with ASTM A 755/A 755M.

1. Surface: Manufacturer's standard clear acrylic coating on both sides.
2. Exposed Coil-Coated Finish:
a. Three-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
b. Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with dry film thickness of not less than 0.2 mil for primer and 0.8 mil for topcoat.

3. Color: As indicated on drawings or if not indicated, as selected by Architect from manufacturer's full range.

2.3 UNDERLAYMENT MATERIALS

A. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt; nonperforated.

B. Synthetic Underlayment: Laminated or reinforced, woven polyethylene or polypropylene, synthetic roofing underlayment; bitumen free; slip resistant; suitable for high temperatures over 220 deg F; and complying with physical requirements of ASTM D 226/D 226M for Type I and Type II felts.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Atlas Roofing Corporation; Summit.
b. Intertape Polymer Group; NovaSeal.
c. Kirsch Building Products, LLC; Sharkskin Ultra.
d. SDP Advanced Polymer Products Inc; Palisade.

C. Self-Adhering, High-Temperature Sheet: Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified

asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.

1. Products: Subject to compliance with requirements, provide one of the following:

    a. Carlisle Residential, a division of Carlisle Construction Materials; WIP 300HT.
    b. Grace Construction Products, a unit of W. R. Grace & Co.-Conn.; Grace Ice and Water Shield Ultra.
    c. Henry Company; Blueskin PE200 HT.
    d. Kirsch Building Products, LLC; Sharkskin Ultra SA.
    e. Metal-Fab Manufacturing, LLC; MetShield.
    f. Owens Corning; WeatherLock Specialty Tile & Metal Underlayment.
    g. Polyguard Products, Inc.; Deck Guard HT.
    h. Protecto Wrap Company; Protecto Jiffy Seal Ice & Water Guard HT.
    i. SDP Advanced Polymer Products Inc; Palisade SA-HT.

2. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F or higher.
3. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F or lower.

D. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. minimum.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

    a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
    b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
    c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.

2. Fasteners for Copper Sheet: Copper, hardware bronze or passivated Series 300 stainless steel.
3. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
4. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
5. Fasteners for Aluminum-Zinc Alloy-Coated Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

C. Solder:

1. For Copper: ASTM B 32, with maximum lead content of 0.2 percent.
2. For Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.
3. For Zinc-Coated (Galvanized) Steel: ASTM B 32, with maximum lead content of 0.2 percent.

D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick minimum.

E. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

H. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.

I. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.5 MANUFACTURED REGLETS

A. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions and with interlocking counterflashing on exterior face, of same metal as reglet.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Cheney Flashing Company.
b. Fry Reglet Corporation.
c. Heckmann Building Products, Inc.
d. OMG Roofing Products
e. Hohmann & Barnard, Inc.
f. Keystone Flashing Company, Inc.
g. National Sheet Metal Systems, Inc.
h. Sandell Manufacturing.

2. Material: 0.019 inch thick Aluminum
3. Finish: With manufacturer's standard color coating.

2.6 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to performance, design, dimensions, geometry, metal thickness, and other characteristics of item required.

1. Obtain field measurements for accurate fit before shop fabrication.
2. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
3. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

C. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.

D. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

E. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

F. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.

G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. With Architects approval, rivet joints where necessary for strength**.**

H. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. With Architects approval, rivet joints where necessary for strength**.**

2.7 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters: Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 96-inch long sections. Furnish flat-stock gutter brackets and gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard but with thickness not less than twice the gutter thickness. Fabricate expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters. Shop fabricate interior and exterior corners.

1. Accessories: Continuous, removable leaf screen with sheet metal frame and hardware cloth screen

B. Built-in Gutters: Fabricate to cross section required, with riveted and soldered joints, complete with end pieces, outlet tubes, and other special accessories as required. Fabricate in minimum 96-inch long sections. Fabricate expansion joints and accessories from same metal as gutters unless otherwise indicated.

1. Accessories: Continuous, removable leaf screen with sheet metal frame and hardware cloth screen
2. Fabricate from the Following Materials:

    a. Copper: 16 oz./sq. ft. minimum
    b. Stainless Steel: 0.016 inch thick minimum

C. Downspouts: Fabricate rectangular downspouts to dimensions indicated, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows.

1. Hanger Style: Submit options for Architect selection.
2. Fabricate from the following materials:

    a. Copper: 16 oz./sq. ft. minimum.
    b. Aluminum: 0.024 inch thick minimum.
    c. Stainless Steel: 0.016 inch thick minimum.
    d. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch thick minimum.

D. Parapet Scuppers: Fabricate scuppers to dimensions required, with closure flange trim to exterior, 4-inch wide wall flanges to interior, and base extending 4 inches beyond cant or tapered strip into field of roof. Fabricate from the following materials:

1. Copper: 16 oz./sq. ft minimum. minimum.
2. Aluminum: 0.032 inch thick minimum.
3. Stainless Steel: 0.019 inch thick minimum.
4. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick minimum.

E. Conductor Heads: Fabricate conductor heads with flanged back and stiffened top edge and of dimensions and shape required, complete with outlet tubes. Fabricate from the following materials:

1. Copper: 16 oz./sq. ft..
2. Aluminum: 0.032 inch thick minimum.
3. Stainless Steel: 0.016 inch thick minimum.
4. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick minimum.

F. Splash Pans: Fabricate to dimensions and shape required and from the following materials:

1. Copper: 16 oz./sq. ft..
2. Aluminum: 0.040 inch thick minimum.
3. Stainless Steel: 0.019 inch thick minimum.

2.8 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing (Gravel Stop) and Fascia Cap: Fabricate in minimum 96-inch long, but not exceeding 12-foot long sections. Furnish with 6-inch wide, joint cover plates. Shop fabricate interior and exterior corners.

1. Fabricate from the Following Materials:

a. Copper: 20 oz./sq. ft..
b. Aluminum: 0.050 inch thick minimum.
c. Stainless Steel: 0.019 inch thick minimum.
d. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick minimum.

B. Copings: Fabricate in minimum 96-inch long, but not exceeding 12-foot long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and interior leg. Miter corners, fasten and seal solder or weld watertight. Shop fabricate interior and exterior corners.

1. Fabricate from the Following Materials:

a. Copper: 24 oz./sq. ft..
b. Aluminum: 0.050 inch thick minimum.
c. Stainless Steel: 0.025 inch thick minimum.
d. Aluminum-Zinc Alloy-Coated Steel: 0.040 inch thick minimum.

C. Base Flashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:

1. Copper: 20 oz./sq. ft.
2. Aluminum: 0.040 inch.
3. Stainless Steel: 0.019 inch thick minimum.
4. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick minimum.

D. Counterflashing and Flashing Receivers: Fabricate from the following materials:

1. Copper: 16 oz./sq. ft..
2. Aluminum: 0.032 inch thick minimum.
3. Stainless Steel: 0.019 inch thick minimum.
4. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch thick minimum.

E. Roof-Penetration Flashing: Fabricate from the following materials:

1. Copper: 16 oz./sq. ft.
2. Stainless Steel: 0.019 inch thick minimum.
3. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick minimum.

F. Roof-Drain Flashing: Fabricate from the following materials:

1. Copper: 12 oz./sq. ft.
2. Stainless Steel: 0.016 inch thick minimum.

2.9 STEEP-SLOPE ROOF SHEET METAL FABRICATIONS

A. Apron, Step, Cricket, and Backer Flashing: Fabricate from the following materials:

1. Copper: 16 oz./sq. ft.
2. Aluminum: 0.032 inch thick minimum.
3. Stainless Steel: 0.016 inch thick minimum.
4. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch thick minimum.

B. Valley Flashing: Fabricate from the following materials:

1. Copper: 16 oz./sq. ft.
2. Stainless Steel: 0.019 inch thick minimum.
3. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick minimum.

C. Drip Edges: Fabricate from the following materials:

1. Copper: 16 oz./sq. ft.
2. Aluminum: 0.032 inch thick minimum.
3. Stainless Steel: 0.016 inch thick minimum.
4. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch thick minimum.

D. Eave, Rake, Ridge, and Hip Flashing: Fabricate from the following materials:

1. Copper: 16 oz./sq. ft.
2. Aluminum: 0.032 inch thick minimum.
3. Stainless Steel: 0.016 inch thick minimum.
4. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch thick minimum.

2.10 WALL SHEET METAL FABRICATIONS

A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch long, but not exceeding 12-foot long, sections, under copings, and at shelf angles. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings; and form with 2-inch high, end dams. Fabricate from the following materials:

1. Copper: 16 oz./sq. ft.
2. Stainless Steel: 0.016 inch thick minimum.

B. Opening Flashings in Frame Construction: Fabricate head, sill, jamb and similar flashings to extend 4 inches beyond wall openings. Form head and sill flashing with 2-inch high, end dams. Fabricate from the following materials:

1. Copper: 16 oz./sq. ft.
2. Aluminum: 0.032 inch thick minimum.
3. Stainless Steel: 0.016 inch thick minimum.
4. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch thick minimum.

C. Wall Expansion-Joint Cover: Fabricate from the following materials:

1. Copper: 16 oz./sq. ft.

2. Aluminum: 0.040 inch thick minimum.
3. Stainless Steel: 0.019 inch thick minimum.
4. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick minimum.

PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION

A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches.

B. Synthetic Underlayment: Install synthetic underlayment, wrinkle free, according to manufacturers' written instructions, and using adhesive where possible to minimize use of mechanical fasteners under sheet metal.

C. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller. Cover underlayment within 14 days.

3.2 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
5. Torch cutting of sheet metal flashing and trim is not permitted.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of uncoated-aluminum and stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Sealants."

G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches; however, reduce pre-tinning where pre-tinned surface would show in completed Work.

1. Do not solder metallic-coated steel and aluminum sheet.
2. Do not use torches for soldering.
3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
4. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.
5. Copper Soldering: Tin edges of uncoated sheets, using solder for copper.

H. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

3.3 ROOF-DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system according to cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Hanging Gutters: Join sections with riveted and soldered joints. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchor them in position. Provide end closures and seal watertight with sealant. Slope to downspouts.

1. Install gutter with expansion joints at locations indicated, but not exceeding, 50 feet apart. Install expansion-joint caps.
2. Install continuous gutter screens on gutters with noncorrosive fasteners, removable or hinged to swing open for cleaning gutters.

C. Built-in Gutters: Join sections with riveted and soldered joints. Provide for thermal expansion. Slope to downspouts. Provide end closures and seal watertight with sealant.

1. Install underlayment layer in built-in gutter trough and extend to drip edge at eaves and under underlayment on roof sheathing. Lap sides minimum of 2 inches over underlying course. Lap ends minimum of 4 inches. Stagger end laps between succeeding courses at least 72 inches. Fasten with roofing nails. Install slip sheet over underlayment.
2. Install gutter with expansion joints at locations indicated, but not exceeding, 50 feet apart. Install expansion-joint caps.

D. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls. Locate hangers at top and bottom and at approximately 60 inches o.c.

E. Splash Pans: Install where downspouts discharge on low-slope roofs. Set in asphalt roofing cement or elastomeric sealant compatible with the substrate.

F. 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.

G. Conductor Heads: Anchor securely to wall, with elevation of conductor head rim at minimum of 1 inch below scupper or gutter discharge.

H. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated. Lap joints minimum of 4 inches in direction of water flow.

3.4 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate.

C. Copings: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated.

D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.

E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints minimum of 4 inches.

F. 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.

3.5 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Through-Wall Flashing: Installation of through-wall flashing is specified in Section 04 20 00 "Unit Masonry".

C. Reglets: Installation of reglets is specified in Section 04 20 00 "Unit Masonry."

D. Opening Flashings in Frame Construction: Install continuous head, sill, jamb and similar flashings to extend 4 inches beyond wall openings.

3.6 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

END OF SECTION 07 62 00

SECTION 07 84 00 - THROUGH-PENETRATION FIRESTOP SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes through-penetration fire-stop systems for the following types of fire-resistance-rated assemblies:
   1. Walls and partitions.
   2. Construction enclosing compartmentalized areas.

1.2 PERFORMANCE REQUIREMENTS

A. F-Ratings: Provide firestop systems with F-ratings equaling or exceeding fire-resistance rating of constructions penetrated as determined per ASTM E 814/UL1479.

B. T-Ratings: Provide firestop systems with T-ratings required, as well as F-ratings, determined per ASTM E 814/UL 1479, where systems protect penetrating items with potential to contact adjacent materials in occupiable floor areas including, but not limited, to the following:
   1. Penetrations located outside wall cavities.
   2. Penetrations located outside fire-resistive shaft enclosures.
   3. Penetrations located in construction containing fire-protection-rated openings.
   4. Penetrating items larger than 4-inch- diameter nominal pipe or 16 sq. in. in overall cross-sectional area.

C. For 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 firestop systems.
   2. For penetrations involving insulated piping, provide firestop systems not requiring removal of insulation.

D. For through-penetration firestop systems exposed to view, provide products with flame-spread indices of less than 25 and smoke-developed indices of less than 450, when tested per ASTM E 84.

E. Proposed firestop materials and methods shall conform to applicable governing codes having local jurisdiction.

F. Firestop Systems do not reestablish the structural integrity of load bearing partitions/assemblies, or support live loads and traffic. Installer shall consult the structural engineer prior to penetrating any load bearing assembly.

G. For those firestop applications that exist for which no UL tested system is available through a manufacturer, a manufacturer's engineering judgment derived from similar UL system designs or other tests shall be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineer judgment drawings shall follow requirements set forth by the International Firestop Council (September 7, 1994).

1.3 SUBMITTALS

A. Product Data: For each product indicated.

B. Shop Drawings: Include details of installation and design designation of testing and inspecting agency acceptable to authorities having jurisdiction that evidences compliance with requirements for each condition indicated.

C. Product certificates and test reports.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials undamaged in manufacturer's clearly labeled, unopened containers, identified with brand, type, and UL label where applicable.

B. Coordinate delivery of materials with scheduled installation date to allow minimum storage time at job-site.

C. Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements, including temperature restrictions.

D. Comply with recommended procedures, precautions or remedies described in material safety data sheets as applicable.

E. Do not use damaged or expired materials.

1.5 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide rated systems identical to those tested per ASTM E 814/UL 1479 and with products bearing the classification marking of a qualified testing and inspecting agency acceptable to authorities having jurisdiction.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate firestop systems.

1.6 INSTALLER QUALIFICATIONS

A. Engage an experienced Installer who is certified, licensed, or otherwise qualified by the Firestopping manufacturer as having been provided the necessary training to install manufacture’s products per specified requirements. A manufacturer’s willingness to sell its Firestopping products to the Contractor or to an Installer engaged by the Contractor does not in itself confer qualification on the buyer

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with through penetration firestop systems (XHEZ) and joint systems (XHBN) listed in Volume II of the UL Fire Resistance Directory, provide products of the following manufacturers as identified below:

1. Hilti Construction Chemicals, Inc.
2. 3M Fire Protection Products.
3. Tremco; Sealant/Weatherproofing Division.
4. Grace, W. R. & Co. - Conn.

B. One manufacturer shall be used for Firestopping on entire project. Manufacturer shall be present at pre-construction meeting and provide training to installers.

2.2 FIRESTOP SYSTEMS

A. Compatibility: Provide firestop systems that are compatible with the substrates forming openings, and with the items, if any, penetrating firestop systems, under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Provide components for each firestop system that are needed to install fill material. Use only components specified by the firestop system manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install through-penetration firestop systems to comply with "Performance Requirements" Article and firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Clean openings immediately before installing firestop systems.
1. Remove foreign materials that could interfere with adhesion of firestop systems.
2. Remove laitance and form-release agents from concrete.
3. Produce clean, sound surfaces capable of developing optimum bond with firestop systems. Remove loose particles remaining from cleaning operation.

C. Priming: Prime substrates when recommended in writing by firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not spill primers or allow them to migrate onto adjoining surfaces.

D. Masking Tape: Use masking tape where required to prevent contact of firestopping with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove firestopping smears. Remove tape immediately after installation without disturbing firestopping seal.

E. Accessories: Install accessories of types required to support fill materials during their application and in the position necessary to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
1. After installing fill materials, remove combustible forming materials and other accessories that are not permanent components of firestop systems.

F. Install fill materials for firestop systems by proven techniques.
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.

G. Identification: Identify firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible. 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. Firestop system manufacturer's name.
6. Installer's name.

H. Clean excess fill materials adjacent to openings as installation progresses by methods and with cleaning materials that are approved in writing by manufacturers and that do not damage materials in which openings occur.

3.2 FIELD QUALITY CONTROL

A. Do not cover up firestop system installations that will become concealed behind other construction until inspecting agency and building inspector, if required by authorities having jurisdiction, have examined each installation.

B. Inspecting agency will state in each report whether inspected firestop systems comply with or deviate from requirements.

C. Enclose firestop systems with other construction only after inspection reports are issued.

D. Where deficiencies are found, repair or replace firestop systems to comply with requirements.

END OF SECTION 07 84 00

SECTION 07 90 00 - SEALANTS

PART 1 - GENERAL

1.1 SCOPE:

A. Provide all of the labor, materials, equipment, and services required to furnish and install the sealant and caulking.

B. The purpose of caulking in this Work is to provide a positive barrier against penetration of air and moisture at joints between items where caulking is essential to continued integrity of the barrier.

1.2 SUBMITTALS:

A. Prior to installation, submit the following to the Architect for review:
   1. Complete and fully descriptive manufacturer's literature for each type of sealant used naming product formulation and giving product limitations.
   2. Data proving the product meets or exceeds the ASTM number referenced.
   3. Color chart for the Architect's selection.
   4. Submit statements by the manufacturers and installers of their acceptance of these documents and conditions and/or any modification proposed to the use of the products. Include a statement from the manufacturer that the proposed use of the product for the conditions encountered is proper.
   5. Submit a guarantee warranting all defects of material and/or application for a period of five (5) years from Date of Substantial Completion. Any failure that may occur within this warranty period, due to defective application and/or materials shall, upon written notification of such failure, be repaired or replaced with proper materials and/or labor as approved by the Architect, at no additional cost to the Owner.
   6. Caulking schedule: Carefully study the drawings and provide a schedule indicating proper caulking for each condition.

1.3 DEFINITIONS:

A. The terms "Sealant" and "Caulking" shall be used interchangeably throughout the Contract Documents and shall be interpreted to mean the same material.

PART 2 - PRODUCTS

2.1 SEALANT - EXPANSION JOINTS, CONTROL JOINTS, AND PERIMETER OF DOOR AND WINDOW FRAMES:

A. Neutral Curing Silicone Sealant, conforming to ASTM C 920, Type S, Grade NS, Class 100 sealant. For use in all exterior building joints.
   1. Pecora 890/890 FTS (Field Tintable Silicone).
   2. Tremco Spectrum 1 or 2.
   3. Dow Corning 790/756 Building Sealant.
   4. Or an approved substitute.

B. Joint Backing: Backer rod as recommended by sealant manufacturer.

C. Where joint depth does not permit use of joint backing, a release paper or bond breaker shall be used.

D. On horizontal joints, surface must be cleaned and primed using primer as recommended by the sealant manufacturer.

2.2 SEALANT - SETTING THRESHOLD; FLASHING; AND GENERAL SEALING NOT OTHERWISE DELEGATED:

A. Dynatrol I
Pecora Corp.
Or an approved substitute.

B. Joint Backing: Round closed-cell polyethylene.

2.3 PRIMERS:

A. As recommended by the sealant manufacturer for use in conjunction with the sealant for application onto the various types of materials to which the sealant is applied, and complying with the requirements above. When the manufacturer's instructions make reference to use of primers and/or the construction condition requires special surface preparation, these instructions shall be complied with.

2.4 CLEANERS:

A. Where required by manufacturer's instruction in lieu of primers, shall be of the type and kind recommended by the sealant manufacturer.

PART 3 - EXECUTION

3.1 CHOICE OF CAULKING MATERIAL:

A. Use only that caulking material which is best suited to the installation and is so recommended by the caulking material manufacturer.

3.2 BACK-UP MATERIALS:

A. Verify the compatibility of filler materials with caulking before installation.

B. Use filler about 1/3 to 1/2 wider than width of joint so sufficient pressure is exerted by filler to provide substantial resistance to displacement.

C. All filler materials shall be non-oily, non-staining, back-up filler such as polyethylene foam rod, expanded polyurethane, neoprene or other filler completely compatible with the caulking material.

3.3 APPLICATION OF CAULKING:

A. Do not caulk under weather conditions or sun conditions potentially harmful to the set and curing of the caulking material.

B. Deliver materials to the job or place of application in original unopened containers bearing manufacturer's name and product designation.

C. Install caulking in strict accordance with the manufacturer's recommendations, taking care to produce beads of proper width and depth, to tool as recommended by the manufacturer, and to immediately remove all surplus caulking.

3.4 CAULKING SCHEDULE:

A. Carefully study the Drawings and furnish and install the proper caulking at each point where called for on the Drawings plus at all other points, whether specifically designated or not, where caulking is essential in maintaining the continued integrity of the intended watertight barrier.

END OF SECTION 07 90 00

Division 08 – Openings

SECTION 08 11 13 – HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:
   1. Steel doors.
   2. Steel door frames.
   3. Fire-rated door and frame assemblies.
   4. Louvers in doors.

B. Related Sections include the following:
   1. Division 04 Section "Unit Masonry" for installing anchors and grouting frames in masonry construction.
   2. Division 08 Section "Flush Wood Doors" for wood doors installed in steel frames.
   3. Division 08 Section "Door Hardware"
   4. Division 08 Section "Glass Glazing" for glass in glazed openings in doors and frames.
   5. Division 09 Section "Gypsum Board Assemblies" for spot-grouting frames installed in steel-framed gypsum board partitions.
   6. Division 09 Section "Painting" for field painting factory-primed doors and frames.

1.3 DEFINITIONS

A. Steel Sheet Thicknesses or gages: Thickness dimensions, including those referenced in ANSI A250.8, are minimums as defined in referenced ASTM standards for both uncoated steel sheet and the uncoated base metal of metallic-coated steel sheets.

1.4 SUBMITTALS

A. Product Data: For each type of door and frame indicated, include door designation, type, level and model, material description, core description, construction details, label compliance, sound and fire-resistance ratings.

B. Shop Drawings: Show the following:
   1. Elevations of each door design.
   2. Details of doors including vertical and horizontal edge details.
   3. Frame details for each frame type including dimensioned profiles.
   4. Details and locations of reinforcement and preparations for hardware.
   5. Details of each different wall opening condition.
   6. Details of anchorages, accessories, joints, and connections.
   7. Coordination of glazing frames and stops with glass and glazing requirements.

C. Door Schedule: Use same reference designations indicated on Drawings in preparing schedule for doors and frames.

1.5 QUALITY ASSURANCE

A. Steel Door and Frame Standard: Comply with ANSI A 250.8, unless more stringent requirements are indicated.

B. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252. After 5 minutes into the NFPA 252 test the neutral pressure plane shall be established in the furnace at 40"or less above the floor.

C. Fire-Rated Window Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 257.

D. Smoke-Control Door Assemblies: Comply with NFPA 105 or UL 1784.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.

B. Inspect doors and frames on delivery for damage, and notify shipper and supplier if damage is found. Minor damages may be repaired provided refinished items match new work and are acceptable to Architect. Remove and replace damaged items that cannot be repaired as directed.

C. Store doors and frames at building site under cover. Place units on minimum 4-inch- high wood blocking. Avoid using non-vented plastic or canvas shelters that could create a humidity chamber. If door packaging becomes wet, remove cartons immediately. Provide minimum 1/4-inch spaces between stacked doors to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Steel Doors and Frames:
      a. Amweld Building Products, LLC.
      b. Ceco Door Products; an ASSA ABLOY Group Company.
      c. CURRIES Company; an ASSA ABLOY Group Company.
      d. Steelcraft; an Allegion brand.
      e. Fleming Door Products Ltd.; an ASSA ABLOY Group Company.
      f. D&D Specialties
      g. Concept Frames Incorporated

2.2 MATERIALS

A. Hot-Rolled Steel Sheets: ASTM A 569, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

B. Cold-Rolled Steel Sheets: ASTM A 366, Commercial Steel (CS), or ASTM A 620, Drawing Steel (DS), Type B; stretcher-leveled standard of flatness.

C. Metallic-Coated Steel Sheets: ASTM A 653, Commercial Steel (CS), Type B, with an A40 zinc-iron-alloy (galvannealed) coating; stretcher-leveled standard of flatness.

2.3 DOORS

A. General: Provide doors of sizes, thicknesses, gages, and designs indicated. Fabricate all doors and frames in accordance with ANSI A250.8-1998/S.D.I.-100 except where more stringent requirements are specified. Bevel lock edges 1/8 inch in 2 inches.

1. Interior Doors: Classification; 1-3/4" thick, Level 2 – Model 1, 18 gauge cold rolled, full flush of composite construction. The top and bottom of the doors shall be closed by 16 gage inverted steel channels. Top channel shall receive flush metal top cap.
2. Exterior Doors: Classification; 1-3/4" thick, Level 32 – Model 21, 16 gauge A-60 galvanized, seamless edge construction. The top and bottom of the doors shall be closed by 16 gage inverted steel channels. Top channel shall receive flush metal top cap.

B. Door Louvers: Provide louvers for interior doors, where indicated, that comply with SDI 111C, with blades or baffles formed of 0.020-inch- thick, cold-rolled steel sheet set into 0.032-inch-thick steel frame.

C. Vision Lite Systems: Manufacturer's standard kits consisting of glass lite moldings to accommodate glass thickness and size of vision lite indicated.

2.4 FRAMES

A. General: Provide steel frames for doors, transoms, sidelights, borrowed lights, and other openings that comply with ANSI A250.8 and with details indicated for type and profile. Conceal fastenings, unless otherwise indicated.

B. Frames of 16 gage A60 metallic-coated steel sheet for:
1. Exterior steel doors.

C. Frames of 16 gage cold rolled steel sheet for:
1. Interior Steel and Wood doors.

D. Hinge reinforcements shall be 7-gage steel for hinge sizes shown. Where heavyweight hinges are scheduled, weld high-frequency hinge straps to the top and bottom of each reinforcement and frame.

E. Door Silencers: Except on weather-stripped frames, fabricate stops to receive three silencers on strike jambs of single-door frames and two silencers on heads of double-door frames.

F. Where indicated furnish Kerfed type jamb profile to accept manufacturer’s appropriate gasket for smoke seals, sound seals or weather-stripping.

G. Plaster Guards: Provide 0.016-inch- thick, steel sheet plaster guards or mortar boxes to close off interior of openings; place at back of hardware cutouts where mortar or other materials might obstruct hardware operation.

H. Supports and Anchors: Fabricated from not less than 0.042-inch- thick, electrolytic zinc-coated or metallic-coated steel sheet.
1. Wall Anchors in Masonry Construction: 0.177-inch- diameter, steel wire complying with ASTM A 510 may be used in place of steel sheet.

I. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where zinc-coated items are to be built into exterior walls, comply with ASTM A 153, Class C or D as applicable.

2.5 FABRICATION

A. General: Fabricate steel door and frame units to comply with ANSI A250.8 and to be rigid, neat in appearance, and free from defects including warp and buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site.

B. Clearances for Non-Fire-Rated Doors: Not more than 1/8 inch at jambs and heads, except not more than 1/4 inch between pairs of doors. Not more than 3/4 inch at bottom.

C. Clearances for Fire-Rated Doors: As required by NFPA 80 and UL10-C.

D. Single-Acting, Door-Edge Profile: Square edge, unless beveled edge is indicated.

E. Double-Acting, Door-Edge Profile: Round vertical edges with 2-1/8-inch radius.

F. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."

G. Fabricate concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold- or hot-rolled steel sheet.

H. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.

I. Thermal-Rated (Insulating) Assemblies: At exterior locations and elsewhere as shown or scheduled, provide doors fabricated as thermal-insulating door and frame assemblies and tested according to ASTM C 236 or ASTM C 976 on fully operable door assemblies. Minimum insulation value of U-0.5.

J. Sound-Rated (Acoustical) Assemblies: Where shown or scheduled, provide door and frame assemblies fabricated as sound-reducing type, tested according to ASTM E 1408, and classified according to ASTM E 413.

K. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements in ANSI A250.6 and ANSI A115 Series specifications for door and frame preparation for hardware.

L. Frame Construction: Fabricate frames to shape shown.
1. Fabricate frames with mitered or coped and continuously welded corners

M. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site.

N. Locate hardware as indicated on Shop Drawings or, if not indicated, according to ANSI A250.8.

O. Glazing Stops: Manufacturer's standard, formed from 0.032-inch- thick steel sheet.
1. Provide non-removable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.
2. Provide screw-applied, removable, glazing stops on inside of glass, louvers, and other panels in doors.

P. Astragals: Furnish at pairs as required by NFPA 80 to provide fire ratings indicated.

2.6 FINISHES

A. Prime Finish: Manufacturer's standard, factory-applied coat of rust-inhibiting primer complying with ANSI A250.10 for acceptance criteria.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install steel doors, frames, and accessories according to Shop Drawings, manufacturer's data, and as specified.

B. Placing Frames: Comply with provisions in SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
1. Except for frames located in existing walls or partitions, place frames before construction of enclosing walls and ceilings.
2. In masonry construction, provide at least three wall anchors per jamb; install adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Acceptable anchors include masonry wire anchors and masonry T-shaped anchors.
3. In existing concrete or masonry construction, provide at least three completed opening anchors per jamb; install adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Set frames and secure to adjacent construction with bolts and masonry anchorage devices.
4. In metal-stud partitions, provide at least three wall anchors per jamb; install adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Attach wall anchors to studs with screws.
5. Install fire-rated frames according to NFPA 80.
6. For openings 90 inches or more in height, install an additional anchor at hinge and strike jambs.

C. Door Installation: Comply with ANSI A250.8. Fit hollow-metal doors accurately in frames, within clearances specified in ANSI A250.8. Shim as necessary to comply with SDI 122 and ANSI/DHI A115.1G.
1. Fire-Rated Doors: Install within clearances specified in NFPA 80.
2. Smoke-Control Doors: Install to comply with NFPA 105.

3.2 ADJUSTING AND CLEANING

A. Prime-Coat Touchup: Immediately after installation, sand smooth any rusted or damaged areas of prime coat and apply touch up of compatible air-drying primer.

B. Protection Removal: Immediately before final inspection, remove protective wrappings from doors and frames.

END OF SECTION 08 11 13

SECTION 08 14 16 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SCOPE:

A. Provide all labor, materials, equipment and services to furnish and install the flush wood doors.

1.2 QUALITY ASSURANCE:

A. Comply with the applicable requirements of the following standards unless otherwise indicated.
   1. ANSI/WDMA I.S. 1-78, "Industry Standard for Wood Flush Doors".
   2. UL10-C fire test for mineral core fire doors.
   3. Provide doors with fire-resistance ratings indicated or required to comply with governing regulations.
   4. All labeled doors shall be manufactured in accordance with the specifications procedures of the Underwriter's Laboratories. All labeled doors shall physically bear the U.L. label showing the rating required.

1.3 SUBMITTALS:

A. Prior to fabrication, submit the following to the Architect for review:
   1. Complete and fully descriptive manufacturer's literature.
   2. Shop drawings: Sizes, face veneer, edge construction, core construction, necessary details, and factory finishing.
   3. Door schedule: Show door sizes, opening numbers or designations and elevations, door type, fire classification marking, swing, light and louver cutout sizes and locations, and undercut.
   4. Physical sample: Cross section at door corner.
   5. Certification: Submit written certification signed by an officer of the manufacturing firm that shall certify that the materials delivered to this work comply in all respects with the requirements of the Contract Documents.

1.4 GUARANTEE:

A. Submit written guarantee for use for the life of the installation, including repair and/or replacement, and refinishing of defective material in accordance with the standard door guarantee of the National Woodwork Manufacturer's Association.

1.5 PRODUCT HANDLING:

A. Package each door at the factory in separate heavy paper-type carton or poly bag. Mark each carton or door for location to correspond with opening number on Drawings.

PART 2 – PRODUCTS

2.1 INTERIOR DOORS - SOLID CORE - FOR STAIN FINISH:

A. WDMA Premium Grade 5-Ply Hot Press Construction

B. Species and Cut:
1. Match Existing Cut, Book match and balance match – Factory finish where clear or stained finish is called for, Match Existing Stain Finish.
2. Medium Density Overlay – Factory paint finish where paint is called for. Provide custom colors as indicated on drawings.

C. Core construction: ***(Edit)***
1. Non-rated: Particleboard PC-5
2. Rated: Mineral - 45 minute or greater. Furnish Category "A" imbedded intumescent insert.
3. Provide 5" inner blocking at top rail of mineral core doors.
4. Provide inner blocking for locks and panics at mineral core doors.
5. Provide bonded core assembly.

D. Subject to compliance of all specifications in this section.
Acceptable manufacturers are:
1. Masonite Architectural
2. Eggers Industries; Architectural Door Division.
3. VT Industries
4. Oshkosh Architectural Door Company.
5. Graham Manufacturing.
6. Lambton Doors.

E. Factory Finish: Manufacturer's standard finish with performance comparable to AWI System TR-6 catalyzed polyurethane.
1. Staining: As indicated on drawings or if not indicated as selected by Architect from manufacturer's full range.

2.2 LIGHTS AND LOUVERS:

A. Provide openings with stops for lights and louvers.

B. Provide the manufacturer's standard wood louvers where indicated.

2.3 PRE-FITTING AND PRE-MACHINING:

A. Pre-fit doors at the factory in accordance with tolerance requirements of the WDMA standards with allowances for undercuts (if any). Provide standard bevel or radius to edge of door as required for the installation.

B. Machine doors for butts, locksets, concealed closers, concealed holders, concealed exit hardware and flush bolts. Machine in accordance with templates of approved hardware manufacturer.

PART 3 - EXECUTION

3.1 INSPECTION:

A. Examine door frames and verify that frames are correct type and have been installed as required for proper hanging of corresponding doors. Correct any conditions that will be detrimental to proper and timely installation of wood doors. Do not proceed with installation

until unsatisfactory conditions have been corrected.

3.2 INSTALLATION:

A. Condition doors to average prevailing humidity in installation area prior to hanging.

B. Hardware: See Section 08 71 00, "Door Hardware".

C. Install wood doors in accordance with manufacturer's instructions and as shown.

D. Pre-fit doors: Fit to frames and machine for hardware to whatever extent not previously worked at factory as required for proper fit and uniform clearance at each edge.

E. Clearance:
1. Non-rated doors: Provide clearances of 1/8" at jambs and heads; 1/8" at meeting stiles for pairs of doors; and ½" from bottom of door to top of finish floor material or covering. At thresholds, provide 1/4" clearance from bottom of door to top of threshold.
2. Fire-rated doors: Provide clearances complying with NFPA.

3.3 ADJUST AND CLEAN:

A. Re-hang or replace doors which do not swing or operate freely.

B. Refinish or replace doors damaged during installation.

END OF SECTION 08 14 16

SECTION 084113 – COMPOSITE LAMINATED INFILL PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Insulated panels. Composite laminated infill panels

B. Related Requirements:
   1. Section 088000 "Glazing" for glazing units

1.3 PREINSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site in conjunction with pre-installation conferences for other aluminum fenestration units.

   1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   2. Review and discuss the finishing of composite laminated infill panels that is required to be coordinated for color and finish matching.
   3. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
   4. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

1.4 SUBMITTALS

A. Product Data: For product indicated.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
   1. Include structural analysis data.
   2. Field verify existing frames prior to Shop Drawings for sizes, connections, installation etc.

C. Samples: For exposed finish.

D. Product test reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Acceptable to manufacturer and capable of preparation of data for composite laminated infill panels including Shop Drawings based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

1.6 WARRANTY

A. Composite Laminated Infill Panels: Furnish manufacturer’s standard warranty:
   1. Warranty Period: Five years from date of Substantial Completion.

B. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Warranty Period:
a. Anodized finishes - 10 years from date of Substantial Completion.
b. Prefinished finishes – 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURES - INSULATED PANELS

A. Basis-of-Design Product: The design shall be based on Mapes Industries, Inc.; MapesShape panels. Subject to compliance with requirements, provide the named product or a comparable product of equal quality by one of the following:
1. Americlad AC-4300
2. Citadel Architectural Products
3. Approved equal

B. Formed Edge Composite Laminated Glaze Infill Panel: Provide panels in lieu of insulated glazing where indicated on Drawings. When installed, panel surface shall finish flush with exterior face of storefront framing system. Panel to have formed corners and edges. Panel composition shall consist of an aluminum face skin and backer board at interior and exterior faces. **See Sheet A1000.**
1. Exterior Skin: Aluminum.
a. Finishes:
1) Provide Superior Performance Organic Coating System: AAMA 2605 multiple coat, thermally cured polyvinylidene fluoride (PVDF) resin system:
a) Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pre-treat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' installation instructions.
b) Color: Approved standard colors by Architect.
b. Texture: Smooth.
c. Backing Sheet: 1/8-inch-thick, tempered hardboard.

2. Interior Skin: Aluminum.
a. Finishes:
1) Provide Superior Performance Organic Coating System: AAMA 2605 multiple coat, thermally cured polyvinylidene fluoride (PVDF) resin system:
a) Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pre-treat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' installation instructions.
b) Color: Approved standard colors selected by the Architect.
b. Texture: Smooth.
c. Backing Sheet: 1/8-inch-thick, tempered hardboard.

3. Thermal Insulation Core: Manufacturer's rigid, closed-cell, polyisocyanurate board.
a. Panel R value of 6.0 minimum for 1 inch nominal thickness.

b. Field verify existing glazing and frame thickness.

C. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25 or less.
2. Smoke-Developed Index: 50 or less.

2.2 GLAZING

A. Glazing: Comply with Section 088000 "Glazing."

B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system to match existing frame, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.

C. Glazing Sealants: Comply with Section 088000 "Glazing."

D. Low-Emitting Materials: Sealants shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.3 ACCESSORIES

A. Framing System Gaskets and Sealants: Manufacturer's standard recommended by manufacturer for existing frame type.

2.4 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

1. Sheet and Plate: ASTM B 209.

2.5 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. 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 panels from framing members.
4. Accommodations for thermal and mechanical movements of panels and framing to maintain required panel edge clearances.
5. Provisions for field replacement of panels from exterior.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

C. Mechanically Panel Framing Members: Fabricate for flush panels without projecting stops.

D. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.6 ALUMINUM FINISHES

A. Organic Coating System: AAMA 2605 multiple coat, thermally cured polyvinylidene fluoride (PVDF) resin system:
   1) Surfaces cleaned and given conversion coating pre-treatment prior to application of 0.3 mil dry film thickness of epoxy or acrylic primer following recommendations of finish coat manufacturer.
   2) Finish coat of 70% minimum fluorocarbon resin fused to primed surfaces at temperature recommended by manufacturer, 1.0 mil minimum dry film thickness.
   3) Acceptable coatings are Trinar by Akzo Coatings, Inc.; Nubelar by Glidden Company; Fluoroceram by Morton International, Inc.; Duranar by PPG Industries Inc.; and Fluropon by Valspar Corporation.
   4) Color: Standard color as selected by the Architect.

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

A. General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure non-movement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
6. Seal perimeter and other joints watertight unless otherwise indicated.

B. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components plumb and true in alignment with established existing frames

D. Install glazing as specified in Section 088000 "Glazing."

END OF SECTION 084113

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Sliding doors.
3. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Cylinders specified for doors in other sections.

C. Related Sections:

1. Division 08 Section “Hollow Metal Doors and Frames”.
2. Division 08 Section “Flush Wood Doors”.
3. Division 08 Section “Stile and Rail Wood Doors”.
4. Division 08 Section “Sound Control Hollow Metal Door Assemblies”.
5. Division 08 Section “Sound Control Wood Door Assemblies”.
6. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 - Access Control System Units.
4. UL 305 - Panic Hardware.
5. ANSI/UL 437- Key Locks.

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:

    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
b. Complete (risers, point-to-point) access control system block wiring diagrams.
c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

1.4 CLOSEOUT SUBMITTALS

A. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

B. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

1.5 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the

manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

F. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.6 DELIVERY, STORAGE AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.7 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.8 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Hardware shall not have any visible manufacturer names on exposed materials, except cylinders, when the door is in a closed position.

2.2 BUTT HINGES

A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:

a. Two Hinges: For doors with heights up to 60 inches.
b. Three Hinges: For doors with heights 61 to 90 inches.
c. Four Hinges: For doors with heights 91 to 120 inches.
d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for all out-swinging lockable doors.

5. Manufacturers:

a. Hager Companies (HA) - BB Series, 5-knuckle.
b. Ives (IV) - 5BB Series, 5-knuckle.
c. McKinney (MK) - TA/T4A Series, 5-knuckle.

2.3 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: Provide products conforming to ANSI/BHMA A156.3 and A156.16, Grade 1.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Manufacturers:

    a. Burns Manufacturing (BU).
    b. Ives (IV).
    c. Rockwood (RO).

B. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Pulls, where applicable, shall be provided with a 10” clearance from the finished floor on the push side to accommodate wheelchair accessibility.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets. When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
6. Manufacturers:

    a. Burns Manufacturing (BU).
    b. Ives (IV).
    c. Rockwood (RO).

2.4 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

1. Manufacturers:

    a. Sargent Manufacturing (SA).
    b. Match Existing, Field Verify.

B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:

1. Threaded mortise cylinders with rings and cams to suit hardware application.

2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
4. Tubular deadlocks and other auxiliary locks.
5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
6. Keyway: Manufacturer’s Standard.

C. Small Format Interchangeable Cores: Provide small format interchangeable cores (SFIC) as specified, core insert, removable by use of a special key; usable with other manufacturers' cylinders.

D. Large Format Interchangeable Cores: Provide removable cores (LFIC) as specified, core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.

E. Permanent Cores: Match standard. Reference Division 01 for material required under project. Installation to be included under Division 08 "Door Hardware" base bid package.

1. Small Format Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.
2. Large Format Interchangeable Cores: Core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware. Provide removable core (small or large format) as specified in Hardware Sets.

F. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. Existing System: Field verify and key cylinders to match Owner's existing system.

G. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).

H. Construction Keying: Provide construction master keyed cylinders.

I. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.5 MORTISE LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): Provide ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed mortise locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - ML2000 Series.
b. Sargent Manufacturing (SA) - 8200 Series.
c. Schlage (SC) - L9000 Series.

2.6 CYLINDRICAL LOCKS AND LATCHING DEVICES

A. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Operational Grade 1 Certified Products Directory (CPD) listed cylindrical locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - CLX3300 Series.
b. Sargent Manufacturing (SA) - 10X Line.
c. Schlage (SC) - ND Series.

2.7 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.8 ELECTROMAGNETIC LOCKING DEVICES

A. Surface Electromagnetic Locks (Heavy Duty): Electromagnetic locks to be surface mounted type conforming to ANSI A156.23, Grade 2 with minimum holding force strength of 1,200

pounds. Locks to be capable of either 12 or 24 voltage and be UL listed for use on fire rated door assemblies. Electronics are to be fully sealed against tampering and allow exterior weatherproof applications. As indicated in Hardware Sets, provide specified mounting brackets and housings. Power supply to be by the same manufacturer as the lock with combined products having a lifetime replacement warranty.

1. Manufacturers:

    a. Schlage (SC) - M450 Series.
    b. Security Door Controls (SD) - EMLock 1500 Series.
    c. Securitron (SU) - M62 Series.

2.9 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. Exit devices shall have a five-year warranty.
2. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
3. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.
4. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
5. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

    a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
    b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.
9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
b. Sargent Manufacturing (SA) - 80 Series.
c. Von Duprin (VD) - 35A/98 XP Series.

2.10 SURFACE DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.

1. Large body cast iron surface mounted door closers shall have a 30-year warranty.
2. Manufacturers:

a. Corbin Russwin Hardware (RU) - DC8000 Series.
b. LCN Closers (LC) - 4040XP Series.
c. Sargent Manufacturing (SA) - 281 Series.

2.11 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1” LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16” above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer’s catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 protection plates (kick, armor, or mop), fabricated from the following:

    a. Stainless Steel: 300 grade, 050-inch thick.

5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:

    a. Hager Companies (HA).
    b. Ives (IV).
    c. Rockwood (RO).

2.12 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

    a. Hager Companies (HA).
    b. Ives (IV).
    c. Rockwood (RO).

C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Manufacturers:

    a. dormakaba (DO).

b. Norton Rixson (RF).
c. Sargent Manufacturing (SA).

2.13 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are 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.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. Pemko (PE).
2. Reese Enterprises, Inc. (RE).
3. Zero (ZE).

2.14 ELECTRONIC ACCESSORIES

A. Push-Button Switches: Industrial grade momentary or alternate contact, back-lighted push buttons with stainless-steel switch enclosures. 12/24 VDC bi-color illumination suitable for either flush or surface mounting.

1. Manufacturers:

a. Alarm Controls (AK) - TS Series.
b. Security Door Controls (SD) - 400 Series.
c. Securitron (SU) - PB Series.

B. Request to Exit Motion Sensor: Passive infrared request to exit (REX) motion sensor designed for detecting exiting through a door from the secure area to a non-secure area.

1. Provide devices with functions and features as follows:

a. Adjustable infrared beam and relock time.
b. UL listed.
c. 12VDC or 24VDC power.
d. Single pole, double throw (SPDT) switch.

2. Manufacturers:

a. Alarm Controls (AK) - SREX Series.
b. Security Door Controls (SD) - MD-31D Series.
c. Securitron (SU) - XMS2 Series.

C. Switching Power Supplies: Provide the least number of power supplies at the appropriate amperage level sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.

1. Manufacturers:

a. Altronix (AS) - Maximal 3.
b. Life Safety Power (LP).
c. Securitron (SU) - AQD Series.

2.15 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.16 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.

E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 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.

3.5 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.6 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.7 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should 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 and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handing and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

B. Manufacturer's Abbreviations:

1. MK - McKinney
2. RO - Rockwood
3. SU - Securitron
4. SA - SARGENT
5. AH - Architectural Builders Hardware
6. RF - Rixson
7. PE - Pemko
8. AK - Alarm Controls
9. OT - Other

Hardware Sets

Set: 1.0

	Hinge	TA2714	US26D	MK
1	Exit Device	LC 8813 ETL	US32D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Surface Closer	281 P10	EN	SA
1	Kick Plate	K1050 8" high CSK	US32D	RO
1	Door Stop	409/441CU	US26D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 2.0

	Hinge	TA2714	US26D	MK
1	Exit Device	LC 8813 ETL	US32D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Surface Closer	281 CPS	EN	SA
1	Kick Plate	K1050 8" high CSK	US32D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 3.0

	Hinge	T4A3786	US26D	MK
2	Exit Device	LC NB8713 ETL	US32D	SA
2	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
2	Surface Closer	281 CPS	EN	SA
2	Kick Plate	K1050 8" high CSK	US32D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 4.0

	Hinge	TA2714	US26D	MK
1	Passage Latch	8215 LL	US26D	SA
1	Door Stop	409/441CU	US26D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 5.0

	Hinge	TA2714	US26D	MK
1	Privacy Lock	LB V21 8265 LL	US26D	SA
1	Surface Closer	281 O	EN	SA
1	Kick Plate	K1050 8" high CSK	US32D	RO
1	Door Stop	409/441CU	US26D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 6.0

	Hinge	TA2714	US26D	MK
1	Office Lock	LC 8205 LL	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Door Stop	409/441CU	US26D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 7.0

	Hinge	TA2714	US26D	MK
1	Classroom Lock	LC 8237 LL	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Door Stop	409/441CU	US26D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 8.0

	Hinge	TA2714	US26D	MK
1	Classroom Lock	LC 8237 LL	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Overhead Stop	10 SERIES	630	RF
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 9.0

	Hinge	TA2714	US26D	MK
1	Classroom Lock	LC 8237 LL	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Surface Closer	281 O	EN	SA
1	Kick Plate	K1050 8" high CSK	US32D	RO
1	Door Stop	409/441CU	US26D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 10.0

	Hinge	TA2714	US26D	MK
1	Classroom Lock	LC 8237 LL	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Surface Closer	281 P10	EN	SA
1	Kick Plate	K1050 8" high CSK	US32D	RO
1	Door Stop	409/441CU	US26D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 11.0

	Hinge	TA2714	US26D	MK
2	Flush Bolt	555/557	US26D	RO
1	Dust Proof Strike	570	US26D	RO
1	Classroom Lock	LC 8237 LL	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
2	Overhead Stop	10 SERIES	630	RF
1	Surface Closer	281 O	EN	SA
2	Kick Plate	K1050 8" high CSK	US32D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 12.0

	Hinge	TA2714	US26D	MK
2	Flush Bolt	555/557	US26D	RO
1	Dust Proof Strike	570	US26D	RO
1	Classroom Lock	LC 8237 LL	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Overhead Stop	10 SERIES	630	RF
1	Surface Closer	281 CPS	EN	SA
2	Kick Plate	K1050 8" high CSK	US32D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 13.0

	Hinge	TA2714	US26D	MK
1	Storeroom Lock	LC 8204 LL	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Door Stop	409/441CU	US26D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 14.0

	Hinge	TA2714	US26D	MK
1	Storeroom Lock	LC 8204 LL	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Overhead Stop	10 SERIES	630	RF
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 15.0

	Hinge	TA2714	US26D	MK
1	Storeroom Lock	LC 8204 LL	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Surface Closer	281 O	EN	SA
1	Kick Plate	K1050 8" high CSK	US32D	RO
1	Door Stop	409/441CU	US26D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 16.0

	Hinge	TA2714	US26D	MK
2	Flush Bolt	555/557	US26D	RO
1	Dust Proof Strike	570	US26D	RO
1	Storeroom Lock	LC 8204 LL	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
2	Overhead Stop	10 SERIES	630	RF
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 17.0

	Hinge	TA2714	US26D	MK
2	Flush Bolt	555/557	US26D	RO
1	Dust Proof Strike	570	US26D	RO
1	Storeroom Lock	LC 8204 LL	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Overhead Stop	10 SERIES	630	RF
1	Surface Closer	281 CPS	EN	SA
2	Kick Plate	K1050 8" high CSK	US32D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 18.0

	Hinge	TA2714	US26D	MK
1	Classroom Intruder Lock	LC V01 8238 LL	US26D	SA
2	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Door Stop	409/441CU	US26D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 19.0

	Hinge	TA2714	US26D	MK
2	Flush Bolt	555/557	US26D	RO
1	Dust Proof Strike	570	US26D	RO
1	Classroom Intruder Lock	LC V01 8238 LL	US26D	SA
2	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Surface Closer	281 P10	EN	SA
2	Kick Plate	K1050 8" high CSK	US32D	RO
2	Door Stop	409/441CU	US26D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 20.0

	Hinge	TA2714	US26D	MK
1	Push Plate	70F	US32D	RO
1	Pull Plate	BF 111x70C	US32D	RO
1	Surface Closer	281 P10	EN	SA
1	Kick Plate	K1050 8" high CSK	US32D	RO
1	Door Stop	409/441CU	US26D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 21.0

	Hinge	TA2714	US26D	MK
2	Push Plate	70F	US32D	RO
2	Pull Plate	BF 111x70C	US32D	RO
2	Surface Closer	281 O	EN	SA
2	Kick Plate	K1050 8" high CSK	US32D	RO
2	Door Stop	409/441CU	US26D	RO
1	Set Door Seals/Silencers	S88BL/608 AS REQUIRED		PE

Set: 22.0

1	Exit Device	80 SERIES x FUNCTION & TRIM TO MATCH EXISTING	US32D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Hardware	SEE NOTE BELOW		OT

NOTE: EXISTING DOOR - BALANCE OF EXISTING HARDWARE TO REMAIN AND BE REUSED.

NOTE: CONFIRM EXISTING EXIT DEVICE TYPE WITH ARCHITECT AND PROVIDE DEVICE TO MATCH EXISTING DOOR PREP.

Set: 22.1

1	Magnetic Lock	M62BD		SU
1	Exit Device	80 SERIES x FUNCTION & TRIM TO MATCH EXISTING	US32D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Pushbutton	EEB2		SU
1	Door Release	TS-18		AK
1	Motion Sensor	XMS		SU
1	Hardware	SEE NOTE BELOW		OT

OPERATION: DOOR STATUS TO BE CONTROLLED BY BUILDING'S ACCESS CONTROL SYSTEM.

NOTE: EXISTING DOOR - BALANCE OF EXISTING HARDWARE TO REMAIN AND BE REUSED.

NOTE: CONFIRM EXISTING EXIT DEVICE TYPE WITH ARCHITECT AND PROVIDE DEVICE TO MATCH EXISTING DOOR PREP.

Set: 23.0

2	Exit Device	80 SERIES x FUNCTION & TRIM TO MATCH EXISTING	US32D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Hardware	SEE NOTE BELOW		OT

NOTE: EXISTING DOOR - BALANCE OF EXISTING HARDWARE TO REMAIN AND BE REUSED.

NOTE: CONFIRM EXISTING EXIT DEVICE TYPE WITH ARCHITECT AND PROVIDE DEVICE TO MATCH EXISTING DOOR PREP. PROVIDE REQUIRED ACCESSORIES FOR EXIT FUNCTION AND SECURITY.

Set: 24.0

2	Exit Device	80 SERIES x FUNCTION & TRIM TO MATCH EXISTING	US32D	SA
1	Hardware	SEE NOTE BELOW		OT

NOTE: EXISTING DOOR - BALANCE OF EXISTING HARDWARE TO REMAIN AND BE REUSED.

NOTE: CONFIRM EXISTING EXIT DEVICE TYPE WITH ARCHITECT AND PROVIDE DEVICE TO MATCH EXISTING DOOR PREP.

Set: 25.0

1	Passage Latch	10X/8200 SERIES AS REQUIRED x L LEVER	US26D	SA
1	Hardware	SEE NOTE BELOW		OT

NOTE: EXISTING DOOR - BALANCE OF EXISTING HARDWARE TO REMAIN AND BE REUSED.

NOTE: CONFIRM EXISTING LOCKSET TYPE WITH ARCHITECT AND PROVIDE LOCKSET TO MATCH EXISTING DOOR PREP.

Set: 26.0

1	Privacy Lock	10X/8200 SERIES AS REQUIRED x L LEVER	US26D	SA
1	Hardware	SEE NOTE BELOW		OT

NOTE: EXISTING DOOR - BALANCE OF EXISTING HARDWARE TO REMAIN AND BE REUSED.

NOTE: CONFIRM EXISTING LOCKSET TYPE WITH ARCHITECT AND PROVIDE LOCKSET TO MATCH EXISTING DOOR PREP.

Set: 27.0

1	Office Lock	10X/8200 SERIES AS REQUIRED x L LEVER	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Hardware	SEE NOTE BELOW		OT

NOTE: EXISTING DOOR - BALANCE OF EXISTING HARDWARE TO REMAIN AND BE REUSED.

NOTE: CONFIRM EXISTING LOCKSET TYPE WITH ARCHITECT AND PROVIDE LOCKSET TO MATCH EXISTING DOOR PREP.

Set: 28.0

1	Classroom Lock	10X/8200 SERIES AS REQUIRED x L LEVER	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Hardware	SEE NOTE BELOW		OT

NOTE: EXISTING DOOR - BALANCE OF EXISTING HARDWARE TO REMAIN AND BE REUSED.

NOTE: CONFIRM EXISTING LOCKSET TYPE WITH ARCHITECT AND PROVIDE LOCKSET TO MATCH EXISTING DOOR PREP.

Set: 29.0

1	Storeroom Lock	10X/8200 SERIES AS REQUIRED x L LEVER	US26D	SA
1	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Hardware	SEE NOTE BELOW		OT

NOTE: EXISTING DOOR - BALANCE OF EXISTING HARDWARE TO REMAIN AND BE REUSED.

NOTE: CONFIRM EXISTING LOCKSET TYPE WITH ARCHITECT AND PROVIDE LOCKSET TO MATCH EXISTING DOOR PREP.

Set: 30.0

1	Classroom Intruder Lock	10X/8200 SERIES AS REQUIRED x L LEVER	US26D	SA
2	Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
1	Hardware	SEE NOTE BELOW		OT

NOTE: EXISTING DOOR - BALANCE OF EXISTING HARDWARE TO REMAIN AND BE REUSED.

NOTE: CONFIRM EXISTING LOCKSET TYPE WITH ARCHITECT AND PROVIDE LOCKSET TO MATCH EXISTING DOOR PREP.

Set: 31.0

1	Hospital Latch	6830 SERIES	US26D	AH
1	Hardware	SEE NOTE BELOW		OT

NOTE: EXISTING DOOR - BALANCE OF EXISTING HARDWARE TO REMAIN AND BE REUSED.

Set: 32.0

1	Push Plate	70F	US32D	RO
1	Pull Plate	BF 111x70C	US32D	RO
1	Hardware	SEE NOTE BELOW		OT

NOTE: EXISTING DOOR - BALANCE OF EXISTING HARDWARE TO REMAIN AND BE REUSED.

NOTE: REPLACE EXISTING CYLINDER WHERE REQUIRED TO WORK WITH EXISTING DEADBOLT OR LOCK.

Set: 33.0

1	Hardware	SEE NOTE BELOW		OT

NOTE: EXISTING OVERHEAD DOOR - ALL EXISTING HARDWARE TO REMAIN AND BE RESUED.

Set: 34.0

Cylinder	SARGENT KEY SYSTEM AS REQUIRED	US32D	SA
Hardware	SEE NOTE BELOW		OT

NOTE: EXISTING DOOR - BALANCE OF EXISTING HARDWARE TO REMAIN AND BE REUSED.

END OF SECTION 087100

SECTION 08 81 00 – GLASS GLAZING AND GLASS FILM

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes glazing for the following products and applications:
   1. Windows.
   2. Doors.

1.2 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: 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. Glass Design: Glass thicknesses indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites for various size openings in nominal thicknesses indicated, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:
   1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:
      a. Specified Design Wind Loads: As indicated on drawings or if not indicated as required by local code.
      b. Probability of Breakage for Vertical Glazing: 8 lites per 1000 for lites set vertically or not more than 15 degrees off vertical and under wind action.
         1) Load Duration: 60 seconds or less.
      c. Minimum Glass Thickness for Exterior Lites: Not less than 6 mm (1/4”).

C. Thermal Movements: Provide glazing that allows for thermal movements resulting from a maximum change (range) of 120 deg F, 180 deg F in ambient and surface temperatures, respectively, 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.

D. 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 mm thick.

   2. For insulating-glass units, properties are based on units with lites 6 mm (1/4”) thick and a nominal 1/2-inch- wide interspace.
   3. Center-of-Glass U-Values: NFRC 100 methodology using LBNL Window 6.3 computer program, expressed as Btu/ sq. ft. x h x deg F.
   4. Center-of-Glass Solar Heat Gain Coefficient: NFRC 200 methodology using LBNL Window 6.3 computer program.
   5. Solar Optical Properties: NFRC 300.

1.3 SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. Samples: 12-inch- square, for each type of glass product indicated, other than monolithic clear float glass.

C. Glazing Schedule: List glazing types and locations.

D. Sealant compatibility and adhesion test reports.

1.4 QUALITY ASSURANCE

A. Sealant Compatibility and Adhesion Testing: Use sealant manufacturer's standard test methods to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.

B. Fire-Rated Assemblies: Where glazing products are used in fire-rated assemblies, comply with requirements of specific assembly specified in other sections of these Specifications.

1. Door Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252.
2. Window Assemblies: Complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 257.

C. Safety Glass: Category II materials complying with testing requirements in 16 CFR 1201 and ANSI Z97.1.

A. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

B. Fire-Protection-Rated Glazing Labeling: Permanently mark fire-protection-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, test standard, whether glazing is for use in fire doors or other openings, whether or not glazing passes hose-stream test, whether or not glazing has a temperature rise rating of 450 deg F (250 deg C), and the fire-resistance rating in minutes.

D. Glazing Publications: Comply with recommendations of the following, unless more stringent requirements are indicated.
1. GANA Publications: "Glazing Manual" and "Laminated Glass Design Guide."
2. SIGMA Publications: SIGMA TM-3000, "Vertical Glazing Guidelines."

E. Insulating-Glass Certification Program: Permanently marked with certification label of one of the following: Insulating Glass Certification Council, Associated Laboratories, Inc National Accreditation and Management Institute.

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form, made out to Owner and signed by manufacturer, in which manufacturer agrees to furnish replacements for units that deteriorate from normal use by developing defects attributable to the manufacturing process, f.o.b. the nearest shipping point to Project site, within warranty period.
   1. Coated Glass:
      a. Defects: Peeling, cracking, and other indications of degradation of metallic coating.
      b. Warranty Period: 10 years from date of Substantial Completion.
   2. Insulating Glass:
      a. Deterioration: Failure of hermetic seal resulting in obstruction of vision by dust, moisture, or film on interior surfaces of glass.
      b. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MONOLITHIC FLOAT GLASS MATERIALS

A. **Uncoated Clear Float Glass**: ASTM C 1036, Type I (transparent glass, flat), Quality q3 (glazing select). Where glass designated below, indicated on drawings, or required by building codes, provide Type I (transparent glass, flat), Class 1 (clear) glass lites complying with the following:
   1. Uncoated Clear Annealed Float Glass: Annealed or Kind HS (heat strengthened), Condition A (uncoated surfaces) where heat strengthening is required to resist thermal stresses induced by differential shading of individual glass lites and to comply with performance requirements.
   2. Uncoated Clear Heat-Strengthened Float Glass: Kind HS (heat strengthened).
      a. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed, unless otherwise indicated.
   3. Uncoated Clear Fully Tempered Float Glass: Kind FT (fully tempered).

B. **Coated Clear Float Glass**: Provide coated glass complying with requirements designated below, indicated on drawings, or required by building code. Provide Kind HS (heat-strengthened) coated float glass in place of coated annealed glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in "Performance Requirements" Article. Provide Kind FT (fully tempered) where safety glass is indicated.
   1. Coated Clear Annealed Float Glass: Annealed or Kind HS (heat strengthened), Condition C (other coated glass) where heat strengthening is required to resist thermal stresses induced by differential shading of individual glass lites and to comply with system performance requirements.
   2. Coated Clear Heat-Strengthened Float Glass: Condition C (other coated glass), Kind HS (heat strengthened).
   3. Coated Clear Fully Tempered Float Glass M: Condition C (other coated glass), Kind FT (fully tempered).

2.2 INSULATING GLASS UNITS

A. General: Insulating-Glass Units: Pre-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190 and complying with requirements designated below, indicated on Drawings, or required by building code.
   1. Provide Kind HS (heat-strengthened) float glass in place of annealed glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to

comply with glass design requirements specified in "Performance Requirements" Article. Provide Kind FT (fully tempered) where safety glass is indicated or required by code.

2. Sealing System: Dual seal with manufacturers standard primary and secondary sealants.
3. Spacer: Manufacturer's standard.
4. Corner Construction: Manufacturer's standard.
5. Overall Unit Thickness and Thickness of Each Lite: 25 mm (1”) and 6 mm (1/4”) Dimensions indicated are nominal and the overall thicknesses of units are measured perpendicularly from outer surfaces of glass lites at unit's edge.
6. Interspace Content: Air.

B. **Low-E Clear Insulating Glass**: to be used in all exterior storefront windows, and doors.

1. Provide glass complying with requirements designated below, indicated on drawings, or required by building code. Provide Kind HS (heat-strengthened) float glass in place of annealed glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in "Performance Requirements" Article. Provide Kind FT (fully tempered) where safety glass is indicated or required by code.
2. Interspace Content: Air
3. Indoor Lite: Float glass, Class 1 (clear), Annealed, Kind HS (heat strengthened), Condition C (other coated glass), Kind FT (fully tempered), Condition C (other coated glass), Kind HS (heat strengthened), Condition A (uncoated surfaces), Kind FT (fully tempered) Condition A (uncoated surfaces).
4. Outdoor Lite: Float glass, Class 1 (clear, heat absorbing, and light reducing), Annealed, Kind HS (heat strengthened), Condition A (uncoated surfaces), Kind HS (heat strengthened), Condition C (other coated glass), Kind FT (fully tempered), Condition A (uncoated surfaces), Kind FT (fully tempered) Condition C (other coated glass).
5. Low-Emissivity Coating: Coating on second surface.
6. Winter Nighttime U-Value: Maximum value of .28 unless otherwise noted
7. Summer Daytime U-Value: Maximum value of .26-.27 unless otherwise noted
8. Visible Light Transmission: 67% Minimum
9. SHGC: .28
10. Shading Coefficient: .30-.32
11. Outdoor Visible Light Reflectance: 13%
12. Basis of Design: Vitro Solarban 72 Acuity/Acuity

2.3 OTHER GLASS TYPES

A. **Laminated Glass**: Comply with ASTM C 1172 for kinds of laminated glass indicated and other requirements specified.

1. Interlayer: Polyvinyl butyral sheet or cured resin, clear or in colors, and of thickness indicated with a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after laminating glass lites and installation.

B. **Fire Rated Glazing**: Laminated Ceramic Glazing Material: Proprietary product in the form of two lites of clear ceramic glazing material laminated together to produce a laminated lite of 5/16-inch nominal thickness; polished on both surfaces; weighing 4 lb/sq. ft; and as follows:

1. Fire-Protection Rating: As indicated for assembly in which glazing material is installed, and permanently labeled by a testing and inspecting agency acceptable to authorities having jurisdiction.
2. Polished on both surfaces, transparent.
3. Product: "FireLite Plus" manufactured by Nippon Electric Glass Co., Ltd. and distributed by Technical Glass Products or approved substitute.

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. Colors of Exposed Sealants: As selected by Architect from manufacturer's standard colors.

B. Elastomeric Glazing Sealants: ASTM C 920, Type S (single component), Grade NS (nonsag), Class 25, Use NT (nontraffic), M, G, A, and, as applicable to glazing substrates indicated, O.
   1. Glazing Sealant for Fire-Resistive Glazing Products: Sealant used in test assembly to obtain fire-protection rating.
   2. Low-Modulus Nonacid-Curing Silicone: With additional movement capability of 50 percent movement in extension and 50 percent movement in compression when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719.
   3. Medium-Modulus Neutral-Curing Silicone: With additional movement capability of 50 percent movement in extension and 50 percent movement in compression when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719.

C. Glazing Sealant for Fire-Resistive Glazing Products: Identical to product used in test assembly to obtain fire-protection rating.

2.5 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tape: Preformed, butyl-based elastomeric tape with a solids content of 100 percent with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated and complying with ASTM C 1281 and AAMA 800 for products indicated below:
   1. AAMA 804.3 tape, where indicated.
   2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
   3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tape: Closed-cell, PVC foam tape; 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.

2.6 GLAZING GASKETS

A. Compression Gaskets: Molded or extruded gaskets of type and material indicated below and of profile and hardness required to maintain watertight seal:
   1. Neoprene or EPDM dense compression gaskets complying with ASTM C 846.
   2. Silicone dense compression gaskets complying with ASTM C 1115.
   3. Neoprene, EPDM, or Silicone soft compression gaskets complying with ASTM C 509, Type II, black.

2.7 GLASS FILM

A. See drawings for locations and dimensions.

B. Translucent cast vinyl .09 mm applied glass film as indicated on the drawings. Pattern/style to be selected by Architect as “Frosted” or as selected from the manufacturer’s full range.

C. Adhesive: Solvent acrylic; pressure-sensitive tape. 17N/25 mm. FTM 1:180 degree peel, substrate: glass; cond: 24 h 23 degree C/50%RH.

2.8 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions with a Shore A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Perimeter Insulation for Fire-Resistive Glazing: Identical to product used in test assembly to obtain fire-resistance rating.

2.9 FABRICATION OF GLASS AND OTHER GLAZING PRODUCTS

A. Fabricate glass and other glazing products 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 standard, to comply with system performance requirements.

PART 3 - EXECUTION

3.1 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.
   1. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
   2. Protect glass edges from damage during handling and installation. Remove glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance from Project site and legally dispose of off Project site.

3. Apply primers to joint surfaces where required for adhesion of sealants, as determined by sealant compatibility and adhesion testing.
4. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
5. Provide spacers for glass lites where the length plus width is larger than 50 inches unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances.

B. Protection:
1. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface.
2. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter.

C. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged, including natural causes, accidents, and vandalism, during construction period.

END OF SECTION 08 81 00

Division 09 - Finishes

SECTION 09 21 16 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Interior gypsum wallboard.
   2. Exterior gypsum sheathing board.
   3. Exterior soffit board
   4. Tile backing panels.
   5. Non-load-bearing steel framing.
   6. Weather-resistant sheathing paper.

1.2 SUBMITTALS

A. Product Data: For each product indicated.

1.3 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: For gypsum board assemblies with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 STEEL FRAMING

A. Steel Framing, General: Comply with ASTM C 754 for conditions indicated.
   1. Steel Sheet Components: Metal complying with ASTM C 645 requirements.
      a. Protective Coating:
         1) Interior Applications: ASTM A 653, G40, hot-dip galvanized zinc corrosion-resistant coating.
         2) Exterior Applications: ASTM A 653/A 653M, G60, hot-dip galvanized zinc corrosion-resistant coating.

B. Suspended Ceiling and Soffit Framing:
   1. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch diameter wire, or double strand of 0.0475-inch diameter wire.
   2. Hanger Attachments to Concrete if required:
      a. Powder-Actuated Fasteners: Suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other devices for attaching hangers of type indicated, and capable of sustaining, without failure, a load equal to 10 times that imposed by construction as determined by testing according to ASTM E 1190 by a qualified independent testing agency.

3. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.162-inch diameter.
4. Carrying Channels: Cold-rolled, commercial-steel sheet with a base metal thickness of 0.0538 inch, a minimum 1/2-inch- wide flange, and in depth indicated.
5. Furring Channels (Furring Members):
    a. Cold Rolled Channels: 0.0538-inch bare steel thickness, with minimum 1/2-inch-wide flange, 3/4 inch deep.
    b. Steel Studs: ASTM C 645, in depth indicated.
        1) Minimum Base Metal Thickness: 0.0179 inch
    c. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch deep, unless indicated otherwise.
        1) Minimum Base Metal Thickness: 0.0179 inch
    d. Resilient Furring Channels: As noted on drawings, 1/2-inch-deep members designed to reduce sound transmission, and asymmetrical with single leg.

C. Grid Suspension System for Interior Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.
1. Products:
    a. Armstrong World Industries, Inc.; Furring Systems/Drywall.
    b. Chicago Metallic Corporation; Drywall Furring System.
    c. USG Interiors, Inc.; Drywall Suspension System.

D. Partition and Soffit Framing: All thicknesses are minimums; verify if drawings call for specific gauge.
1. Steel Studs and Runners: ASTM C 645, in depth indicated.
    a. Minimum Base Metal Thickness: 0.0200 mil.
2. Deflection Design Options:
    a. Steel sheet top runner manufactured to prevent cracking of gypsum board applied to interior partitions resulting from deflection of structure above; in thickness indicated for studs and in width to accommodate depth of studs. Refer to manufacturer’s recommendations for use in axial load-bearing stud conditions or above continuous window spandrels.
        1) Deep-Leg Deflection Track: ASTM C 645 top runner with 2-inch deep flanges. Requires U-Channels and angles installed continuously throughout the uppermost punch-outs to align the studs vertically within the plane of the wall.
        2) Slotted Deflection Track: ASTM C 645 Top runner with 2 1/2” deep flanges with vertical slots.
3. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
    a. Minimum Base Metal Thickness: 0.0179 inch.
4. Cold-Rolled Channel Bridging: 0.0538-inch bare steel thickness, with minimum 1/2-inch-wide flange, and in depth indicated.
    a. Clip Angle: 1-1/2 by 1-1/2 inch, 0.068-inch-thick, galvanized steel.
5. Hat-Shaped, Rigid Furring Channels: ASTM C 645, in depth indicated.
    a. Minimum Base Metal Thickness: 0.0179 inch
6. Resilient Furring Channels: 1/2-inch-deep, steel sheet members designed to reduce sound transmission. Asymmetrical or hat shaped, with face attached to single flange by a slotted leg (web) or attached to two flanges by slotted or expanded metal legs.
7. Cold-Rolled Furring Channels: 0.0538-inch bare steel thickness, with minimum 1/2-inch-wide flange, and in depth indicated.
    a. Furring Brackets: Adjustable, corrugated-edge type of steel sheet with minimum bare steel thickness of 0.0312 inch.

b. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch-diameter wire, or double strand of 0.0475-inch diameter wire.

8. Z-Shaped Furring: With slotted or non-slotted web, face flange of 1-1/4 inches, wall attachment flange of 7/8 inch, minimum bare metal thickness of 0.0179 inch, and depth are required to fit insulation thickness indicated.
9. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power and other properties required to fasten steel members to substrates.

2.2 PANEL PRODUCTS

A. Panel Size, General: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.

B. Gypsum Wallboard: ASTM C 1396.
1. Regular Type: In thickness indicated and with long edges tapered and featured (rounded or beveled).
2. Type X: In thickness indicated and with long edges tapered and featured (rounded or beveled).

C. Flexible Gypsum Wallboard: ASTM C 1396, manufactured to bend to fit tight radii and to be more flexible than standard regular-type panels of the same thickness, 1/4 inch thick, and with long edges tapered. Apply in double layer at curved assemblies.

D. Abuse-Resistant Gypsum Wallboard: ASTM C 1396, manufactured to produce greater resistance to surface indentation and through-penetration per ASTM C1629 than standard gypsum panels, with core type and in thickness indicated, and with long edges tapered.
1. Products:
a. National Gypsum Company; Gold Bond Hi-Abuse Wallboard.
b. United States Gypsum Co.; SHEETROCK Brand Abuse-Resistant Gypsum Panels.
c. American Gypsum Company, M-Bloc AR with mold and moisture resistance.

E. Exterior Gypsum Sheathing Panels for Walls, Parapets, Ceilings and Soffits:
1. Exterior Glass-Mat Gypsum Soffit and Ceiling Board: ASTM C 1396/C 1396M and C 1177/C 1177M, with core type and in thickness indicated and with manufacturer's standard edges.
a. Product: G-P Gypsum Corp; Dens-Armor Plus. Install manufacturer’s recommended taping system over joints.
2. Glass-Mat Gypsum Sheathing Board (exterior walls): ASTM C 1177/C 1177M, with core type and in thickness indicated.
a. Products:
1) G-P Gypsum Corp; Dens-Glass Gold. Install manufacturer’s recommended taping system over joints.
2) CertainTeed Gypsum; GlasRoc high-performance sheathing. Install manufacturer’s recommended taping system over joints.
3) United States Gypsum Co.; SECUROCK Glass-mat sheathing. Install manufacturer’s recommended taping system over joints.
4) American Gypsum Company, M-Glass Exterior Sheathing. Install manufacturer’s recommended taping system over joints.
3. Glass-Mat Gypsum Sheathing Board (roof side of parapets): ASTM C 1177/C 1177M, with core type and in thickness indicated.
a. Product: G-P Gypsum Corp; Dens-Deck Roof Board.
b. United States Gypsum Co.; SECUROCK Glass-Mat Roof Board.

F. Tile Backing Panels:
1. Water-Resistant Gypsum Backing Board: ASTM C 630/C 630M, with core type and in thickness indicated.
2. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with core type and in thickness indicated.
a. Product: G-P Gypsum Corp.; Dens-Shield Tile Backer.
b. Product: CertainTeed Gypsum; DiamondBack Tile Backer.
c. Or approved equal.

2.3 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.
1. Corner bead: Use at outside corners.
2. Bullnose Bead: Use at outside corners.
3. LC-Bead: Use at exposed panel edges.
4. L-Bead: Use where indicated.
5. U-Bead: Use where indicated.
6. Expansion (Control) Joint: Use as noted below and where indicated on drawings.
a. Ceilings
1) Install control joints in areas exceeding 2500 sq. ft. (232 sq. m).
2) Space control joints not more than 50 feet (15.2 m) o.c.
3) Install control joints where ceiling framing or furring changes direction.
b. Partitions and Furring
1) Install control joints in partitions and wall furring runs exceeding 30 feet.
2) Space control joints not more than 30 feet o.c.
3) Install control joints in furred assemblies where control joints occur in base exterior wall
7. Curved-Edge Corner bead: With notched or flexible flanges; use at curved openings.

B. Exterior Trim: ASTM C 1047, hot-dip galvanized steel sheet or rolled zinc.
1. Corner bead: Use at outside corners.
2. LC-Bead: Use at exposed panel edges.
3. Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening. Use as noted below and where indicated on drawings.
a. Ceilings
1) Install control joints in areas exceeding 2500 sq. ft. (232 sq. m).
2) Space control joints not more than 50 feet (15.2 m) o.c.
3) Install control joints where ceiling framing or furring changes direction.

C. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.
1. Products:
a. Fry Reglet Corp.; As indicated by designation on Drawings
b. Gordon, Inc.; As indicated by designation on Drawings
c. MM Systems Corporation; As indicated by designation on Drawings
d. Pittcon Industries; As indicated by designation on Drawings
2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221, alloy 6063-T5.
3. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified

2.4 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475.

B. Joint Tape:
1. Interior Gypsum Wallboard: Paper.
2. Glass-Mat Gypsum Soffit Board: As recommended by panel manufacturer.
3. Glass-Mat Gypsum Sheathing Board: As recommended by panel manufacturer.
4. Tile Backing Panels: As recommended by panel manufacturer.

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, flanges of trim accessories, and fasteners, use setting-type taping compound.
   a. Use setting-type compound for installing paper-faced metal trim accessories.
3. Fill Coat: For second coat, use setting-type, sandable topping compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.
5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound**.**

D. Joint Compound for Exterior Applications:
1. Glass-Mat Gypsum Soffit Board: As recommended by manufacturer.
2. Glass-Mat Gypsum Sheathing Board: As recommended by manufacturer.

E. Joint Compound for Tile Backing Panels:
1. Water-Resistant Gypsum Backing Board: Use setting-type taping and setting-type, sandable topping compounds.
2. Glass-Mat, Water-Resistant Backing Panel: As recommended by manufacturer.
3. Cementitious Backer Units: As recommended by manufacturer.

2.5 WEATHER-RESISTANT SHEATHING PAPER

A. Building Wrap: ASTM E 1677, Type I air retarder; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E 84; UV stabilized; and acceptable to authorities having jurisdiction.
1. Subject to compliance with requirements, provide the following product as a basis-of-design product or a comparable product of equal quality.
2. Product:
   a. DuPont (E. I. du Pont de Nemours and Company); Tyvek Commercial Wrap.

2.6 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining, latex sealant complying with ASTM C 834 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
1. Products:
   a. Pecora Corp.; AC-20 FTR Acoustical and Insulation Sealant.

b. United States Gypsum Co.; SHEETROCK Acoustical Sealant.

C. Acoustical Sealant for Concealed Joints: Nondrying, non-hardening, non-skinning, non-staining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission.
1. Products:
a. Ohio Sealants, Inc.; Pro-Series SC-170 Rubber Base Sound Sealant.
b. Pecora Corp.; BA-98.
c. Tremco, Inc.; Tremco Acoustical Sealant.

D. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

E. Sill Seal at Exterior Walls:
1. Sill Seal: Provide flexible polyethylene foam gasketing strip between concrete foundation and sill plate. Strip shall be .25” x 5.5” for 6” metal stud walls. Provide “Weathmate Sill Seal” by Dow Building Solutions or equal.

F. Sound Attenuation Blankets: Refer to Division 07 Section “Blanket Insulation”.

G. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

PART 3 - EXECUTION

3.1 NON-LOAD-BEARING STEEL FRAMING INSTALLATION

A. General: Comply with ASTM C 754, and ASTM C 840 requirements that apply to framing installation.

B. Suspended Ceiling and Soffit Framing:
1. Suspend ceiling hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
3. Attach hangers to structural members. Do not support ceilings from or attach hangers to permanent metal forms, steel deck tabs, steel roof decks, ducts, pipes, or conduit.
4. Screw furring to framing.
5. Wire-tie or clip furring channels to supports, as required to comply with requirements for assemblies indicated.
6. Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

C. Partition and Soffit Framing:
1. Where studs are installed directly against exterior walls, install isolation strip between studs and wall.
2. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
3. Frame door openings to comply with GA-600 and with gypsum board manufacturer's applicable written recommendations, unless otherwise indicated. Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
   a. Install two studs at each jamb, unless otherwise indicated.
4. Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.

D. Z-Furring Members: Erect insulation vertically and hold in place with Z-furring members.
1. Until gypsum board is installed, hold insulation in place with 10-inch staples fabricated from 0.0625-inch diameter, tie wire and inserted through slot in web of member.

3.2 PANEL PRODUCT INSTALLATION

A. Gypsum Board: Comply with ASTM C 840 and GA-216.
1. Space fasteners in panels that are tile substrates a maximum of 8 inches on center.
2. On ceilings, apply gypsum panels before wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
3. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
   a. Stagger abutting end joints not less than one framing member in alternate courses of board.
   b. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.
4. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
5. Single-Layer Fastening Methods: Apply gypsum panels to supports with steel drill screws.
6. Multilayer Fastening Methods: Fasten base layers; and face layers separately to supports with screws; fasten face layers with adhesive and supplementary fasteners; or, as required to comply with requirements for fire-resistance-rated assemblies indicated.
7. Laminating to Substrate: Comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

B. Exterior Ceilings and Soffits: Apply exterior gypsum panels perpendicular to supports, with end joints staggered and located over supports.
1. Fasten with corrosion-resistant screws.

C. Tile Backing Panels:
1. Water-Resistant Gypsum Backing Board: Install with 1/4-inch gap where panels abut other construction or penetrations.

2. Glass-Mat, Water-Resistant Backing Panel: Install with 1/4-inch gap where panels abut other construction or penetrations.
3. Cementitious Backer Unit Application: ANSI A108.11.

3.3 WEATHER-RESISTANT SHEATHING PAPER INSTALLATION

A. General: Cover sheathing with weather-resistant sheathing paper as follows:

1. Cut back barrier 1/2 inch on each side of the break in supporting members at expansion- or control-joint locations.
2. Apply barrier to cover vertical flashing with a minimum 4-inch overlap, unless otherwise indicated.

B. Building Wrap: Comply with manufacturer's written instructions.

1. Seal seams, edges, fasteners, and penetrations with tape.
2. Extend into jambs of openings and seal corners with tape.

3.4 FINISHING

A. Installing Trim Accessories: 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. Finishing Gypsum Board Panels: 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.
1. Prefill open joints, rounded or beveled edges, and damaged surface areas.
2. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
3. Glass-Mat Gypsum Sheathing Board: Finish according to manufacturer's written instructions for use as exposed soffit board.
4. Glass-Mat, Water-Resistant Backing Panels: Finish according to manufacturer's written instructions.

C. Cementitious Backer Units: Finish according to manufacturer's written instructions.

D. Label all rated walls above ceilings or below raised access floors using verbiage, lettering, size, color and spacing as required by code and AHJ.

E. Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C 840 and GA 214, for locations indicated:
1. Level 1: Embed tape at joints in ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire-resistance-rated assemblies and sound-rated assemblies.
2. Level 2: Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges where panels are substrate for tile and where indicated.
3. Level 4: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges of all panel surfaces that will be exposed to view, unless Level 5 finish is otherwise indicated.
4. Level 5: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges and apply a final skim coat over the entire surface of

panels that will be exposed to view. Use Level 5 for gypsum panel surfaces to be finished with gloss, semi-gloss or enamel paint unless otherwise indicated.

END OF SECTION 09 21 16

SECTION 09 30 00 - TILING

PART 1 - GENERAL

1.01 SUMMARY:

A. Provide all of the labor, materials, equipment and services to furnish and install the tile and accessories as indicated on the Drawings and as specified herein.

B. This section includes the following:

1. Quarry tile
2. Glazed tile
3. Porcelain tile
4. Stone thresholds.
5. Waterproof membrane.
6. Crack-isolation membrane.
7. Tile backing panels.
8. Metal edge/transition.

1.02 DEFINITIONS

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."

C. Module Size: Actual tile size (minor facial dimension as measured per ASTM C 499) plus joint width indicated.

D. Face Size: Actual tile size, (minor facial dimension as measured per ASTM C 499) excluding spacer lugs.

1.03 PERFORMANCE REQUIREMENTS

A. Dynamic Coefficient of Friction: For tile installed on walkway, surfaces, provid products that meet the requirements of ANSI A137.1-2012 testing method, the DCOF Acu Test.

1. Minimum DCOF: 0.42 for level interior spaces expected to be walked upon when wet.

1.04 PRE-INSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.05 QUALITY ASSURANCE:

A. In addition to complying with all pertinent codes and regulations, comply with the following:

1. "Handbook for Ceramic Tile Installation" (latest edition) as published by the Tile Council of America, Inc., TCNA.
2. "American National Standard Specifications for Ceramic Tile “ (ANSI 108 Series of tile installation and in ANSI 137.1 and A137.3-latest edition).

3. ANSI Specifications: American National Standard Specification for Installation of Ceramic Tile. Reference number is at specific installation area.

B. **Tile contractor, by commencing the work of this section, assumes overall responsibility to assure that all assemblies, components and parts shown or required within the work of this section comply with contract documents and are compatible with each other and with the conditions and expected use.**

C. Pre-Installation Meeting: Prior to tile installation, conduct a pre-installation project meeting. Contractor, Subcontractor, Material Suppliers, Manufacturer representative, Architect and Owner Representative shall be notified of the meeting.

D. Source Limitations for Tile: Obtain all tile and Setting and Grouting Material from one source.

E. Source Limitations for Setting and Grouting Material: obtain ingredients of a uniform quality for each mortar, adhesive and grout component from a single manufacturer and each aggregate from one source.

F. Source Limitations for other Products: Obtain each of the following products specified in this section through one source from a single manufacturer. If manufacturer has products in multiple categories, then that manufacturer must be used for all.
1. Stone Thresholds
2. Waterproofing
3. Joint Sealants or Movement Joint Profiles
4. Metal edge strip
5. Uncoupling or Anti-Fracture Membrane

G. Installer Qualification: Engage an installer that has a minimum of five years' commercial experience with tile installations similar in material, design and scope to that indicated.

1.06 SUBMITTALS:

A. Prior to installation, submit to the Architect for review the following:
1. Physical samples:
a. Tile and tile accessory pieces: Submit two (2) samples of each type and color specified.
b. Grout.
c. Metal edge strips in 6-inch lengths.
2. Master Grade Certificate, signed by an officer of the firm manufacturing the tile used, and issued when the shipment is made, stating the grade, kind of tile, identification marks for tile containers, and the name and location of the Project.

B. Maintenance and operation manual: Submit tile manufacturer's maintenance guides for Owner's use in maintaining all tile herein specified.

C. Shop Drawings: Show location of each type of tile and tile pattern. Show widths, details and locations of expansion, contraction, control and isolation joints in tile substrates and finished tile surfaces.

D. Product Data: For each product indicated.

E. Qualification Data: For firms and persons specified in “Quality Assurance” article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, plus other information specified.

1.07 PRODUCT HANDLING:

A. Deliver all materials of this Section to the job site in their original unopened containers with all labels intact and legible at time of use.

1.08 EXTRA MATERIALS:

A. Deliver extra materials to Site. Furnish extra materials described below that match products installed, and are packaged with protective covering for storage, and are identified with labels describing contents, name of project and the project’s address.

1. Tile and Trim Units: Furnish 1 box of full size units for each type, composition, color, pattern, and size indicated.
2. This material shall not be available to the Contractor for replacement goods within the Contractor’s General Warranty period for the Work.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
1. Basis-of-Design Product: The design for each tile type is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product aesthetically closely matching, as well as matching listed performance characteristics of another name or unnamed manufacturer.

2.02 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.
1. Provide tile complying with Standard grade requirements, unless otherwise indicated.
2. For facial dimensions of tile, comply with requirements relating to tile sizes specified in Part 1 "Definitions" Article.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI Standards referenced in "Setting and Grouting Materials" Article.

C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:
1. As selected by Architect from manufacturer's full range.

D. Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, blend tile in factory and package so tile units taken from one package

show same range in colors as those taken from other packages and match approved Samples.

E. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer, unless otherwise indicated.
1. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

F. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.03 FLOOR TILE PRODUCTS

A. Manufacturers:
1. Florida Tile Inc.
2. Crossville Ceramics Company, L.P.
3. Dal tile; Div. of Dal-Tile International Inc.
4. StonePeaks Ceramics

B. TYPICAL FLOOR TILE – "**PT-1**" & "**B-2**" UNGLAZED PORCELAIN TILE:
1. **PT-1 Basis-of-Design:** Florida Tile; Canal Street, product # FTICST4012X24, color Spanish Clay.
2. **B-2 Basis-of-Design:** Florida Tile; Canal Street, product # FTICST4012X24, color Spanish Clay. Size: Cut PT-1 to 6" x 12" Joined with Schluter Dilex-AHK to floor tile topped with Schluter Schiene.
3. **Grout: GR-1** Laticrete Spectralock Pro Premium – High performance Epoxy, #24 Natural Grey.
4. **Composition:** U.S. manufacturer, unglazed color body, rectified porcelain tile. Impervious body, tile with 1/2% absorption. 40% pre-consumer recycle content.
5. **Size: PT-1**: 12" X 24" (large format tile), **B-2**: 6" X 24" (Cut PT-1) with Schluter Dilex-AHK and topped with Schluter schiene
6. **Thickness:** 9 mm
7. **Face:** Natural
8. **DFOC:** Not less than 0.42
9. **Breaking Strength:** 450 lbf. Avg.
10. **Installation Pattern:** Running Bond 1/3 Offset.
11. **Installation:** TCNA F125 Full Spread and ANSI A108.1B for LFT/LHT Medium Bed.

2.04 WALL TILE PRODUCTS

E. WALL TILE – "**WT-1**" GLAZED PORCELAIN WALL TILE:
1. **WT-1 Basis-of-Design:** Florida Tile; Time 2.0, product # FTIT22B112X24, color White Natural, size: 12" x 24".
2. **TR-5 Basis-of-Design:** Schluter; DILEX-AHK, color anodized aluminum. Cove floor to wall tile. See detail 01/A700.
3. **Grout: GR-2** Laticrete Spectralock Pro Premium – High performance Epoxy, #17 Marble Beige.

4. **Composition:** U.S. manufacturer, high definition glazed color body porcelain tile, with Microban. Impervious body, tile with .5% absorption. 40% pre-consumer recycle content.
5. **Size: WT-1**: 12" X 24".
6. **Thickness**: 10 mm
7. **Face:** Surface Hardness 7 Mohs
8. **DFOC:** Not less than 0.42
9. **Breaking Strength:** 510 lbf. Avg.
11. **Installation Pattern:** Horizontal Stacked Bond.
12. **Installation:** TCNA W202I for LFT/LHT Medium Bed Plus – no sag.

2.05 TILE ACCESSORIES & TRIM:

A. Tile Trim: Size, color and shade to match selected tile as required.
1. Wainscot cap: Bull nose, except provide regular glazed flat tile where tile wall surface is flush with finished wall surface above.
2. Inner corners: Square.
3. Outer corners: Bull nose.
4. Jambs: Bull nose where tile work projects from jamb.
5. Cove base: Flat-top cove base with inside and outside corners where appropriate/specified or TR-1 Basis-of-Design: Schluter: DILEX-AHK, color; anodized aluminum, cove floor to wall tile as listed. See detail 01/A700
6. Installation Type: TCNA Method W223 thinset. Adhesive as recommended by manufacturer.

B. METAL FINISHING AND EDGE PROTECTION PROFILE FOR WALLS
1. TR-1: Schluter: DILEX-AHK, color; anodized aluminum, cove floor to wall tile as listed. See detail 01/A700.
2. TR-2: Schluter; Jolly; anodized aluminum; L-shaped profile sized accordingly, to cap vertical wall tile portion, concealing the cut / factory finish edge including grout joint spacer.
3. TR-3: Schluter; Reno-U; anodized aluminum; Edge-Protection profile for abutting tile to lower transitions.
4. TR-7: Schluter; Schiene color; anodized aluminum: L-shaped floor tile profile sized accordingly, to protect / cushion outside edge of tile.

2.06 TILE BACKING PANELS:

A. Cementitious Backer Units: ANSI A118.9 or ASTM C 1325, Type A, in maximum lengths available to minimize end to end butt joints.
1. Thickness: 5/8"

2.07 CRACK ISOLATION MEMBRANE / UNCOUPLING MEMBRANE:

A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.10/ANSI A118.12 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer. Provide 125 full spread on grade slab and F128 on 2nd floor and above and all full coverage applications.

B. F125 Full Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.

1. Basis-of-Design Products: Subject to compliance with requirements, provide "Mapelastic CI" crack-isolation membrane as manufactured by Mapei Corporation or comparable product offered by one of the following:
   A. Custom Building Products.; "RedGard Waterproofing and Crack Prevention Membrane."
   B. Laticrete International, Inc.; "Hydro Ban."

C. UNCOUPLING MEMBRANE

1. F 113A: Uncoupling Membrane: Basis of Design: Schluter Systems L.P, Ditra, DitraXL or Ditra Duo.
   Uncoupling Membrane: Description:1/8 inch (3 mm) thick, orange, high-density polyethylene membrane with a grid structure of 1/2 inch by 1/2 inch (12 mm by 12 mm) square cavities, each cut back in a dovetail configuration, and a polypropylene anchoring fleece laminated to its underside. Conforms to definition for uncoupling membranes in the Tile Council of North America Handbook for Ceramic Tile Installation and is listed by cUPC to meet or exceed the requirements of the "American national standard specifications for load bearing, bonded, waterproof membranes for thin-set ceramic tile and dimension stone installation A118.10 and is listed by cUPC, and is evaluated by ICC-ES (see Report No. ESR-2467).
2. Waterproofing seaming membrane:
   a. Provide Seams and Corners material 0.004 inch (0.1 mm) thick, orange polyethylene membrane, with polypropylene fleece laminated on both sides.

2.08 WATERPROOFING MEMBRANES (SHOWER AREAS)

A. General: Manufacturer's standard product, selected from the following, which complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Sheet Applied Waterproofing Membrane
Description: 0.008 inch (0.2 mm) thick, orange polyethylene membrane, with polypropylene fleece laminated on both sides, which is listed by cUPC to meet or exceed requirements of the "American national standard specifications for load bearing, bonded, waterproof membranes for thin-set ceramic tile and dimension stone installation A118.10 and is listed by cUPC, and is evaluated by ICC-ES (see Report No. ESR-2467).

1. Product: Schluter Systems L.P; Kerdi.

C. Bonding Adhesive: Type recommended by sheet membrane manufacturer to suit application

2. Basis of Design: Schluter Systems L.P: Schluter- ALL SET Modified Thin Set Mortar

D. Seam Sealant: Type recommended by sheet membrane manufacturer

2.09 INSTALLATION TYPE - SETTING BED:

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Bonsal American, an Oldcastle company.
2. Laticrete International, Inc.
3. MAPEI Corporation.

B. Latex-Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.

1. Cleavage Membrane: Asphalt felt, ASTM D 226/d 226M, Type I (No. 15): or polyethylene sheeting, ASTM D 4397, 4.0 mils thick.
2. Reinforcing Wire Fabric: Galvanized, welded-wire fabric, 2 by 2 inches by 0.062-inch diameter; comply with ASTM A 185/A 185M and ASTM A 82/A 82M, except for minimum wire size.
3. Latex Additive: Manufacturer's standard water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed.

C. High-Performance Latex-Portland Cement Mortar (Thinset): ANSI A118.15.

1. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
2. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.15.

D. High-Performance Medium-Bed, Latex-Portland Cement Mortar: Comply with requirements in ANSI A118.15. Provide product that is approved by manufacturer for application thickness of 3/4 inch.

1. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.

E. Water-Cleanable, Tile-Setting Epoxy: ANSI A118.3.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Custom Building Products; CEG Lite.
b. Laticrete International Inc.; SpectraLock Pro Premium.
c. MAPEI Corporation; Kerapoxy.

2. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F, respectively, and certified by manufacturer for intended use.

2.10 GROUT:

A. A. High-Performance Tile Grout: ANSI A118.7.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Custom Building Products; Prism.
   b. Laticrete International Inc.; Perm color Select.
   c. MAPEI Corporation; Ultra color Plus.

2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.
3. Color: As selected by Architect from manufacturer’s full range.

B. Water-Cleanable Epoxy Grout: ANSI A118.3.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Custom Building Products; CEG Lite.
b. Laticrete International, Inc.; Spectralock Pro Premium.
c. MAPEI Corporation; Kerapoxy.

2. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F, respectively, and certified by manufacturer for intended use.

2.11 THRESHOLD & TRANSITIONS:

A. Marble: White or Black Carrara, polished exposed surface; Marble threshold shall be 2" wide and of a thickness appropriate for thin-set application

B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications, stainless steel; ASTM A 666, 300 Series exposed-edge material.
1. Description: Basis of Design: Schluter Systems L-shaped profile with 1/8 inch (3.2 mm) wide visible surface integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
2. Description: Basis of Design: Schluter Systems profile with sloped exposed surface, 1/4 inch (6 mm) deep channel below exposed surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
3. Description: Basis of Design: Schluter Systems profile with sloped exposed surface, 5/32 inch (4 mm) tall leading edge, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.

2.12 MOVEMENT JOINTS AND COVE-SHAPED PROFILES

A. Description: Basis of Design: Schluter Systems L.P: “DILEX”
profile with integrated aluminum, trapezoid-perforated anchoring legs, connected by grip bars to a 1/4 inch (6 mm) wide soft PVC movement zone, which together form the visible surface.

B. Description: Basis of Design: Schluter Systems L.P: “DILEX”
profile with integrated trapezoid-perforated anchoring legs, connected by a 7/16 inch (11 mm) wide replaceable thermoplastic rubber movement zone, which together form the visible surface.

2.13 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided by manufacturer of tile-setting materials for installations indicated.

B. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; half-hard brass or white zinc alloy exposed-edge material as selected by Architect.

C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

D. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

1. Products shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

E. Joint Sealant: Silicone, S, NS, 25, T, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, Shore A hardness not less than 35, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Uses T and NT.

2.14 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.

2. Verify substrates comply with the flatness tolerances required by ANSI A108.01 and the following:

a. Tile with no edge larger than 15 inches; 1/4-inch in 10 feet.
b. Large Format Tile (15 inches or more on a side): 1/8 inch in 10 feet.

3. Verify that concrete substrates for tile floors installed with thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
   a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
   b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
4. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.

5. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.

C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.03 CERAMIC TILE INSTALLATION

A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
   a. Tile floors in wet areas.
   b. Tile floors in laundries.
   c. Tile floors consisting of tiles 8 by 8 inches or larger.
   d. Tile floors consisting of rib-backed tiles.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

E. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.

F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

   a. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
   b. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.

c. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.

G. Joint Widths: Unless otherwise indicated, install tile with the joint widths the narrowest joint recommended in writing by tile manufacturer.

H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them and of equal or greater widths.
2. Where tilework abuts restraining surfaces such as perimeter walls, curbs, columns, and ceilings.
3. Where there is a change in substrate material.
4. Interior Tilework: 20 to 25 feet in each direction.
5. Above ground concrete substrates: 8 to 12 feet in each direction.
6. Interior tilework exposed to direct sunlight: 8 to 12 feet in each direction.
7. Interior tilework exposed to moisture: 8 to 12 feet in each direction.

J. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-portland cement mortar (thinset).
2. Do not extend cleavage membrane waterproofing or crack isolation membrane under thresholds set in latex-portland cement mortar. Fill joints between such thresholds and adjoining tile set on cleavage membrane waterproofing or crack isolation membrane with elastomeric sealant.

K. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated, and at locations indicated.

L. Floor Sealer: Apply floor sealer to cementitious grout joints in tile floors according to floor-sealer manufacturer's written instructions. As soon as floor sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.04 TILE BACKING PANEL INSTALLATION

A. Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

3.05 WATERPROOFING INSTALLATION

A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.

1. In all Toilet Rooms, Shower Rooms and Locker Rooms, cover entire floor with waterproofing/anti-fracture membrane and fabric reinforcement, extend waterproofing/anti-fracture membrane and fabric reinforcement up all walls a minimum of 4 inches. Waterproof all pipe and drain penetrations through membrane.

a. At showers, including changing area, install waterproofing/anti-fracture membrane and fabric reinforcement full height on walls under ceramic tile and lap over

waterproof/anti-fracture membrane at base.

1. Install fabric reinforcing according to manufacturer’s instructions.

b. At all pipe and drain penetrations through waterproofing/anti-fracture membrane comply with the following:

1. Install fabric reinforcing according to manufacturer’s instructions.
2. Extend waterproofing/anti-fracture membrane and fabric reinforcement into flange of floor drains.
3. Extend waterproofing anti-fracture membrane and fabric reinforcement into pipe and conduit penetrations through waterproofing.

B. Do not install tile over waterproofing/anti-fracture membrane until waterproofing/antifrcature has cured and been tested to determine that it is watertight.

3.06 CRACK ISOLATION MEMBRANE INSTALLATION

A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

B. Allow crack isolation membrane to cure before installing tile or setting materials over it.

C. Fabric-Reinforced, Modified-Bituminous Sheet: Use where required to bridge existing cracks and to relocate crack control joints to coordinate with nearest tile grout joint: Install in accordance with manufacturer's instructions. Clean and prime concrete surface and allow primer to dry. Set self-adhering sheet in place, remove release sheet, and roll sheet to ensure full contact with substrate.

3.07 ADJUSTING AND CLEANING

A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.

B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove grout residue from tile as soon as possible.
2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.08 PROTECTION

A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

1. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.09 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor recessed minimum 2 inches and as required for slopes:

1. Ceramic Tile Installation PT-?: TCNA F121 with F112 bonded wire-reinforced mortar bed; water-cleanable, tile-setting epoxy on fluid-applied waterproofing membrane over cured cement mortar bed bonded to concrete subfloor on ground.
   a. Ceramic Tile Type: Unglazed quarry tile and base.
   b. Grout: Industrial grade, chemical resistant, water-cleanable epoxy grout ANSI 108.6. and ANSI 118.5.
   c. Application: Food service areas with slope to drain, including adjacent toilet room. Extend waterproofing membrane to drain flanges and flashed up perimeter walls and in-field interruptions including columns, chases, and wing walls to form watertight installation.

2. Ceramic Tile Installation PT-?: TCNA F122; thinset mortar on full waterproofing membrane.
   a. Ceramic Tile Type: Unglazed quarry tile and base.
   b. Thinset Mortar: Latex- portland cement mortar.
   c. Grout: Industrial grade, chemical resistant, water-cleanable epoxy grout ANSI 108.6. and ANSI 118.5.
   d. Fluid-applied waterproofing membrane.
   e. Application: Food service areas without slope to drain, including adjacent toilet room. Extend waterproofing membrane to drain flanges and flashed up perimeter walls and in-field interruptions including columns, chases, and wing walls to form watertight installation.

3. Ceramic Tile Installation PT-?: TCNA F121 with F112 bonded wire-reinforced mortar bed; fluid-applied waterproofing membrane over cured cement mortar bed bonded to concrete subfloor on ground.
   a. Ceramic Tile Type: Unglazed porcelain pavers.
   b. Bond Coat for Cured-Bed Method: Medium-bed latex- portland cement mortar.
   c. Grout: Water-cleanable epoxy grout ANSI 108.6.
   d. Fluid-applied waterproofing membrane.
   e. Application: Toilet rooms on slab on ground with slope to drain. Extend waterproofing membrane to drain flanges and flashed up perimeter walls and in-field interruptions including columns, chases, and wing walls to form watertight installation.

4. Ceramic Tile Installation PT-?: TCNA F122; medium-bed mortar on full waterproofing membrane.
   a. Ceramic Tile Type: Unglazed porcelain pavers.
   b. Mortar: Medium-bed, latex- portland cement mortar.
   c. Grout: Water-cleanable epoxy grout ANSI 108.6.
   d. Fluid-applied waterproofing membrane.
   e. Application: Toilet rooms on above-ground slab without slope to drain. Extend waterproofing membrane to drain flanges and flashed up perimeter walls and in-field interruptions including columns, chases, and wing walls to form watertight installation.

5. Ceramic Tile Installation PT-?: TCNA F125-Full; medium-bed mortar on full crack isolation membrane.
   a. Ceramic Tile Type: Unglazed porcelain pavers.
   b. Thinset Mortar: Medium-bed, latex- portland cement mortar.
   c. Fluid-applied crack isolation membrane.
   d. Grout: High-performance sanded grout.
   e. Application: Dry areas.

B. Interior Wall Installations, Masonry or Concrete:

1. Ceramic Tile Installation PT-?: TCNA W202; thinset mortar.
   a. Ceramic Tile Type: Glazed wall tile.
   b. Thinset Mortar: Latex- portland cement mortar.
   c. Grout: Water-cleanable epoxy grout.

C. Interior Wall Installations, Metal Studs or Furring:

1. Ceramic Tile Installation PT-?: TCNA W244C or TCNA W244F; thinset mortar on cementitious backer units.
   a. Ceramic Tile Type: Glazed wall tile.
   b. Thinset Mortar: Latex- portland cement mortar.
   c. Grout: Water-cleanable epoxy grout.

D. Shower Receptor and Wall Installations:

1. Ceramic Tile Installation PT-?: TCNA B421; thinset mortar on waterproof membrane over solid backing.
   a. Ceramic Tile Type: Glazed wall tile.
   b. Ceramic Tile Type: Porcelain tile at receptor floor.
   c. Thinset Mortar: Latex-portland cement mortar.
   d. Grout: Water-cleanable epoxy grout.

END OF SECTION 09 30 00

SECTION 09 51 00 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.1 SCOPE:

The work covered by this section consists of furnishing all labor and materials for the complete installation of acoustical tile ceilings.

1.2 QUALITY ASSURANCE:

A. In addition to complying with all pertinent codes and regulations, comply with all pertinent recommendations published by the Ceilings and Interior Systems Contracting Association and the requirements of ASTM C636 (latest edition).

B. Seismic Loads: Design and size components to withstand seismic loads in accordance with the local governing building code, for the seismic design category as indicated on the structural drawings.

C. Single source manufacturer providing 30-year system warranty.

1.3 SUBMITTALS:

A. Prior to installation, submit the following to the Architect for review:

1. Submit manufacturer's project specifications and installation instructions for each type of acoustical panel and suspension system required, including certified laboratory test reports and other data necessary to show compliance with these specifications.
2. Include manufacturer's recommendations for cleaning and refinishing acoustical panels, including precautions against materials and methods which may be detrimental to finishes and acoustical performances.
3. Shop drawings, showing layout of each type of ceiling system in relation to surrounding structure, mechanical work (which shall include, but not be limited to, duct work and piping), lighting and electrical work, and any other pertinent fixtures and equipment. Drawings shall also show location of accessible panels. The reproduction of Architect's Drawings as the basis of these shop drawings will not be acceptable.
4. Physical Samples: Furnish one sample of each type of ceiling board or tile and exposed grid in finish and pattern specified.

1.4 JOB CONDITIONS:

A. Do not install interior acoustical panel ceilings until space enclosed and weatherproof, and until work above ceilings completed, and unit ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

1.5 EXTRA MATERIALS

A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Ceiling Panels: 2 unopened boxes for each type indicated.

B. This material shall not be available to the contractor for replacement goods within the building warranty period.

PART 2 - PRODUCTS

2.1 ACOUSTICAL CEILING:

A. Ceiling panel:

1. ACT-1:
   Class A, mineral fiber, 2'x 2' x 5/8" white acoustical ceiling tile, Square Lay-in edge with 15/16" white grid. NRC 50+, CAC 33+, Sag/Humidity Resistance & Mold/Mildew Resistance, 30-year warranty.
   a. Armstrong; Dune Square Lay-in, Item No. 1850
   b. USG: Astro Firecode Acoustical Panel, Square Edge, #8122
   c. CertainTeed; Sand Micro Tegular, Item No. SHM-157

2. ACT-2; 2'x2' acoustical ceiling for back of house areas with square edge and 15/16" white grid.
   a. Armstrong: Clean Room V L, Unperforated No. 868, Square edge lay-in (White), 24" x 24" x 5/8"
   b. USG Radar: "Clean Room" with Clima Plus No. 56099, Square edge lay-in (White), 24" x 24" x 5/8" New Line
   c. CertainTeed "Vinyl Shield A" No. 1102-CRF-1, (White), 24" x 24" x 5/8"

B. Suspension System:

1. Exposed grid suspension system designed to accommodate ceiling board.
2. Suspension system shall conform to ASTM C635 (latest edition) and installation shall be in accordance with ASTM C636 (latest edition).
3. The suspension system shall support the ceiling panels with a maximum deflection of 1/360 of span. Exposed finish shall be white unless otherwise noted. The system shall include, but not be limited to, the following:
   a. Material:
      1) Components shall be formed from commercial quality cold-rolled steel electrogalvanized.
      2) High Use Kitchen Application ACT-3: Components shall be formed from commercial quality cold-rolled steel electrogalvanized with aluminum cap. (Specify for use in commercial kitchens only)
   b. Main Tee: Double web design; with cross tee holes at 6" o.c.; with hanger wire holes at 2" o.c.; with an integral reversible splice.
      1) 15/16" exposed face for non-rated assemblies.
      2) 15/16" exposed face Fire Guard for rated assemblies.
   c. Cross Tee: Double web design; with web extended to form a positive interlock between cross tee webs through intersecting tee web holes; with the lower flange extended and offset to provide a flush level intersection.
   d. Wall molding of a channel or angle shape with an exposed face.

2.2 OTHER MATERIALS:

A. All other materials, not specifically described but required for a complete and proper installation of the suspended acoustical ceiling, shall be as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS:

A. Prior to all work of this Section, carefully inspect the installed work of all other Trades and verify that all such work is complete to the point where this installation may properly commence.

B. Verify that suspended acoustical ceiling may be installed in accordance with the original design, all codes and regulations, the manufacturer's current recommendations and the approved submittals.

C. In the event of discrepancy, immediately notify the Architect.

D. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 COORDINATION WITH MECHANICAL AND ELECTRICAL:

A. Coordinate with the requirements of other Trades. Use all means necessary to interface with adjacent materials.

B. Where recessed lighting fixtures are installed in suspension system, consult with the fixture manufacturer prior to preparation of shop drawings so that the work of this Section shall be installed ready to receive the lighting fixtures. Modify the suspension system members adjacent to fixture locations as approved by the Architect and to the extent necessary to accommodate the fixtures.

C. In the event lighting fixtures or air distribution or return air equipment other than those specified should be substituted under their respective Sections and/or Drawings and should the substituted fixtures require more extensive modifications, the Contractor shall make such required additional modifications and any additional cost shall be paid by the Contractor.

D. Where wide or deep air conditioning ducts above suspended acoustical ceilings interfere with suspension hangers, provide independent framing below the duct work to support the ceiling as an obligation under this Section. Framing shall meet the approval of the Architect. Framing shall be supported from floor or roof structure above and shall in no case be attached to the duct work, piping or conduit.

3.3 SUSPENDED CEILING INSTALLATION:

A. Comply with ASTM C 636 as applicable to acoustical panel ceilings, except to extent more stringent requirements indicated or required for compliance with governing regulations or fire resistance ratings.

B. Suspend ceiling hangers from building structural members only, and only as indicated.

1. Secure to structure, including intermediate framing members, by attaching to metal clips

designed for type of member involved, or where possible, by looping and wire-tying directly to members.

C. Space hangers not more than 4'-0" o.c. along each member supported directly from hangers, unless otherwise shown, and provide hanger not more than 6" from ends of each member.

D. For the support of light fixtures, the fixture load shall be supported by supplemental hangers within 6" of each corner, or the fixture shall be supported separately.

3.4 MOLDINGS:

A. Cope exposed flanges of intersecting members so that flange faces will be flush.

B. Install edge moldings of type indicated at edges of each acoustical panel ceiling area, and at locations where edge of panel would otherwise be exposed after completion of work.

C. Secure moldings to building construction by fastening through holes drilled in vertical leg. Space holes not more than 3" from each end and not more than 16" o.c. Draw-up fasteners for tight set against vertical surfaces.

D. Miter corners of moldings accurately to provide hairline joints.

E. Level moldings with ceiling suspension system, to level tolerance of 1/8" in 12'-0".

3.5 ACOUSTICAL PANEL INSTALLATION:

A. Plan each layout to balance border widths at opposite edges of each ceiling area. Avoid use of less-than-half width units wherever possible. Comply with Architect's reflected ceiling plans to greatest extent possible.

B. Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members.

C. Scribe and cut panels for accurate fit at borders and at interruptions and penetrations by other work through ceilings.

3.6 CLEANING AND PROTECTION:

A. Clean exposed surfaces of acoustical panels and of trim, edge moldings, and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

B. Institute required protection for acoustical panel ceilings, including temperature and humidity limitations and dust control, so that work will be without damage and deterioration at time of substantial completion.

END OF SECTION 09 51 00

SECTION 09 65 13 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Thermoplastic-rubber base.
   2. Rubber stair accessories.
   3. Homogeneous Composition of Polyvinyl Chloride (PVC) molding accessories.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified.

PART 2 - PRODUCTS

2.1 THERMOPLASTIC-RUBBER BASE – B-1

A. Subject to compliance of all specifications in this section.
   Acceptable manufacturers:
   1. Tarkett / Johnsonite
   2. Mannington
   3. Allstate Rubber

B. Product Standard: ASTM F1861, Type TP thermoplastic.

   1. Basis of Design: Tarkett / Johnsonite.
   2. Style; see A700 Room Finish Schedule for location:
      a. “B-1”- Cove base.
         1. 0.125 thick.
         2. 4” High
         3. Minimum length: full coil length
         4. Inside corners: Score back for a tight to wall (no gap) install or a tight miter acceptable.
         5. Outside corners: Score back for a tight to wall (no gap) install. Snipped cove is acceptable if required.
   3. Colors: As indicated by manufacturer's designations and listed on A700 Finish Legend.
   4. Provide “Color Rite” (or equal manufacturer) matching caulk if needed to finish and create acceptable final presentation of all trims.

2.2 RUBBER MOLDING ACCESSORY

A. Acceptable manufacturers:
   1. Roppe Corporation
   2. VIP Corporation
   3. Tarkett / Johnsonite

B. **TR-4**; Description, Shaw (Basis of Design) Micro-Transitions, ¼" carpet to 1/8" material.
   1. Profile, Color and Dimensions: As indicated on finish legend A700.
   2. Locations: As indicated on Finish Plans A700's.

C. **TR-5**; Description, Tarkett/ Johnsonite (Basis of Design) Reducer, 1/8" materials to Subfloor.
   1. Profile, Color and Dimensions: As indicated on finish legend A700.
   2. Locations: As indicated on finish plans A700's.

D. **TR-6**; Description, Tarkett/ Johnsonite (Basis of Design) Reducer, 1/8" materials to 5/16" materials.
   1. Profile, Color and Dimensions: As indicated on finish legend A700.
   2. Locations: As indicated on finish plans A700's.

E. **TR-8**; Description, Tarkett/ Johnsonite (Basis of Design) Wheeled Traffic Transition, 1/4" materials to Subfloor.
   1. Profile, Color and Dimensions: As indicated on finish legend A700.
   2. Locations: As indicated on finish plans A700's.

F. **TR-9**; Description, Tarkett/ Johnsonite (Basis of Design) Edge Guard Transition, 5/16" materials to Subfloor.
   1. Profile, Color and Dimensions: As indicated on finish legend A700.
   2. Locations: As indicated on finish plans A700's

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

C. Stair-Tread Nose Filler: Two-part epoxy compound recommended by resilient stair-tread manufacturer to fill nosing substrates that do not conform to tread contours.

D. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient stair-tread manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates for Resilient Stair Accessories: Prepare horizontal surfaces according to ASTM F710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing.
4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. for each area, 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 in 24 hours.
    b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install resilient products until materials are the same temperature as space where they are to be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.2 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Job-Formed Corners:

1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 8’-0” in length.

a. Form without producing discoloration (whitening) at bends.

2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 8’-0” in length.

a. Miter or cope corners to minimize open joints.

3.3 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

B. Resilient Stair Accessories:

1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
2. Tightly adhere to substrates throughout length of each piece.
3. For treads installed as separate, equal-length units, install to produce a flush joint between units.

C. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Floor Polish: Remove soil, adhesive, and blemishes from resilient stair treads before applying liquid floor polish.

1. Apply three coat(s).

C. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 09 65 13

SECTION 09 65 21 – QUARTZ VINYL TILE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. quartz vinyl floor tile.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.

C. Samples: Full-size units of each color and pattern of floor tile required.

D. Maintenance data.

E. Provide attic stock for each color and type of product installed from the same run/dye lots in the amount of 2 extra boxes of each color or type. Materials should be packaged with protective covering for storage and identified with labels describing contents. This material shall not be available to the contractor for replacement goods within the building warranty period.

1.3 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.4 PROJECT CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer in spaces to receive floor tile.

B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer.

C. Close spaces to traffic during floor tile installation.

D. Close spaces to traffic for 48 hours after floor tile installation.

E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 QUARTZ VINYL FLOOR TILE

A. Basis of Design Product: Subject to compliance with requirements, provide Upofloor, Quartz composite tile made from PVC, plasticizer and stabilized compounded with quartz sand, calcium carbonate and pigments. Plasticizers are biobased phthalate free plasticizer. Surface treatment of urethane.

B. Acceptable manufacturers:
   1. Altro, EASTERN USA: 80 Industrial Way, Wilmington, MA 01887 Toll-free: 800.377.5597 Fax: 610 746 4325 www.altro.com.
   2. Or approved equal.

C. Basis of Design:
   1. (QTZF-1 & QTZF-2) Manfacturer: Kahrs, Upfloor, Style: Mosaic collection, Colors: reference A700 Interior Finish Legend.

D. Properties:
   1. Tile Standard: ASTM F1066.
   2. Fire resistance: Flammability exceed minimum for Class 1 rating per ASTM E648. Through-pattern tile.
   3. Wearing Surface: Smooth.
   4. Thickness: 0.08” inch (2.0 mm).
   5. Chemical Resistance: Altro Quartz Tile is virtually unaffected by surface water and most chemicals which do not have a solvent action on vinyl. Certain chemicals can cause staining, and acids and dyes can affect the color, which should be selected accordingly.
   6. Flexibility: Meets requirements of ASTM F1066.
   7. Indentation Resistance: Meets indentation resistance requirements of ASTM F1066.
   8. Static Load Limit: Tile has been tested to 3000 psi (12410 Kpa) in accordance with ASTM F970.
   9. Size: 12 by 12 inches, 12 by 24 inches, 24 by 24 inches.
   10. Colors and Patterns: As selected by Architect from full range of industry colors.

E. INSTALLATION MATERIALS
   1. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.
   2. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.
   3. Adhesives, High Moisture: Water-resistant high-moisture type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.
   4. Use adhesives approved by tile flooring manufacturer for installation on floor slabs with up to 7 lb. of vapor pressure, relative humidity of up to 85 percent,.

F. Acceptable Products: Subject to requirements, provide adhesives acceptable to flooring manufacturer, which may include one of the following:

   a. Kahrs Upofloor, Mapei Ultrabond ECO V4SP, Mapei Ultrabond ECO VS 90 Plus, Ardex AF 145, Ardex AF 180.

B. Altro, Ecofix 20- Hard set for heavy rolling loads.

C. Approved equal.

G. Floor Polish: Do not polish. Refer to Division 01 Section "Progress and Final Cleaning."

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
4. Moisture Testing: Perform tests recommended by floor covering manufacturer. Proceed with installation only after substrates pass testing.

    a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have the maximum moisture-vapor-emission rate recommended by the manufacturer.
    b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have reached the maximum relative humidity level measurement recommended by the manufacturer.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install floor tiles until they are same temperature as space where they are to be installed.

1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.2 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

1. Lay tiles in pattern indicated.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

1. Lay tiles in pattern of colors and sizes indicated.

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, non-staining marking device.

G. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.3 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing resilient product installation:
1. Remove adhesive and blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.

B. Comply with manufacturer's written instructions for cleaning and protection of floor tile.
1. Maintain floor by using appropriate manufacturer’s recommendation of **[polish] [no polish spray-buffing]**.

C. Cover floor tile until Substantial Completion.

D. Newly installed flooring should not be exposed to rolling load traffic for at least 72 hours after installation to allow setting and drying of the adhesive.

END OF SECTION 09 65 21

SECTION 09 65 66 - RESILIENT ATHLETIC FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 & Division 03 Concrete Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Adhered sheet vinyl flooring.

B. Related Sections include the following:
   1. Division 09 Section "Resilient Tile Flooring" for wall base and accessories installed with athletic flooring.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show installation details including layout, colors, widths, and dimensions of game lines locations of athletic equipment floor inserts.

C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors and patterns available for flooring. Include charts showing colors and glosses of game-line and marker paint.

D. Samples for Verification: For each type, color, and pattern of flooring indicated, 8” x 11” samples of same thickness and material indicated for the Work. Include sample sets showing game-line and marker paint colors applied to flooring.

E. Maintenance Data: For each type of flooring indicated to include in maintenance manuals specified in Division 01.

1.4 QUALITY ASSURANCE

A. Sheet Vinyl Installer Qualifications: An experienced installer who has completed sheet vinyl athletic flooring installations with welded seams similar in material, design, and extent to that indicated for this Project, who is acceptable to manufacturer, and whose work has resulted in installations with a record of successful in-service performance.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storing.

B. Store materials to prevent deterioration. Store rolls upright.

C. Move products into spaces where they will be installed at least 48 hours before installation, unless longer conditioning period is recommended in writing by manufacturer. Do not install products until they are at the same temperature as the space where they are to be installed.

1.6 PROJECT CONDITIONS

A. Install products after other finishing operations, including painting, are completed.

B. Adhesively Applied Products: As follows:
1. Maintain a temperature of not less than 70 deg F or more than 95 deg F in installation spaces for at least 48 hours before installation, during installation, and for at least 48 hours after installation, unless manufacturer's written recommendations specify longer time periods. After post installation period, maintain a temperature of not less than 55 deg F or more than 95 deg F.
2. Close spaces to traffic during flooring installation and for time period after installation recommended in writing by manufacturer.
3. Do not install products over concrete slabs until slabs have cured and are dry enough to bond with adhesive, as determined by flooring manufacturer's recommended bond and moisture test. (no more than 4 lbs as determined by the calcium chloride test.)

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Furnish not less than 10 linear feet in roll form for each 500 linear feet or fraction thereof, of each type, color, and pattern of sheet flooring installed.
2. Deliver extra materials to Owner.

PART 2 - PRODUCTS

2.1 SHEET VINYL ATHLETIC FLOORING (VS-1)

A. Products: Subject to compliance with requirements, provide one of the following:
1. Matsinc. Woodflex
2. Gerflor Taraflex Sport M Plus (Basis of Design)
3. Gerbert Limited Rexcourt G-6000

B. Materials and Construction: Smooth-surface flooring, complying with ASTM F 1303, Type I (minimum binder content of 90 percent) requirements, with Class B (nonfoamed plastic) or Class C (foamed plastic) backing.

C. Backing: Foam with fiberglass interlayer.

D. Applied Finish: Field-applied polyurethane.

E. Roll Size: Not less than 48 inches wide by manufacturer's standard length.

F. Overall Thickness: approximately 7.5mm.

G. Seaming Method: Heat welded.

H. Color and Pattern: Light Cherry

I. Game line paint to be selected at time of submittal by architect from non-standard colors.

2.2 SHEET RUBBER ATHLETIC FLOORING (RF-1)

A. Products: Subject to compliance with requirements, provide one of the following:
1. Capri – Fitness & REC (Basis of Design)
2. Amarco – Sport Fleck
3. Kodiak Sports

B. Materials and Construction: Smooth-surface flooring, complying with ASTM F 1303, Type I (minimum binder content of 90 percent) requirements.

C. Roll Size: Not less than 48 inches wide by 50’ length.

D. Overall Thickness: 8mm.

E. Color and Pattern: See A700.

2.3 ACCESSORIES

A. Trowelable Leveling and Patching Compound: Latex-modified, hydraulic-cement-based formulation approved by flooring manufacturer.

B. Adhesives: Water-resistant type recommended by manufacturer for substrate and conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where installation of products will occur, with Installer present, for compliance with manufacturer's requirements. Verify that substrates and conditions are satisfactory for flooring installation and comply with requirements.

B. Concrete Substrates: 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, moisture, and pH tests recommended in writing by flooring manufacturer.
2. Substrate finishes comply with requirements specified in Division 3 Section "Cast-in-Place Concrete" for slabs receiving resilient flooring.
3. Substrates are free of cracks, ridges, depressions, scale, and foreign deposits.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.

B. Remove coatings, including curing compounds, and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

C. Broom and vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 FLOORING INSTALLATION, GENERAL

A. Scribe, cut, and fit flooring to butt neatly and tightly to vertical surfaces, equipment anchors, floor outlets, and other interruptions of floor surface.

B. Extend floor coverings into toe spaces, door reveals, closets, and similar openings, unless otherwise indicated.

C. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating subfloor markings on finish flooring. Use nonpermanent, nonstaining marking device.

D. Adhere products to substrates using a full spread of adhesive applied to substrate to comply with adhesive and flooring manufacturers' written instructions, including those for trowel notching, adhesive mixing, and adhesive open and working times.
   1. Provide completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

E. Mask flooring at game lines and markers, and apply paint to produce sharp edges.

3.4 SHEET FLOORING INSTALLATION

A. Lay out sheet flooring to comply with the following requirements:
   1. Maintain uniformity of flooring direction.
   2. Arrange for a minimum number of seams and place them in inconspicuous and low-traffic areas, and not less than 6 inches from parallel joints in flooring substrates.
   3. Match edges of sheet flooring for color shading and pattern at seams.
   4. Avoid cross and butt seams.

B. Heat-Welded Seams: Rout joints and heat weld with welding bead, permanently fusing sections into a monolithic floor finish. Prepare, weld, and finish seams according to manufacturer's written instructions and ASTM F 1516 to produce surfaces flush with adjoining floor covering surfaces.

3.5 CLEANING AND PROTECTING

A. Perform the following operations immediately after installing flooring products:
   1. Remove adhesive and other surface blemishes using cleaner recommended in writing by flooring manufacturer.
   2. Sweep and vacuum floor thoroughly.
   3. Do not wash floor until after waiting period recommended in writing by flooring manufacturer.
   4. Damp mop floor to remove marks and soil using method and cleaner recommended in writing by flooring manufacturer.

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 in writing by flooring manufacturer.
   1. Do not move heavy or sharp objects directly over floor surfaces. Place plywood or hardboard panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.

END OF SECTION 09 65 66

SECTION 09 67 11 – RESINOUS FLOORING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section specifies epoxy, broadcast quartz epoxy and aliphatic urethane resinous flooring systems.

B. Related Work

1. Division 3 Section Cast-in-place Concrete
2. Division 7 Section Joint Sealers

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, installation instructions, and general recommendations for each resinous flooring material required. Include certification indicating compliance of material with requirements.

B. Samples: Submit, for verification purpose, 4 inch square samples of each type of resinous flooring required, applied to a rigid backing, in color and finish indicated.

C. For initial selection of colors and finishes, submit manufacturer's color charts showing full range of colors and finishes available.

1.04 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain primary resinous flooring materials including primer, resins, hardening agents, finish or sealing coats from a single manufacturing with not less than ten years of successful experience in manufacturing and installing principal. Materials described in this section. Contractor shall have completed at least five projects of similar size and complexity. Provide secondary material only as supplied by manufacturer of primary materials.

B. Manufacturer:

1. 10 years' experience manufacturing components similar to or exceeding requirements of project.

2. Having sufficient capacity to produce and deliver required materials without causing delay in work.
3. Capable of providing field service representation during construction.

C. Installer: Acceptable to the manufacturer, experienced in performing work of this section and has specialized in installation of work similar to that required for this project.

D. Mockups: Apply mockups of each system to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Apply full-thickness of all systems via a mockup on 48-inch by 48-inch floor area selected by Architect. This maybe a job site mock up and/or a movable sample (like a piece of plywood, durock, etc.).

    a. If required - Include 48-inch length of integral cove base as part of the sample.

2. Simulate finished lighting conditions for Architect's review of mockups.
3. Mockups shall be reviewed by all parties and evaluated for the aesthetic look, colors, sheen, texture, slip resistances, etc.
4. Contractor shall provide water for wetting mockup and allow Owner the opportunity to a wet slip test as well as a dry slip test.
5. Provide Owner Acceptance sign off sheet.

E. Pre-Installation Conference

1. General contractor shall arrange a meeting not less than thirty days prior to starting work.
2. Attendance
    a. General Contractor
    b. Architect/Owner’s Representative
    c. Manufacturer/Installer’s Representative

F. ISO 9002: All materials, including primers, resins, curing agents, finish coats, aggregates and sealants are manufactured and tested under an ISO 9002 registered quality system.

1.05 DELIVERY, STORAGE AND HANDLING

A. Material shall be delivered to job site and checked by flooring contractor for completeness and shipping damage prior to job start.

B. All materials used shall be factory pre-weighted and pre-package in single, easy to manage batches to eliminate on site mixing errors. Manufacturer’s information must be printed directly on individual components. “Pasted on” information is not

permitted as it may be indicative of re-packaging by someone other than the original manufacturer. No on site weighing or volumetric measurements allowed.

C. Material shall be stored in a dry, enclosed area protected from exposure to moisture. Temperature of storage area shall be maintained between 60º and 85º F/16º and 30º C.

1.06 PROJECT CONDITIONS

A. New concrete substrate shall be properly cured for a minimum of 30 days. A vapor barrier must be present for concrete subfloor on or below grade. Otherwise, an osmotic pressure resistant grout must be installed prior to the resinous flooring.

B. Prepare slab (existing or new) by shot blasting top finish off as recommended by manufacturer and as required by existing conditions. Manufacturer/Sub-Contractor shall visit site to evaluate existing conditions, prior to bid.

C. Utilities, including electric, water, heat (air temperature between 60º and 85º F/16 and 30º C) and finished lighting to be supplied by General Contractor.

D. Job area to be free of other trades during, and for a period of 24 hours, after floor installation.

E. Protection of finished floor from damage by subsequent trades shall be the responsibility of the General Contractor.

1.07 WARRANTY

A. Contractor installing the resinous flooring and ceramic wall coating shall furnish a single, written warranty covering both material and workmanship for a period of five (5) years from date of Substantial Completion being issued. Yearly site visit required for performance evaluations of installed products during the first five years.

PART II - PRODUCTS

2.01 RESINOUS FLAKE BROADCAST OVER TROWELED EPOXY FLOORING – (EPF-1)

A. Definitions: (Areas –See Finish Schedule A701A & A701B**)** 1/8” thick, multilayer, decorative, stain-resistant surface over a troweled base urethane mortar flooring system with two-component, UV-resistant, aliphatic polyaspartic urethane sealer top coat consisting of:

1. A penetrating, moisture tolerant, 100% reactive solids two-component epoxy primer that exhibits chemical resistance
   a. Primer: Epoxy Vapor Barrier.
      Percent Solids ASTM D3960: 58.
      VOC Content ASTM D3960: 0 percent.
      Bond Strength (ASTM D4541): Substrate failure >450 psi.

2. Two coats of 100% solids impact-resistant epoxy bonding base coat and selected, graded aggregates
   a. Base Coat: Pigmented Epoxy coating that accepts flakes.
      Percent Solids ASTM D3960: 100.
      VOC Content ASTM D3960: 0 percent.
      Compressive Strength (ASTM D645): Not less than 9500 psi.
      Tensile Strength (ASTM D638): Not less than 7700 psi.
      Flexural Strength (ASTM D790): Not less than 4500 psi.
      Shore D Hardness (ASTM D2240): Not less than 83 (7 days).

3. Color & Flakes: As scheduled or as selected by the Architect, reference A700.

4. Middle layer: Colored flakes.
   Percent Solids ASTM D3960: 100.
   VOC Content ASTM D3960: 0 percent.
   Compressive Strength (ASTM D645): Not less than 12,000 psi.
   Tensile Strength (D638): Not less than 7100 psi.
   Abrasion Resistance (ASTM D4060): Not more than 30 mg loss, CS-Wheel, 1 kg load at 1000 cycles.
   Flexural Strength (ASTM D790): Not less than 7500 psi.
   Shore D Hardness (ASTM D2240): Not less than 89 (7 days).

5. Protective Coat:
   a. A two-component, UV-resistanct, Aliphatic polyaspartic urethane sealer.
      Percent Solids ASTM D2369: 75.
      VOC Content ASTM D2369: 0 percent.
      Abrasion Resistance (ASTM D4060): Not more than 17 mg loss, CS-Wheel, 1 kg load at 500 cycles.
      Flexibility ASTM D522: No crack or defects on a 1/8 inch mandrel.
      Adhesion to E100-UV1 (ASTM D4541): Substrate failure >450 psi.
      Water Spot Resistance Watch Glass - 24 hrs. - No water spotting: No water spotting.
      Blush Resistance ASTM 4640 - No amine blush.
      Provide #3 textured finish to prevent slippage.

6. Coefficient of Friction:
    a. Slip resistance is a critical requirement that must be approved in writing by the Owner based on the mock-up. Resinous Flooring shall meet or exceed the following standards.
        1. ADA Flat surfaces: .60
        2. ADA ramps: .80
        3. OSHA: .5
        4. NFPA: .80

B. Mixes:
    1. Mix components in accordance with manufacturer's written instructions.

2.03 JOINT SEALANT MATERIALS

A. Type produced by manufacturer of resinous flooring system for type of service and joint condition indicated.

2.04 MANUFACTURERS

A. Acceptable Manufacturers:

1. Elite Crete Systems – Valparaiso, IN.
2. Terrazzo & Marble Supply Co. - Wheeling, IL
3. Stonehard Inc. – Maple Shade, NJ
4. Sherwin-Williams – Cleveland, OH (Basis of Design)

PART III - EXECUTION

1.01 PREPARATION

A. Substrate: Concrete preparation shall be by mechanical means and include use of a scabbler, scarifier or shot blast machine for removal of bond inhibiting materials such as curing compounds or laitance.

1.02 APPLICATION

A. General: Apply each component of resinous flooring system in compliance with manufacturer's directions to produce a uniform monolithic wearing surface of thickness indicated, uninterrupted except at divider strips, sawn joints or other types of joints (if any), indicated or required.

B. Shot blast existing slabs per manufacturer's recommendations for each installation location and condition.

C. Primer: Mix and apply primer over properly prepared substrate with strict adherence to manufacturer's installation procedures and coverage rates. Coordinate timing of primer application with application of troweled mortar to ensure optimum adhesion between resinous flooring material and substrate.

D. Troweled Mortar: Mix mortar material according to manufacturer's recommended procedures. and coverage rates. Uniformly spread mortar over substrate using manufacturer's specially designed screed box adjusted to manufacturer's recommended height. Hand trowel apply mixed material over freshly primed substrate using stainless steel finishing trowels.

E. Coating: Remove any surface imperfections by lightly abrading and vacuuming the floor surface. Mix, squeegee apply and back roll coating with strict adherence to manufacturer's installation procedures and coverage rates. Install slip resistant material per manufacturer's installation procedures and coverage rates. Install slip resistant material per manufacturer's recommendations.

F. Install all directional and paving marking per manufacturer's recommendations prior to top finish coat.

G. Sealer: Mix polyurethane sealer according to manufacturer's recommended procedures. Roller apply (do not squeegee) with a medium nap roller according to manufacturer's installation procedures and coverage rates.

3.03 FIELD QUALITY CONTROL

A. The right to reserve to invoke the following material testing procedure at any time, and any number of times during period of floor application.

1. Random coring of floor for thickness verification. This must be agreed to in writing by the successful resinous flooring vendor. Applicator is responsible for repairing cored areas as well as any thickness deficiencies.

B. The Owner will engage service of an independent testing laboratory to sample materials being used on the job site. Samples of material will be taken, identified and sealed, and certified in presence of Contractor.

C. Testing laboratory will perform tests for any of characteristics specified, using applicable testing procedures referenced herein, or if none referenced, in manufacturer's product data.

D. If test results show materials being used do not comply with specified, requirements, Contractor may be directed by Owner to stop work; remove non-complying materials;

pay for testing; reapply flooring materials to properly prepared surfaces which had previously been coated with unacceptable materials.

1.03 CURING, PROTECTION AND CLEANING

A. Cure resinous flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 24 hours.

B. Protect resinous flooring materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendation for protective materials and method of application. General Contractor is responsible for protection and cleaning of surfaces after finial coats.

C. Cleaning: Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer.

END OF SECTION 09 67 11

SECTION 09 68 13 - TILE CARPETING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes all of the labor, material, equipment and services to furnish and install carpet tiles.

1.2 SUBMITTALS

A. Product Data: For each product indicated.

B. Shop Drawings: Show the following:

1. Existing flooring materials to be removed.
2. Existing flooring materials to remain.
3. Carpet tile type, color, and dye lot.
4. Pattern of installation.
5. Insets and borders.
6. Edge, transition, and other accessory strips.
7. Transition details to other flooring materials.

C. Samples: For each color and texture required.

1. Carpet Tile: Full-size Sample.
2. Exposed Edge, Transition, and other Accessory Stripping: 12-inch- long Samples.

D. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

E. Maintenance data.

1.3 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. Mockups: Before installing carpet tile, build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution, if requested by Owner or Architect.

1. Approved mockups may become part of the completed Work if undamaged at time of Substantial Completion.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI 104, Section 5, "Storage and Handling."

1.5 PROJECT CONDITIONS

A. Comply with CRI 104, Section 7.2, "Site Conditions; Temperature and Humidity" and Section 7.12, "Ventilation."

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.

1.6 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. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, and delamination.

1. Warranty Period: Lifetime Commercial Limited from date of Substantial Completion.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Carpet: For each type specificed, boxes equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.

B. This material shall not be available to the contractor for replacement goods within the building warranty period.

PART 2 - PRODUCTS

2.1 CARPET TILE

A. Products: Subject to compliance with requirements, provide the following:

1. CPT-1: Shaw Contract

a. Color: 01751 Sepia.
b. Pattern: 5T001 Vibrant Tile.
c. Fiber Content: 100% NYLON

d. Fiber Type: Ecosolution Q100 Nylon
e. Pile Characteristic: Multi-Level Pattern Loop
f. Stitches: **10.0 per inch**
g. Gage: 1/12 in
h. Total Weight: 20 **oz./sq. yd.** for finished carpet tile.
i. Primary Backing/Backcoating; Synthetic
j. Secondary Backing: Ecoworx Tile
k. Size: **24 by 24 inches**
l. Total VOCs: 0.5 mg/sq. mxh
m. 4-PC (4-Phenylcyclohexene): 0.05 mg/sq. m x h.
n. Formaldehyde: 0.05 mg/sq. m x h.
o. Styrene: 0.4 mg/sq. m x h.

2. CPT-2: Shaw Contract

a. Color: 94761 Comprehend.
b. Pattern:5T395 Discussion Tile.
c. Fiber Content: 100% NYLON
d. Fiber Type: Ecosolution Q100 Nylon
e. Pile Characteristic: Multi-Level Pattern Loop
f. Stitches: **9.0 per inch**
g. Gage: 1/12 in
h. Total Weight: 18 **oz./sq. yd.** for finished carpet tile.
i. Primary Backing/Backcoating; Synthetic
j. Secondary Backing: Ecoworx Tile
k. Size: **12 by 48 inches**
l. Total VOCs: 0.5 mg/sq. mxh
m. 4-PC (4-Phenylcyclohexene): 0.05 mg/sq. m x h.
n. Formaldehyde: 0.05 mg/sq. m x h.
o. Styrene: 0.4 mg/sq. m x h.

3. CPT-3: Shaw Contract

a. Color: 50518 Merge.
b. Pattern:5T451 In Common Tile.
c. Fiber Content: 100% NYLON
d. Fiber Type: Ecosolution Q100 Nylon
e. Pile Characteristic: Multi-Level Pattern Loop
f. Stitches: **8.5 per inch**
g. Gage: 1/10 in
h. Total Weight: 22 **oz./sq. yd.** for finished carpet tile.
i. Primary Backing/Backcoating; Synthetic
j. Secondary Backing: Ecoworx Tile
k. Size: **9 by 36 inches**
l. Total VOCs: 0.5 mg/sq. mxh
m. 4-PC (4-Phenylcyclohexene): 0.05 mg/sq. m x h.
n. Formaldehyde: 0.05 mg/sq. m x h.
o. Styrene: 0.4 mg/sq. m x h.

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.

B. 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.

1. VOC Limits: Provide adhesives that comply with the following limits for VOC content when tested according to ASTM D 5116:

a. Total VOCs: 10.00 mg/sq. m x h.
b. Formaldehyde: 0.05 mg/sq. m x h.
c. 2-Ethyl-1-Hexanol: 3.00 mg/sq. m x h.

PART 3 - EXECUTION

3.1 INSTALLATION

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**] [**Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive**] [**Partial glue down; install periodic tiles with releasable, pressure-sensitive adhesive**] [**Free lay; install carpet tiles without adhesive**].

C. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

D. Install pattern: **CPT-1–** Brick Installation; **CPT-2** – Ashlar Installation; **CPT-3** – Stagger Installation.

3.2 CLEAN-UP AND PROTECTION

A. Clean-up: Upon completion of the work, remove all waste, excess materials, tools and equipment from job site. Remove loose threads from carpeted surfaces. Remove adhesives from carpet and other surfaces, which are not scheduled to receive adhesive as they occur.
1. Carefully and thoroughly vacuum clean carpeting with an upright bar type beater, vacuum cleaner.
2. Usable pieces (approx. one sq. yd. and larger) of carpet not required to complete the work, shall be left on the job site and shall be placed in an orderly manner in an area designated by the Architect for the Owner’s use.

B. Repair: Prior to acceptance of installation, carpet, which is damaged, stained, discolored, torn, ripped or otherwise not acceptable, shall be repaired and replaced with new material in an approved manner recommended by the Architect.

C. Protection: Protect installed carpeting from damages by other Contractors and be responsible for installing protective materials over traffic areas and if necessary closing off areas to traffic.

D. Instruction: After the installation is completed, the carpet manufacturer and contractor shall provide representative to instruct the Owner's maintenance personnel in the care, cleaning and maintenance of the installed carpet.

END OF SECTION 09 68 13

SECTION 09 91 00 – PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes surface preparation and field painting of the following:
   1. Exposed exterior items and surfaces.
   2. Exposed interior items and surfaces.
   3. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from a full range of standard colors and finishes available.
   1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and ironwork, and primed metal surfaces of mechanical and electrical equipment.

C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels. Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

D. Related Sections include the following:
   1. Division 02 through 09.
   2. Divisions 22, 23 and 26: Painting of plumbing, mechanical and electrical work is specified in Divisions 22, 23 and 26, respectively.

1.3 DEFINITIONS

A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
   1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
   2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.
   3. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.
   4. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
   5. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.

1.4 SUBMITTALS

A. Product Data: For each paint system specified. Include block fillers and primers.
   1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
   2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use

B. Samples for Initial Selection: Manufacturer's color fan deck showing the full range of colors available for each type of finish-coat material indicated.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

B. Comply with MPI standards for products and paint systems.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.

1.7 PROJECT CONDITIONS

A. Apply paints per Paint Manufacturer’s conditions and instructions.

1.8 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied in the quantities described below. Package paint materials in unopened, factory-sealed containers for storage and identify with labels describing contents. Deliver extra materials to the Owner.
   1. Quantity: Furnish the Owner with an additional 5 percent, but not less than 1 gal. or more than 1 case, as appropriate, of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products in the paint schedules.

B. Manufacturers Names: The following manufacturers are referred to in the paint schedules by use of shortened versions of their names, which are shown in parentheses:
   1. The Sherwin-Williams Co. (SW)
   2. The Pittsburgh Paints Co. (PPC) (PPG)
   3. Benjamin Moore & Co. (Moore)

2.2 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
   1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. Colors: Provide color match selections as scheduled on sheet A700. Use ‘Monochromatic Gray tinted primer’ per manufacturer’s recommendation for base coat of Deep and Ultra Deep colors.

D. Areas to receive accent colors to be designated by Architect. Verify quantity of colors and location using the finish legend, finish plans, room schedule and elevations.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.
   1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
   2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
   1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

3.2 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. Reinstall items when

painting is completed. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.

B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning. Use appropriate cleaners or solvents recommended by the paint and coatings manufacturer.
   1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
   1. Provide barrier or tie coats over incompatible primers or remove and reprime.
   2. Cementitious Materials: Prepare concrete, concrete masonry block, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation. Form release agents on tilt up panels can be removed by recommended cleaners and pressurized water if recommended by manufacturer. Prepare surface per manufacturer’s recommendations.

   3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
      a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

   4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.

   5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods. These can be referred to as Passivator Coatings. Conduct a “Copper Sulfate” or other recommended method to see if Passivator Coatings are present. These MUST be removed to promote proper adhesion of primers and or finish coats.

D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
   1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
   2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using. Mechanically mix (drill mix) ALL dual component products as per manufacturers recommendations.
   3. Use only thinners approved by paint manufacturer and only within recommended limits.

3.3 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
   1. Paint colors, surface treatments, and finishes are indicated in the schedules.
   2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
   3. Provide finish coats that are compatible with primers used.
   4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
   5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
   6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
   7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
   8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
   9. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
   10. Sand lightly between each succeeding enamel or varnish coat.

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
   1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions sand between applications.
   2. Omit primer on metal surfaces that have been shop primed and touchup painted unless a FULL PRIME COAT is specified.
   3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
   4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
   1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
   2. Rollers: Use rollers of Polyester, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
   3. Spray Equipment: Use airless spray equipment with Spray tip orifice size as recommended by the manufacturer for the material and texture required. ONLY use electric spray equipment indoors or in confined areas due to Carbon Monoxide and indoor air quality.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness (DFT) of the entire system as recommended by the manufacturer.

E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and in occupied spaces.

F. Exposed mechanical items to be painted include, but are not limited to, the following:
1. Pipe hangers and supports.
2. Heat exchangers.
3. Tanks that do not have factory-applied final finishes.
4. Ductwork.
5. Insulation.
6. Motors and mechanical equipment
7. Accessory items.

G. Exposed electrical items to be painted include, but are not limited to, the following:
1. Conduit, piping and fittings.
2. Switchgear (Not already pre-finished).
3. Panelboards (Not already pre-finished).

H. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled. Surface must be a minimum of 95% Pinhole free

I. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing. Use gray tinted primer per manufacturer for base coat with saturated interior paint color selections.

J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

K. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
1. Provide satin finish for final coats or otherwise specified.

L. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.

M. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site. Do not dispose of paints and solvents in liquid or solid form on any on site trash containers or dumpsters.

3.5 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.

B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
   1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.6 EXTERIOR PAINT SCHEDULE

A. Concrete, Stucco, and Masonry (Other than Concrete Masonry Units): Provide the following finish systems over exterior concrete, stucco, and brick masonry surfaces:

   1. Flat Acrylic Finish: 2 finish coats over a primer.
      a. Primer: Alkali-resistant, exterior, acrylic-latex primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils.
         1) SW: Loxon Concrete & Masonry Primer/Sealer, LX02W50.
         2) PPC: 4-603 PPC PermaCrete Alkali Resistant Primer Sealer.
         3) Benjamin Moore: Ultra Spec® High-Build Masonry Primer N609.

      b. First and Second Coats: Flat, exterior, acrylic-emulsion paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.4 mils.
         1) SW: A-100® Exterior Latex Flat, A6 Series.
         2) PPC: 6-610XI Series Speedhide Flat Acrylic Latex Exterior Paint.
         3) Benjamin Moore: Ultra Spec® EXT Exterior Acrylic Flat W447.

B. Concrete Masonry Units: (For non-integral colored block) Provide the following finish systems over exterior concrete masonry units:
   1. Flat Acrylic Finish: 2 finish coats over a block filler.
      a. Block Filler: High-performance, latex block filler applied at spreading rate recommended by the manufacturer to achieve a total dry mill thickness of not less than 7.0 mils DFT.
         1) SW: Pro Industrial Heavy Duty Block Filler, B42W150.
         2) PPC: 6-15 XI Speedhide Masonry Latex Hi-Fill Block Filler.
         3) Benjamin Moore: Ultra Spec® Hi-Build Masonry Block Filler 571

      b. First and Second Coats: Flat, exterior, acrylic-emulsion paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.4 mils.
         1) SW: A-100 Exterior Latex Satin, A6 Series.
         2) PPC: 6-610XI Series Speedhide Flat Acrylic Latex Exterior.
         3) Benjamin Moore: Ultra Spec® EXT Exterior Satin W448.

C. Concrete Masonry Units: (For non-integral colored block) Provide 100% Acrylic Paint finish systems over exterior concrete masonry units for interior side of dumpster enclosure, can wash, exterior wet areas, etc.:

1. Acrylic Paint Finish: 2 finish coats over a block filler -primer.
   a. Block Filler/Primer: High-performance, latex block filler applied at spreading rate recommended by the manufacturer to achieve a total dry mill thickness of not less than 7.0 mils DFT.
      1) SW: Loxon XP Waterproofing Masonry Coating
      2) PPC: Pittsburgh Paints Speedhide 6-15XI HD Acrylic Int/Ext Block Filler
      3) Benjamin Moore: *Rough or Pitted Masonry:* Ultra Spec® Masonry Interior/Exterior Hi-Build Block Filler (571)
         Poured or Pre-cast Concrete/Fiber Cement Siding: Ultra Spec® Masonry Interior / Exterior 100% Acrylic Masonry Sealer (608)

   b. Two Coats: Exterior, acrylic-emulsion paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.4 mils.
      1) SW: Loxon XP Waterproofing Masonry Coating
      2) PPC: Pittsburgh Paints Acri-Shield Max Exterior Semi-Gloss 100% Acrylic Paint
      3) Benjamin Moore: Ultra Spec EXT Low Lustre N455

D. Exterior Gypsum Soffit Board: Provide the following finish systems over exterior gypsum soffit board:
   1. Flat Acrylic Finish: 2 finish coats over an exterior latex alkali-resistant primer, as recommended by the manufacturer.
      a. Primer: Exterior, alkyd- or alkali-resistant, acrylic-latex primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils.
         1) SW: Multi-Purpose Int/Ext Latex Primer, B51-450.
         2) PPC: 4-603 PPC PermaCrete Alkali Resistant Primer Sealer.
         3) Benjamin Moore: Ultra Spec® High Build Masonry Primer N609.

      b. First and Second Coats: Flat, exterior, acrylic-emulsion paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.4 mils.
         1) SW: A-100® Exterior Latex Flat, A6 Series.
         2) PPC: 6-610XI Speedhide Flat Acrylic Latex Exterior.
         3) Benjamin Moore: Ultra Spec® EXT Exterior Acrylic Flat W447.

E. Wood Surfaces and Trim: Provide the following finish systems over smooth wood siding, plywood and other exterior wood surfaces and exterior trim: (Note: If there are existing wood surfaces that are to be painted that have an alkyd-based finish, prep surface per manufacturer's instructions before applying new finish.)

   1. Semigloss, Acrylic-Enamel Finish: 2 finish coats over a primer.
      a. Primer: Exterior, alkyd or latex, wood primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils.

         1) SW: Exterior Oil-Based Wood Primer, Y24W8020.
         2) PPC: 17-921 Seal Grip Interior Exterior 100% Acrylic Universal Primer.
         3) Benjamin Moore: Fresh Start® Exterior Wood Primer (094).

b. First and Second Coats: Semigloss, waterborne, exterior, acrylic enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.4 mils.
   1) SW: A-100 Exterior Latex Satin, A82 Series.
   2) PPC: 6-900XI Speedhide Exterior Semi-Gloss Acrylic Latex.
   3) Benjamin Moore: Ultra Spec® EXT Exterior Acrylic Soft Gloss W449.

F. Wood Shakes and Rough Siding and Stained Wood: Provide the following finish systems over exterior wood shakes and rough wood siding and stained wood:
1. Flat Acrylic Finish: 2 coats of an acrylic-latex stain.
   a. First and Second Coats: Solid-color, exterior, acrylic-latex, wood stain applied at spreading rate recommended by the manufacturer.
      1) SW: Superdeck Solid Color Acrylic Stain.
      2) PPC: Flood FLD820 Solid Color 100% Acrylic Stain.
      3) Benjamin Moore: Woodluxe™ Water-Based Deck + Siding Exterior Stain Ultra Flat Solid 695.

G. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items unless a barrier or tie coat is required.
1. Full-Gloss, Alkyd-Enamel Finish: 2 finish coats over a rust-inhibitive primer.
   a. Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils.
      1) SW: Kem Kromik Universal Primer B50WZ1
      2) PPC: 4160 MultiPrime Rust Inhibitive Metal Primers.
      3) Benjamin Moore: High Performance-HP1320 Universal Metal Primer.

   b. First and Second Coats (DTM Acrylic Finish): Full-gloss, exterior High Performance Acrylic enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 3.0 mils.
      1) SW: Pro Industrial DTM Acrylic Gloss B66-1050 Series.
      2) PPC: 90-1610 HP Pitt Tech Plus Int/Ext DTM Acrylic Industrial Gloss Enamel.
      3) Benjamin Moore: Ultra Spec® HP D.T.M. Acrylic Gloss Enamel HP28.

H. Zinc-Coated Metal: Provide the following finish systems over exterior zinc-coated (galvanized) metal surfaces:

1. Full-Gloss, Acrylic-Enamel Finish: 2 finish coats over a galvanized metal primer.
   a. Primer: Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
      1) SW: Pro Industrial Pro-Cryl Universal Primer, B66-1300.
      2) PPC: 90-XXXX Series Pitt Tech Plus WB Metal Primer- Finish
      3) Benjamin Moore: Ultra Spec Hp® Acrylic Metal Primer Hp04.

   b. First and Second Coats (DTM Acrylic Finish): Full-gloss, exterior Acrylic enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 3.0 mils.

      1) SW: Pro Industrial DTM Acrylic Gloss B66-1050 Series.
      2) PPC: 90-1610 HP Pitt Tech Plus Int/Ext DTM Acrylic Industrial Gloss Enamel.
      3) Benjamin Moore: Ultra Spec® HP D.T.M. Acrylic Gloss Enamel HP28.

3.7 INTERIOR PAINT SCHEDULE

A. Concrete and Masonry and Concrete Masonry units. Provide the following paint systems over interior concrete and masonry surfaces: (Note: If there are existing surfaces that are to be painted that have an alkyd-based finish, prep surface per manufacturer's instructions before applying new finish.)

1. Semigloss, Acrylic-Enamel Finish: 2 finish coats over a primer or block filler.
   a. Primer (no-masonry units): Alkali-resistant, acrylic-latex, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.0 mils.
      1) SW: Loxon Concrete & Masonry Primer/Sealer, LX02W50.
      2) PPC: 4-603 PPC Perma Crete Acrylic Latex Alkali Resistant Primer.
      3) Benjamin Moore: Ultra Spec Masonry Interior / Exterior 100% Acrylic Sealer 608.

   b. Block Filler (for masonry units only): High-performance, latex-based, block filler applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 7.0 mils.
      1) SW: Pro Industrial Heavy Duty Block Filler, B42W150.
      2) PPC: 6-15XI Speedhide Masonry Latex Hi-Fill Block Filler.
      3) Benjamin Moore: Ultra Spec® Hi-Build Masonry Block Filler 571.

   c. First and Second Coats: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils.
      1) SW: ProMar 200 Zero VOC Semi-Gloss, B31-2600 Series.
      2) PPC: 6-500 ZV Speedhide Zero VOC Latex Semi-Gloss.
      3) Benjamin Moore: SUPER HIDE® Interior Latex Semi-Gloss N298.

2. Two Component, Epoxy Coating with Gloss Finish: 2 finish coats over a block filler. **(See drawings or finish schedule for locations noted "epoxy paint")**
   a. Block Filler: High-performance, latex-based, block filler applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 7.0 mils.
      1) SW: Pro Industrial Heavy Duty Block Filler, B42W150.
      2) PPC: 6-15XI Speedhide Masonry Latex Hi-Fill Block Filler.
      3) Benjamin Moore: Ultra Spec Hi-Build Masonry Block Filler or Corotech V155 100% Solids Epoxy Pre-Primer Semi-Gloss

   b. First and Second Coats: Gloss, epoxy emulsion.
      1) SW: Pro Industrial WB Catalyzed Epoxy Gloss, B73 Series.
      2) PPC: 98-1 Aquapon EPI Waterbased Ultra Low VOC Gloss Epoxy Coating
      3) Benjamin Moore: Corotech Waterborne Acrylic Epoxy Gloss (V450).

3. Single Component Pre- Catalyzed Epoxy Gloss Coating: 2 finish coats over a block filler. **(See drawings or finish room schedule for locations noted "epoxy paint")**
   c. Block Filler: High-performance, latex-based, block filler applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 7.0 mils.

1. SW: Pro Industrial Heavy Duty Block Filler B42W150
2. PPC: Speedhide 6-15 HD Acrylic Int/Ext Block Filler
3. Benjamin Moore: Ultra Spec® Hi-Build Masonry Block Filler 571.

d. First & Second Coats: Pre-Catalyzed WB Epoxy Coating applied at a spread rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.0mils.
1. SW: Pro Industrial Pre-Catalyzed WB Epoxy Semi-Gloss, K46 Series.
2. PPC: 16-1510 Pitt Glaze Pre- Catalyzed WB Gloss Epoxy Coating
3. Benjamin Moore: HP3410 Pre-Catalyzed Waterborne Epoxy Semi-Gloss.

B. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:

1. Acrylic-Enamel Finish:(for walls) 2 finish coats over a primer.
a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
1) SW: ProMar 200 Zero VOC Primer, B28W2600.
2) PPC: 6-4900XI Speedhide Zero VOC Interior Latex Primer Sealer.
3) Benjamin Moore: Ultra Spec® 500 Interior Latex Primer N534.

b. First and Second Coats: Low-Sheen (eggshell or satin), acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils.
1) SW: ProMar 200 Zero VOC Eg-Shel, B20-2600 Series.
2) PPC: PPC: 6-411 ZV Speedhide Zero VOC Latex Interior Eggshell.
3) Benjamin Moore: SUPER HIDE® Interior Latex Eggshell N297.

2. Flat Acrylic Finish:**(for ceilings and soffits)** 2 finish coats over a primer.

a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils.
1) SW: ProMar 200 Zero VOC Primer, B28W2600.
2) PPC: 6-4900XI Speedhide Zero VOC Latex Primer Sealer.
3) Benjamin Moore: Ultra Spec® 500 Interior Latex Primer N534.

b. First and Second Coats: Low-Sheen (eggshell or satin), acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils.
1) SW: ProMar 200 Zero VOC Flat, B30-2600 Series.
2) PPC: PPC: 6-70 ZV Speedhide Zero VOC Latex Interior Flat.
3) Benjamin Moore: SUPER HIDE® Interior Latex Flat N295.

3. Two Component Epoxy Semigloss Coating: 2 finish coats over a block filler or primer. **(See drawings or finish schedule for locations noted "epoxy paint".)**
a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
1) SW: ProMar 200 Zero VOC Primer, B28W2600.
2) PPC: 6-4900XI Speedhide Zero VOC Latex Primer Sealer.
3) Benjamin Moore: Ultra Spec® 500 Interior Latex Primer N534.

b. First and Second Coats: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils.

1) SW: Pro Industrial WB Catalyzed Epoxy Gloss, B73 Series.
2) PPC: P98-1 Aquapon WB1 Zero VOC Pre-Catalyzed Semi- Gloss Epoxy Coating.
3) Benjamin Moore: Corotech Waterborne Acrylic Epoxy Gloss (V450).

4. Single Component Pre-Catalyzed Epoxy Coating: 2 finish coats over a Gypsum Board primer. **(See drawings or finish schedule for locations noted "epoxy paint".)**
   a. Primer: Latex-based, interior primer applied at a spread rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.0 mils.
      1) SW: ProMar 200 Zero VOC Primer, B28W2600.
      2) PPC: 6-4900XI Speedhide Zero VOC Latex Primer Sealer.
      3) Benjamin Moore: Ultra Spec® 500 Interior Latex Primer N534.

   b. First and Second Coats: Pre-Catalyzed Epoxy Coating applied at a spread rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.0 mils.
      1) SW: Pro Industrial Pre-Catalyzed WB Epoxy Coating, K46
      2) PPC: 16-1510 Pitt-Glaze WB1 Zero VOC Pre-Catalyzed Epoxy Coating
      3) Benjamin Moore: HP3410 Pre-Catalyzed Waterborne Epoxy Semi-Gloss.

C. Woodwork and Hardboard: Provide the following paint finish systems over new, interior wood surfaces:

1. Semigloss, Acrylic-Enamel Finish: 2 finish coats over a wood undercoater.
   a. Undercoat: Acrylic-latex-based, interior wood undercoater, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
      1) SW: ProMar 200 Zero VOC Primer, B28W2600.
      2) PPC: 6-4900XI Speedhide Zero VOC Latex Primer Sealer.
      3) Benjamin Moore: Ultra Spec® 500 Interior Latex Primer N534.

   b. First and Second Coats: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils.
      1) SW: ProMar 200 Zero VOC Semi-Gloss, B31-2600 Series.
      2) PPC: PPC: 6-500 ZV Speedhide Zero VOC Interior Latex Semi-Gloss
      3) Benjamin Moore: SUPER HIDE® Interior Latex Semi-Gloss N298.

2. Semigloss, Waterbased-Alkyd-Enamel Finish: 2 finish coats over a primer. **(Note: Use only when painting existing alkyd-based woodwork or matching existing woodwork.)**
   a. Primer: Odorless Alkyd or latex-based, interior enamel undercoater applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.

      1) SW: ProBlock Interior Oil-Based Primer, B79W8810.
      2) PPC: 17-921XI Seal Grip Acrylic Interior/Exterior Universal Primer.
      3) Benjamin Moore: Fresh Start Undercoater & Primer/Sealer (032).

   b. First and Second Coats: Odorless, semigloss, alkyd, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.4 mils.
      1) SW: ProMar 200 Acrylic-Alkyd Semi-Gloss, B34W8200.

2) PPC: 6-1510XI Speedhide Interior Exterior WB Alkyd Semi-Gloss.
3) Benjamin Moore: **Advance® Waterborne Interior Alkyd Semi-Gloss (793).**

D. Stained and Natural-Finish Woodwork: Provide the following stained finishes over new, interior woodwork: To Match color of D-1. See sheet A700
1. Alkyd-Based, Satin-Varnish Finish: 2 finish coats of an alkyd-based, clear-satin varnish over a sealer coat and an alkyd-based, interior wood stain. Wipe wood filler before applying stain.
a. Filler Coat: Paste-wood filler applied at spreading rate recommended by the manufacturer. **(Provide for wide grained woods such as oak only. Provide color putty or filler to match stain if dark color stain is selected by Architect.)**

b. Stain Coat **(Do not use if natural-finish noted in drawings or finish schedule):** Alkyd-based, interior wood stain applied at spreading rate recommended by the manufacturer.
1) SW: Minwax Performance Series Tintable Wood Stain.
2) PPC: PPC: DFT 400 Series Deft Interior Oil Based Wood Stain.
3) Gemini (Benjamin Moore Stores): Lenmar Waterborne Interior Wiping Wood Stain.

c. Sealer Coat: Clear sanding sealer applied at spreading rate recommended by the manufacturer.
1) SW: Minwax Performance Series Sanding Sealer.
2) PPC: DFT157 Deft Interior Water Based Gloss Polyurethane (thin 10%).
3) Benjamin Moore: UltraLaq® 275 VOC Water White Vinyl Sanding Sealer 1C.2138.

d. First and Second Finish Coats: Alkyd-based or polyurethane varnish, as recommended by the manufacturer, applied at spreading rate recommended by the manufacturer.
1) SW: Minwax Performance Series Fast Dry Varnish Satin.
2) PPC: DFT157 Deft Interior Water Based Satin Polyurethane.
3) Benjamin Moore: Stays Clear Acrylic Polyurethane Low Lustre W423.

E. Ferrous Metal: Provide the following finish systems over ferrous metal:
1. Semigloss, Acrylic -Enamel Finish: One finish coat over an enamel undercoater and a primer.
a. Primer: Quick-drying, rust-inhibitive, Acrylic or Waterbased epoxy-metal primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 -4.0 mils.
1) SW: Pro Industrial Pro-Cryl Universal Primer, B66-1300.
2) PPC: 90-XXXX Series Pitt Tech WB Metal Primer- Finish
3) Benjamin Moore: Ultra Spec HP® Acrylic Metal Primer HP04.

b. Finish Coat: Odorless, semigloss, alkyd, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.4 mils.
1) SW: ProMar 200 Acrylic-Alkyd Semi-Gloss, B34W8200.
2) PPC: 6-1510XI Speedhide Interior/ Exterior WB Alkyd Semi-Gloss.
3) Benjamin Moore: SUPER HIDE® Interior Latex Semi-Gloss N298.

F. Zinc-Coated Metal: Provide the following finish systems over zinc-coated metal:
   1. Eg-Shel or Satin, Acrylic-Enamel Finish: 2 finish coats over a primer.
      a. Primer: Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
         1) SW: Pro Industrial Pro-Cryl Universal Primer, B66-1300.
         2) PPC: 90-XXXX Series Pitt-Tech Acrylic Primer/Finish.
         3) Benjamin Moore: Ultra Spec® HP Acrylic Metal Primer HP04.

      b. First and Second Coats: Low- Sheen (eggshell or satin), acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils.
         1) SW: ProMar 200 Zero VOC Eg-Shel, B20-2600 Series.
         2) PPC: 6-411 ZV Speedhide Zero VOC Interior Latex Eggshell.
         3) Benjamin Moore: Super Hide® Zero VOC Interior Eggshell 357.

G. Exposed Metal Structure:(If Applicable) (Galvanized Metal Decking), structural beams, braces, columns, bar joists and miscellaneous ductwork.: Provide the following finish systems over these substrates. **NOTE: Check for Passivator Coatings on substrates. Conduct a Copper Sulfate or recommended test. If protective coating or film is present it must be removed entirely prior to application of primers and or finish coats. Consult paint manufacturer for recommendations.**
   1. Flat, Eg-Shel or Semi-Gloss Dryfall Coating: 1-2 finish coats over a primer.
      a. Primer: IF NEEDED: Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
         1) SW: Pro Industrial Pro-Cryl Universal Primer, B66-1300.
         2) PPC: 90-XXXX Series Pitt-Tech Acrylic Primer/Finish.
         3) Moore: Ultra Spec Hp Acrylic Metal Primer Hp04

      b. First and Second Coats: Flat, Eggshell or Semi-Gloss Interior Latex Dyfall Coatings applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils.
         1) SW: Pro Industrial Acrylic Dryfall Flat, B42T00081
         2) PPC: 6-723XI Eggshell, 6-724XI Semi-Gloss and 6-725XI Flat Super Tech Waterborne Dryfall Coatings.
         3) Benjamin Moore: Latex Dryfall - Flat 395

END OF SECTION 09 91 00

SECTION 09 98 60 - SANITARY WALL FINISH (Interior FRP)

PART 1 - GENERAL

1.01 SCOPE:

A. This section describes the requirements for furnishing and installing fiberglass reinforced plastic panels according to manufacturer's recommendations.

1.02 SUBMITTALS:

A. Submit in accordance with Division 01.

1. Two samples of each type of panel, each type of trim and fastener.
2. Shop Drawings: Indicate the location and dimension of joints and fastener attachments.
3. Installation Guide.

1.03 QUALITY ASSURANCE:

A. Provide panels and molding only from the manufacturer specified to ensure warranty and color harmonization of accessories.

1.04 DELIVERY, STORAGE, AND HANDLING:

A. Delivery of Materials: Package sheets on skids or pallets for shipment to project site.

B. Storage of Materials: Store panels in a dry place at the project site.

C. Handling: Remove foreign matter from face of panel by use of a soft bristle brush, avoiding abrasive action.

1.05 PROJECT CONDITIONS:

A. Installation shall not begin until building is enclosed, permanent heating and cooling equipment in operation, and residual moisture from plaster, concrete or terrazzo work has dissipated.

B. During installation and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.

C. Provide ventilation to disperse fumes during application of adhesive as recommended by the adhesive manufacturer.

PART 2 – PRODUCTS

2.01 MATERIALS:

A. Class A © Interior Finish. Wall panels shall be Glasbord “FX” with Surfaseal, (fiberglass reinforced plastic panels / FRP). Manufactured by Crane Composites Inc., Channahon, Illinois 60410. PH: 1-800-435-0080, fax: 1-815-467-8666, website: cranecomposites.com.

Color to be White 85. Finish to be Pebbled Embossed texture. Panel thickness shall be nominal .09" (2.3mm) for Glasbord for use as general purpose wall application. Panel size to be 4'-0" x 8'-0”. Approved Equal Manufacturers per Division 01.

1. Independent laboratory ASTM E-84 testing.
2. Flame Spread of 200 or lower, Smoke Developed of 450 or lower per ASTM E-84 latest version.
3. Barcol Hardness: 40 (scratch resistance) ASTM D-2583.
4. Panels will exhibit no more than a 0.038% weight loss after a 25-cycle Taber Abrasion Test.
5. Impact Strength ASTM 5420: 45.0 in/lbs showing no visible damage on finish side.
6. Meets USDA/FSIS Guidelines.
7. A means of frontside identification and confirmation of meeting Class A © interior finish requirements after installation and while in service without labels.

B. Moldings:

1. Standard vinyl/PVC (polyvinylchloride) moldings shall be: 85 White.

C. Sealant: Joints sealed with a high quality clear silicone sealant in food preparation, storage, or process areas, areas of high moisture, and in areas where steam cleaning occurs.

D. Rivets: Optional. Specify rivets in harmonizing colors (by color name and number) in areas where there are wide changes in temperature or humidity, where the substrate is unusually uneven, and in all low temperature or cold storage applications. Refer to Installation Guide #6211 for rivet pattern and installation instructions.

END OF SECTION 09 98 60

Division 10 - Specialties

SECTION 10 14 00 - SIGNAGE

PART 1 - GENERAL

1.01 SUMMARY:

A. This section includes the following types of signs:
   1. Panel and Code Required Signs.
   2. Door Identification Tags.
   3. Exterior Flat Cut Aluminum Pin Mounted Letters

1.02 SUBMITTALS:

A. General:
   1. Submit the following according to the Conditions of the Contract and Division 01 Specification Sections.

B. Product Data:
   1. Product data for each type of sign specified, including details of construction relative to materials, dimensions of individual components, profiles, and finishes.

C. Samples: Provide the following samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements indicated.

D. Color Charts: Manufacturer's color charts consisting of actual sections of material including the full range of colors available for each material required.

E. Samples of Interior Plaques: Two actual-sized samples of interior plaques showing compliance with requirements.

1.03 QUALITY ASSURANCE:

A. Sign Fabricator Qualifications: Firm experienced in producing signs similar to those indicated for this Project, with a record of successful in-service performance, and sufficient production capacity to produce sign units required without causing delay in the Work.

B. Single-Source Responsibility: For each separate sign type required, obtain signs from one source of a single manufacturer.

C. Design Concept: The drawings indicate sizes, profiles, and dimensional requirements of signs and are based on the specific types and models indicated. Sign units by other manufacturers may be considered provided deviations in dimensions and profiles do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.

1.04 WARRANTY:

A. General Warranty: The warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents, Uniform Commercial Code regulations or applicable state statutes of limitations. This

warranty shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Digital Signage Warranty: Provide 5 year manufacturer's warranty..

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

A. Subject to compliance with requirements, provide products by one of the following:
   1. Manufacturers of Sawn Letters:
      a. Andco Industries Corp.
      b. ASI Sign Systems, Inc.
      c. Gemini, Inc.
      d. Leeds Architectural Letters, Inc.
      e. Matthews International
      f. Spanjer Brothers, Inc.
      g. Vomar Products, Inc.
      h. 2/90 Signage Systems

   2. Manufacturers of Interior Plaques:
      a. Andco Industries Corp.
      b. ASI Sign Systems, Inc.
      c. Leeds Architectural Letters, Inc.
      d. Matthews International
      e. 2/90 Signage Systems

2.1 MATERIALS

A. Cast Acrylic Sheet: Provide cast (not extruded or continuous cast) methyl methacrylate monomer plastic sheet, in sizes and thick nesses indicated, with a minimal flexural strength of 16,000 psi when tested according to ASTM D 790, with a minimum allowable continuous service temperature of 176 deg F.

B. Aluminum Sheet: Provide aluminum sheet of alloy and temper recommended by the sign manufacturer for the type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM B 209 for 5005-H15.

C. Fasteners: Use tamper resistant concealed fasteners fabricated from metals that are not corrosive to the sign material and mounting surface.

D. Anchors and Inserts: Use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into masonry work.

E. Colored Coatings for Acrylic Plastic Sheet: Use colored coatings, including inks and paints for copy and background colors, that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and are nonfading for the application intended.
   a. Opaque Sheet: Colored, in colors as selected from manufacturer's full range.

F. Brass Castings: ASTM B 584, Alloy UNS No. C85200 (high-copper yellow brass).

G. Brass, Yellow, Sheet: ASTM B 36/B 36M, Alloy UNS No. C26000.

2.2 FINISHES:

A. Baked-Enamel Finish: AA-M4xC12C42R1x (Mechanical Finish: Manufacturer's standard, other nondirectional textured; Chemical Finish: Chemical conversion coating, acid chromate-fluoride-phosphate pretreatment; Organic Coating: as specified below).

Apply baked enamel in compliance with paint manufacturer's specifications for cleaning, conversion coating, and painting.

1. Organic Coating: Thermosetting-modified acrylic enamel primer/topcoat system complying with AAMA 603.8 except with a minimum dry film thickness of 1.5 mils, medium gloss.
   a. Color: Selected from manufacturer's standard colors

2.3 FABRICATION – PANEL SIGNS

A. Unframed Panel Signs: Fabricate with smooth edges mechanically finished.

1. Edge Condition: Beveled.
2. Edge Color for Plastic Laminate: Same as background.

B. Raised Copy: Machine-cut copy characters from matte-finished opaque acrylic sheet and chemically weld onto acrylic sheet forming sign panel face. Produce precisely formed characters with square cut edges free from burrs and cut marks.

C. Aluminum anodized, bead-blasted return, #514 aluminum alloy.

D. Sign panels shall be 1/8-inch thick acrylic plastic. Mount sign panels with concealed fasteners.

E. Sign panels shall be sized as indicated on Drawings and below.

F. Provide signs with minimum 1/32-inch raised text, upper case, with Grade 2 braille, and at required locations provide universal symbols directly above text.

2.5 EXTERIOR DIMENSIONAL CHARACTERS

A. Provide individual plate letters with metal studs for concealed flush mounting to walls and bottom back angle bracket for letters on the canopies.
B. See drawings for locations and dimensions. The Font will be determined by the Architect.
C. Characters shall be Aluminum conforming to Alloy #514.
D. Characters to have factory Baked-Enamel Finish coating. Color as selected by Architect.

PART 3- EXECUTION

3.1 INSTALLATION

A. General: Locate signs where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
   1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

B. Interior Plaques: Attach panel signs to wall surfaces using the methods indicated below:
   1. Vinyl-Tape Mounting: Use double-sided foam tape to mount signs to smooth, nonporous surfaces.
   2. Concealed Mounting: Mount the plaques by inserting threaded studs into tapped lugs on the back of the plaque. Set in predrilled holes filled with quick-setting cement.
   3. Cement Mounting: Mount plaques using exposed fasteners with rosettes attached though the face of the plaque into the wall surface.

3.02 CLEANING AND PROTECTION:

A. After installation, clean soiled sign surfaces according to the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

3.2 SCHEDULE

A. Restroom signage:

1. Exact text to be determined by Owner. Refer to Drawings for locations.

B. General Room Signage:

1. Exact text to be determined by Owner. Refer to Drawings for locations and type of sign below.



C. Exit Signage:

1. Provide raised letter and Braille exit signs at all required exit doors. Coordinate locations with local Building Inspector. Refer to Drawings for locations.

D. Exterior Flat Cut Aluminum Pin Mounted Letters:

1. Exact text to be determined by Owner. Refer to Drawings for size and location.

END OF SECTION 10 14 00

SECTION 10 18 05 - SHOWER CURTAINS

PART 1 – GENERAL

1.1 SCOPE:

A. Performance Requirements
   1. Provide shower curtains that conform to the following requirements of regulatory agencies.

B. Fire Performance Characteristics
   1. Provide curtains that conform to NFPA 701 (Fire Tests for Flame and Resistant Textiles and Films) and California Title 19 regulations.

1.2 SUBMITTALS:

A. Product Data
   1. Manufacturer's printed product data for each type of shower curtain specified.
B. Fabric Samples
   1. Swatch cards of fabric (memo) samples illustrating fabric weave, color and pattern and/or design.

1.3 DELIVERY, STORAGE AND HANDLING

A. Inspect materials at delivery to assure that specified products have been received.
B. Deliver and store packaged products in original containers and labels intact until time of use.
C. Store delivered products inside in a clean, safe and dry environment.

1.4 WARRANTY

A. Standard Limited Warranty against material and manufacturing defects for a period of 1 year from the date of the installation.

PART 2 - PRODUCTS

2.1 SHOWER CURTAINS & LINER (**CRT-1**)

A. Shower Curtain
   1. Vinyl Material: Provide Heavy duty, 13 gauge, flame retardant, anti-microbial super bio stat vinyl. Features include: Polyester reinforced medical grade PVC, anti-static, antimicrobial, flame retardant, stain resistant, odor resistant, water repellent, wear resistant, scrubbable and colorfast.
   2. Curtain Width: Manufacture curtains of one piece, sized to 10% wider than the track length but no less than 1'-0" extra fullness. Width tolerance ±3".
   3. Acceptable Manufactures:
      A. Inpro – Basis of Design – See Finish Schedule A700 for color and pattern.
      B. CS Acrovyn
      C. or Approved Equal
   4. Double Sided Metal Hooks Easy Slide – To ensure easy removal of each curtain piece individually.

B. Provide 2 extra decorative front curtain and shower liner than required.

2.2 ACCESSORIES

A. Grommets / Eyelets
   a. non-corroding Metal

b. ½" Diameter
c. Spaced evenly every six inches on both the fabric and the vinyl curtains.

B. Hooks
a. Non-corroding – Stainless steel
b. Heavy duty
c. Easy slide mechanism – beaded or similar.
d. Double sided (two bottom hooks) – for ease of removing either curtain individually

PART 3 - Construction

A. Height of curtains to be coordinated with height of curtain rod and a distance of not more than ½"-1 ½" inches above finished floor (or curb).

1. Form top hems by a triple fold securely sewn with edges and panels seams 1 inch (25mm) overlapped lock stitched.

2. Provide bottom weights (if not provided by manufacturer) to both the PEVA liner and decorative fabric curtain.

B. Fabric Patterns
1. Color and border pattern as specified in Part 2, Products; 2.1 Shower Curtain and Liner.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not install shower curtains until conditions are satisfactory.

3.2 PREPERATION & CLEANING

A. Coordinate details with other work supporting, adjoining, or otherwise contacting items as required to ensure proper installation.
B. At completion of installation, remove any debris and clean surfaces in accordance with the clean-up and maintenance instructions.

SECTION 10 21 13.19 SOLID PLASTIC TOILET COMPARTMENTS

PART 1 - GENERAL

1.01 SUMMARY:

A. Solid plastic toilet compartments including the following:

1. Floor mounted overhead-braced toilet compartments.
2. Floor mounted overhead-braced privacy screens.
3. Floor mounted overhead-braced entry partitions.
4. Floor mounted urinal screens.
5. Wall mounted urinal screens.

B. Related Sections include the following:
1. Section 10 28 13 “Toilet Accessories” for toilet paper holders, grab bars, purse shelves, and similar accessories.
2. Section 06 10 00 - Rough Carpentry.

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

D. References:
1. ASTM International (ASTM)
a. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
b. ASTM B 85 - Standard Specification for Aluminum-Alloy Die Castings.
c. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
2. National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
3. United States Green Building Council (USGBC): LEED Green Building Rating System.

1.02 SUBMITTALS:

A. Product Data: For each type and style of toilet compartments specified. Include details of construction relative to materials, dimensions of individual components, fabrication, and installation. Storage and handling requirements. Include details of anchors, hardware, and fastenings.

B. Shop Drawings: For fabrication and installation of toilet compartment assemblies. Include plans, elevations, sections, details, and attachments to other work.
1. Show locations of reinforcement and cutouts for compartment-mounted toilet accessories.

C. Samples for initial selection:
1. Submit manufacturer’s color chart with full range of standard colors and if color scheduled on A700, provide two samples of color, texture and pattern.

D. Samples for Verification:
1. Submit 6” square samples of each color and finish on same substrate used in work, for color verification after selections have been made.
2. Submit one (1) sample of the following:
a. Hardware (Complete)
b. Stainless Steel Mounting Bracket
c. Stainless Steel Hinges

E. Maintenance Instructions: Provide manufacturer's printed instructions for Maintenance of installed Work.

F. Sustainable Design Submittals:
   1. Recycled Content: Certify percentages of post-consumer and pre-consumer recycled content.
   2. Regional Materials: Certify distance in miles between manufacturer and Project and between manufacturer and extraction or harvest point.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: A company regularly engaged in manufacture of products specified in this section, and whose products have been in satisfactory use under similar service conditions for not less than 5 years.

B. Installer Qualifications: A company regularly engaged in installation of products specified in this Section, with a minimum of 5 years' experience.

C. Performance Requirements:
   1. Fire Resistance: Partition materials shall comply with the following requirements, when tested in accordance with the ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials:
      a. Class B flame spread/smoke developed rating, tested to ASTM E84.
   2. Material Fire Ratings:
      a. National Fire Protection Association (NFPA) 286: Pass.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

1.05 PROJECT CONDITIONS:

A. Field Measurements: Verify dimensions in areas of installation by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. 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.

1.06 WARRANTY

A. Manufacturer guarantees its plastic against breakage, corrosion, and delamination under normal conditions for 25 years from the date of receipt by the customer. If materials are found to be defective during that period for reasons listed above, the materials will be replaced free of charge. (Labor not included in warranty.)

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Flame-Spread Index: [25] [75] [200] or less.
   2. Smoke-Developed Index: 450 or less.

B. Regulatory Requirements: Comply with applicable provisions in the U.S. Department of Justice "2010 ADA Standards for Accessible Design" and ICC A117.1 for toilet compartments designated as accessible.

2.02 SOLID-PLASTIC TOILET COMPARTMENTS:

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ASI Global Partitions (Eastanollee, GA)
2. Scranton Products (Scranton, PA. 18505)
3. Hadrian (Mentor, OH 44060)
4. Metpar (Westbury, NY 11590)
5. Aamco (Freeport, NY 11520)

2.03 MATERIALS:

A. Plastic Panels: High density polyethylene (HDPE) suitable for exposed applications, waterproof, non-absorbent, and graffiti-resistant textured surface;
   1. Fire-resistance Rating: Tested in Accordance with NFPA 286.
   2. Fire-resistance Rating: Tested to meet ASTM E84, Class B.
   3. Standard Collection, Does not meet NFPA 286 or ASTM E84
   4. Recycled Content (Post Industrial): 25 percent.
   5. Recycled Content (Post Industrial): 100 percent.
   6. Recycled Content (Post Consumer): 100 percent.
B. Aluminum Extrusions: ASTM B221, 6463-T5 alloy and temper.
C. Aluminum Die Castings: ASTM B85, A380 alloy.
D. Stainless Steel Castings: ASTM A167, Type 304.
E. Rubber: Abrasion resistant Styrene Butadiene Rubber, 65 to 80 Shore A durometer, black.

2.04 SOLID PLASTIC TOILET COMPARTMENTS AND SCREENS

A. Basis of Design: Eclipse Toilet Partitions as manufactured by and supplied by Scranton Products.
   1. Style: Floor mounted overhead-braced toilet compartments.
B. Doors and Panels: High density polyethylene (HDPE), fabricated from SEQ CHAPTER 1extruded polymer resins, forming single thickness panel.
   1. Waterproof and nonabsorbent, with self-lubricating surface, resistant to marks by pens, pencils, markers, and other writing instruments.
   2. Thickness: 1 inch (25 mm).
   3. Edges: Shiplap.
C. (TP-1) Color/Finish: **COORDINATE COLOR AND TEXTURED FINISH WITH INTERIOR FINISH LEGEND A700. Selection from Manufacturers full range of colors, patterns and textures.**
D. Doors and Dividing Panels:
   1. High Privacy:
      a. Height: 70 inches (1575 mm) high and mounted at 12 inches (203 to 356 mm) above the finished floor
E. Metal Posts: 82.75 inches (2102 mm) high, heavy duty extruded aluminum, clear anodized finish, fastened to foot with stainless steel tamper resistant screw.
F. Hidden Shoe (Foot): One-piece molded polyethylene invisible shoe inserted into metal post and secured to metal post with stainless steel tamper resistant screw.
G. Headrail Cap and Corner Cap: One-piece molded polyethylene secured to metal post with

stainless steel tamper resistant screw; adjustable to level headrail to finished floor.

H. Wall Brackets: Continuous heavy duty extruded aluminum, clear anodized finish, inserted into slotted panel and fastened to panels with stainless steel tamper resistant screws.
   1. Type: Single Ear bracket aluminum.
   2. Type: Double ear bracket aluminum.
   3. Length: 54 inches (1372 mm).
   4. Length: 61 inches (1550 mm).
   5. Length: 71 inches (1803 mm).

I. Headrail: Heavy duty extruded aluminum, designer anti-grip design, clear anodized finish, fastened to headrail bracket with stainless steel tamper resistant screw and to headrail cap or corner cap with stainless steel tamper resistant screw.
   1. Headrail Brackets: Heavy duty extruded aluminum, clear anodized finish, secured to wall with stainless steel tamper screws.

J. Door Hardware:
   1. Hinges:
      a. Edge-mounted helix style stainless steel continuous hinge.
         1) Closing degree: 5 degrees.
         2) Comes to a full close on its own weight
   2. Occupancy Indicator Latch and Housing:
      a. Material: Satin stainless steel.
      b. Occupancy indicators: Green for occupied and red not occupied.
      c. Slide bolt and button.

K. Coat Hook and Door Bumper Combination:
   a. Material: Chrome plated Zamak
   b. Handicap Door: Equip with second door pull and door stop.

L. Door Pulls: Chrome plated Zamak

2.04 FABRICATION:

A. General: Provide standard doors, panels, screens and pilasters fabricated for partition system, complete with all accessories and hardware listed above and as required for installation of fully functional system, unless otherwise noted. Provide units with cutouts and drilled holes to receive partition-mounted hardware, accessories, and grab bars as indicated.

B. Overhead-Braced and Floor-Anchored Partitions:
   1. Make provision for setting and securing continuous Extruded Aluminum Anti-Grip Headrail at top of each pilaster.
   2. Furnish Stainless Steel Shoe at each pilaster to conceal supports and leveling mechanism.

C. Doors: Unless otherwise indicated, provide 24” (610 mm) wide in-swinging doors for standard Toilet Partitions and 36” (914 mm) wide out-swinging doors with a minimum 32” (813 mm) wide clear opening for Partitions indicated to be Handicapped Accessible.

PART 3 - EXECUTION

3.01 EXAMINATION
   A. Do not begin installation until substrates have been properly prepared.
   B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION
   A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Examine areas to receive toilet partitions, screens, and shower compartments for correct height and spacing of anchorage/blocking and plumbing fixtures that affect installation of partitions. Report discrepancies to the architect.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved Shop Drawings.

B. Install partitions rigid, straight, plumb, and level.

C. Locate bottom edge of doors and panels 4, 9, or 14 inches (102, 229, or 356 mm) above finished floor.

D. Clearance at vertical edges of doors shall be uniform top to bottom and shall not exceed 3/8 inch (9.5 mm).

E. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.

F. Finished surfaces shall be cleaned after installation and be left free of imperfections.

3.02 ADJUSTING AND CLEANING:

A. Hardware Adjustment: Adjust and lubricate hardware according to manufacturer’s written instructions for proper operation.

B. Protect installed products until completion of project.

C. Provide final protection and maintain conditions that ensure Toilet Partitions and Screens are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 10 21 13

SECTION 10 26 13 – CORNER GUARDS

PART 1- GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Corner Guards.

B. See Division 06 Section "General Carpentry" for blocking required for installing fasteners.

1.2 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections.

B. Product data and detailed specifications for each system component and installation accessory required, including installation methods for each type of substrate.

C. Shop drawings showing locations, extent and installation details of corner guards. Show methods of attachment to adjoining construction.

D. Samples for verification purposes: Submit the following samples, as proposed for this work, for verification of guard.

1. 12" long sample of each model specified.
2. Physical Color sample showing full range of manufacturer's colors and finish options.

E. Product test reports from a qualified independent testing laboratory showing compliance of each component with requirements indicated.

F. Maintenance data for wall protection system components for inclusion in the operating and maintenance manuals specified in Division 1.

1.3 QUALITY ASSURANCE

A. Installer qualifications: Engage an installer who has no less than 3 years' experience in installation of systems similar in complexity to those required for this project.

B. Manufacturer's qualifications: Not less than 5 years' experience in the production of specified products and a record of successful in-service performance

C. Code compliance: Assemblies should conform to all applicable codes including IBC, UBC, SBCCI, BOCA and Life Safety.

D. Fire performance characteristics: Provide wall protection system components with UL label indicating that they are identical to those tested in accordance with ASTM-E84 for Class A characteristics listed below:

1. Flame spread: 25 or less
2. Smoke developed: 450 or less

E. Impact Strength: Provide assembled wall protection units that have been tested in accordance with the applicable provisions of ASTM F476.

F. Chemical and stain resistance: Provide wall protection system components with chemical and stain resistance in accordance with ASTM D-1308.

G. Single source responsibility: Provide all components of the wall protection system manufactured by the same company to ensure compatibility of color, texture and physical properties.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the project site in unopened original factory packaging clearly labeled to show manufacturer.

B. Store materials in original, undamaged packaging in a cool, dry place out of direct sunlight and exposure to the elements. A minimum room temperature of 40°F (4°C) and a maximum of 100°F (38°C) should be maintained.

C. Material must be stored flat.

1.5 PROJECT CONDITIONS

A. Materials must be acclimated in an environment of 65°-75°F (18°-24°C) for at least 24 hours prior to beginning the installation.

B. Installation areas must be enclosed and weatherproofed before installation commences.

PART 2 -PRODUCTS

2.1 MANUFACTURERS (CG)

A. Subject to compliance with requirements, provide the products specified in individual subparagraphs below as basis-of-design products or a comparable product by one of the following:

1. Basis-of-Design Product: Construction Specialties, Inc.; Acrovyn 4000 Corner Guard (CG-1) SM-20AN
2. Inpro
3. Afco Brands
4. Pawling Corporation
5. Koroseal

2.2 MATERIALS

A. Vinyl or Vinyl/Acrylic compound: Extruded material should be high impact plastic with shadow grain texture. Chemical and stain resistance should be per ASTM D-1308 standards as established by the manufacturer. Colors to be selected from one of manufacturer's standard color range.

B. Retainers: recycled vinyl or vinyl/acrylic compound.

C. Fasteners: All fasteners to be non-corrosive and compatible with retainers. All necessary fasteners to be supplied by the manufacturer.

D. Adhesive: As recommended by protection product manufacturer
   1. Adhesives shall have a VOCcontent of [**70**] g/L or less.
   2. Adhesive shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.3 CORNER GUARDS (CG)

1. (CG-1) – Basis of Design: Model SM-20AN - 90° surface mounted corner guard with 3" (76.6mm) legs and 1/4" (6.4 mm) radiused cover. See Finish legend A700 for color.

2. Provide full height lengths unless indicated otherwise on the drawings

2.4 FABRICATION

1. General: Fabricate corner guards to comply with requirements indicated for design, dimensions, detail, finish and member sizes.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verification of conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.

   1. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface preparation: Prior to installation, clean substrate to remove dirt, debris and loose particles. Perform additional preparation procedures as required by manufacturer's instructions.

B. Protection: Take all necessary steps to prevent damage to material during installation as required in manufacturer’s installation instructions.

3.3 INSTALLATION

A. Install the work of this section in strict accordance with the manufacturer's recommendations, using only approved mounting hardware, and locating all components firmly into position, level and plumb.

B. Temperature at the time of installation must be between 65°-75°F (18°-24°C) and be maintained for at least 48 hours after the installation.

C. Adjust installed end caps as necessary to ensure tight seams.

3.4 CLEANING

A. General: Immediately upon completion of installation, clean vinyl covers and accessories in accordance with manufacturer’s recommended cleaning method.

B. Remove surplus materials, rubbish and debris resulting from installation as work progresses and upon completion of work.

3.5 PROTECTION

A. Protect installed materials to prevent damage by other trades. Use materials that may be easily removed without leaving residue or permanent stains.

END OF SECTION 10 26 13

SECTION 10 28 13 - TOILET ACCESSORIES

PART 1 - GENERAL

1.1 SCOPE:

A. Provide all labor, materials, equipment and services required to furnish and install the toilet accessories.

1.2 SUBMITTALS:

A. Prior to installation, submit to the Architect for review the following:
   1. Complete and fully descriptive manufacturer's literature, which shall include a picture of the product, product size, material type and gauge, finish, and installation detail.
   2. A complete list of all accessories proposed for use and the room (identified by room number and room name) and the number of accessories of each type installed in that particular area. Include rough-in drawings for recessed accessories and details of backing.

PART 2 – PRODUCTS

2.1 APPROVED MANUFACTURERS:

A. Bradley Corporation
Mt. Laurel, New Jersey

Bobrick Washroom Equipment
Los Angeles, California

ASI American Specialties, Inc.
Yonkers, NY

An approved equal submitted 10 days prior to bid.

B. Note: The catalog numbers and descriptive names used are those of Bobrick Washroom Equipment unless otherwise noted and are for the purpose of convenience, identification, and establishing standards of quality for materials, construction, dimensions, etc.

C. Select toilet accessories must be purchased from owner’s vendor to work with paper products etc. purchased by the county. Refer to toilet accessories schedule for requirements and vendor contact information.

2.2 TOILET ACCESSORIES:

A. See Toilet Accessory Schedule on Drawings.

2.3 FASTENING:

A. All items of toilet accessories shall be provided complete with all required fastening devices. All fastening devices shall harmonize, in finish, with the item being fastened.

PART 3 – EXECUTION

3.1 INSTALLATION:

A. Install all toilet accessory units in accordance with manufacturer's instructions, using fasteners, which are appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level, firmly anchored in locations indicated. Provide blocking in wall as required.

B. Grab bars: Finished installation of grab bars shall be capable of withstanding 250 lbs. of pressure.

3.2 ADJUST AND CLEAN:

A. Adjust toilet accessories for proper operations and verify that mechanisms function smoothly.

B. Clean and polish all exposed surfaces after removing protective coatings.

END OF SECTION 10 28 13

SECTION 10 44 00 - FIRE EXTINGUISHERS AND CABINETS

PART 1 - GENERAL

1.1 SCOPE:

A. Provide all labor, materials, equipment and services required to furnish and install the fire extinguishers and cabinets.

1.2 SUBMITTALS:

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire-protection specialties.

1. Fire Extinguishers: Include rating and classification.
2. Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style and panel style.

B. Samples for Initial Selection: Manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available for each type of cabinet finish indicated.

1.3 QUALITY ASSURANCE

A. Source Limitations: Obtain fire extinguishers and cabinets through one source from a single manufacturer.

B. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Standard for Portable Fire Extinguishers."

C. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
1. Provide extinguishers listed and labeled by FM.

1.4 COORDINATION:

A. Coordinate size and type of cabinets to ensure that the type and capacity of fire extinguishers indicated can be accommodated.

PART 2 - PRODUCTS

2.1 FIRE EXTINGUISHERS AND CABINETS:

A. Basis-of-Design Products: Subject to compliance with requirements, provide products by the manufacturer specified in the paragraph below as basis-of-design products or comparable products by one of the following manufacturers:

1. Potter Roemer Industries.
2. J. L. Industries, Inc.

B. Basis of Design: Larsen's Manufacturing Company, Architectural Series.

2.2 FIRE EXTINGUISHERS:

A. Type:
1. Multi-Purpose Areas: Dry Chemical Larsen's MP Series MP-10.
2. Kitchen Areas: Wet Chemical Class K Larsen's WC Series WC-6L.
3. Mechanical/Electrical Areas: DC Series Larsen's DC-10. (Wall mounted, fire extinguisher cabinet not required).

2.3 FIRE EXTINGUISHER CABINETS:

A. Type:
1. Provide Fire-Rated Cabinets where required: Listed and labeled to meet requirements of ASTM E 814 for fire-resistance rating of wall where installed in rated wall.

a. Semi-Recessed-Mounted: Larsen's FS 2409-R4 (Standard U.N.O).
b. Larsen's 2712-RL for WC type extinguisher – (Kitchen).

B. Door Style: Larsen's Vertical Duo. Fire-rated with partial glass vision panel in door.

C. Cabinet shall be sized to accommodate extinguisher.

D. Finish: Baked enamel in color as selected by the Architect.

PART 3 - EXECUTION

3.1 GENERAL:

A. Examine walls and partitions for suitable framing depth and blocking where recessed and semi-recessed cabinets are to be installed.

B. Examine fire extinguishers for proper charging and tagging.
1. Remove and replace damaged, defective, or undercharged units.

C. Comply with manufacturer's written instructions for installing fire-protection specialties.

D. Install in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction and ADA Standards..
1. Prepare recesses for cabinets as required by type and size of cabinet and trim style.
2. Fasten mounting brackets to structure and cabinets, square and plumb.
3. Fasten cabinets to structure, square and plumb.

E. Provide final protection and maintain conditions that ensure that cabinets and doors are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 10 44 00

SECTION 10 73 23 – PRE-ENGINEERED METAL CANOPY

PART I GENERAL

1.01 RELATED DOCUMENTS:

A. The bidding requirements, general conditions, supplementary conditions, drawings and requirements of all related structural, mechanical, electrical, plumbing, and fire protection divisions of the specifications shall apply to work specified in this section.

1.02 DESCRIPTION OF WORK:

A. The extent and location of the pre-engineered metal canopy is shown on the drawings and as specified herein. Contractor shall provide complete turn-key installation of the pre-engineered metal canopy system.

B. Definition: Pre-engineered metal canopy shall consist entirely of extruded aluminum sections (roll-formed not acceptable) or galvanized steel sections. System shall consist of welded, one-piece rigid structural bents (column and beam assemblies), decking, fascia, accessory items and hardware to provide a complete system.

C. Water shall drain from deck into designated beams and out of columns through weepholes or as indicated on the drawings.

D. All components shall receive factory finish paint system.

E. The roof deck shall not be penetrated for the purpose of supporting mechanical, electrical, plumbing, or fire protection systems. Other penetrations shall occur only with the approval of the Architect.

1.03 SUBMITTALS

A. Shop Drawings: Submit detailed drawings of plans, sections, elevations, details, column layout, layout of canopy system, bent locations (identify drain columns and wet bents), all mechanical joint locations with complete details, connections, jointing and accessories. Include details of concrete footings and bent anchorage. Include details of support of mechanical, electrical, plumbing, or fire protection systems.

B. Product Data: Submit manufacturer's product data, specifications, component performance data, installation instructions and sample warranty.

C. Calculations: Provide signed and sealed structural calculations for the proposed canopy, by a professional engineer registered in the state of North Carolina, who professes his discipline to be structural engineering.

D. Color Samples: Submit color samples of color indicated on the drawings.

F. Closeout Submittals: Maintenance Data for canopies to include in maintenance manuals.

1.04 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of the following except as otherwise indicated:

North Carolina State Building Code, latest addition with amendments, if any.

AWS (American Welding Society) standards for structural aluminum or steel welding.

B. Manufacturer: Obtain pre-engineered metal covered canopy system from only one (1) manufacturer, although several may be indicated as offering products complying with requirements.

C. Installer Qualification: Firm with not less than three (3) years of experience in installation of pre-engineered metal canopies of type, quantity and installation methods similar to work of this section.

D. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication where possible, to insure proper fitting of work. However, allow for adjustments within specified tolerations wherever taking of field measurements before fabrication might delay work.

E. Shop Assembly: Preassemble units in shop to greatest extent possible and disassemble as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

F. Coordination: Coordinate work of this section with work of other sections which interface with canopy system (sidewalks, curbs, paving, building fascias, electrical rough-ins, etc.).

1.05 PERFORMANCE REQUIREMENTS:

A. System Performance: Provide pre-engineered metal canopy system that has been designed, produced, fabricated and installed to withstand normal temperature changes as well as live loading, dead loading and wind loading in compliance with North Carolina Building Code requirements for geographic area in which work is located and as indicated on sheet S001.

B. Structure shall be capable of sustaining severe icing, hail, and supporting a concentrated load such as being walked upon.

PART 2 PRODUCT

2.01 ACCEPTABLE MANUFACTURERS

A. Mapes Canopies, LLC
B. TFC, A division of Centurion Industries
C. Peachtree Protective Covers
D. Dittmer Architectural Aluminum
E. Carport Structures Corporation

D. Equivalent systems by other manufacturers will be approved by addendum provided the following are submitted ten (10) days prior to bid opening and are complete:

1. Submit evidence of having operated a successful business of manufacturing and installing complete pre-engineered metal canopy systems.

a. Business must have been in operation under submitted name and ownership for a minimum of ten (10) years.

b. Submit a list of successfully completed projects of similar scope, size and complexity. List shall include job name, date of completion, architect's firm name, address and phone number, owner's name with representative and phone number.

2.02 MATERIALS

A. All aluminum extrusions shall be alloy 6063 heat treated to a T-6 temper. Steel components shall meet the requirements listed on sheet S001.

B. Standard finish for all components shall include manufacturers premium multi-step Flourocarbon (Kynar 500) factory applied paint coating system. Color to be selected by Architect from standard colors.

C. Fasteners:

1. Deck Screws (rivets or expansion anchor systems are not permitted): Type 18-8 non-magnetic stainless steel sealed with a neoprene "O" ring beneath 5/8" outside dimension, conical washer.
2. Fascia Rivets: Size 3/16" by 1/2" grip range aluminum rivets with aluminum mandrel. For steel components provide stainless steel fasteners.
3. Bolts: All bolts, nuts and washers to be 18-8 non-magnetic stainless steel.
4. Tek Screws: not permitted

D. Warranty:

1. Manufacturer shall warrant the entire system against defects in labor and materials for a period of one (1) year commencing on the date of substantial completion as established in Division One of these specifications.
2. Intention of this warranty is the manufacturer will come onto the jobsite and do all necessary to effect corrections of any deficiencies.

3. Evidence of defects in labor and material may include but is not limited to, one or more of the following:
   a. Moisture leaks
   b. Metal failure including excessive deflection
   c. Fastener failure

4. Finish warranty shall warrant entire finish system against fading, chalking, cracking, pealing or checking for a period of not less than 20 years commencing on the date of substantial completion.

2.03 FABRICATION

A. Comply with indicated profiles, dimensioned requirements and structural requirements.

B. Use sections true to details with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture, free from defects impairing strength and durability.

C. Bents shall consist of shop welded one piece units. When size of bents do not permit shipment as a welded unit, concealed mechanical joints may be used.

D. Mechanical joints shall consist of stainless steel bolts with a minimum of two (2) bolts per fastening. Bolts and nuts shall be installed in a concealed manner utilizing 1/2" thick by 1 1/2" aluminum bolt bars welded to structural members. All such mechanical joints must be detailed on shop drawings showing all locations.

E. Roof Deck: Extruded metal shapes, interlocking self-flashing sections. Shop fabricate to lengths and panels widths required for field assembly. Depth of sections to comply with structural requirements. Provide shop induced camber in deck units with spans greater than 16'- 0" to offset dead load deflections. Welded dams are to be used at non-draining ends of deck.

F. Expansion joints, design structure for thermal expansion and contraction. Provide expansion joints as required.

G. Exposed rivets used to fasten bottom of fascia to deck to have finish to match fascia.

H. Apply a shop applied dip-coat of clear acrylic enamel to each column end terminating in concrete to insulate from electrolytic reaction. Column ends shall be pierced to "key" grout to bent for maximum uplift protection.

PART 3 EXECUTION

3.01 DELIVERY, STORAGE AND HANDLING:

Deliver, store and handle pre-engineered metal canopy system components as recommended by manufacturer. Handle and store in a manner to avoid deforming members and to avoid excessive stresses.

3.02 EXAMINATION

A. Examine adjacent work for conditions that would prevent quality installation of system.

B. Do not proceed until defects are corrected.

3.04 FIELD DIMENSIONS

A. General contractor shall field confirm bent locations, dimensions and elevations shown on shop drawings prior to fabrication.

3.05 INSTALLATION

A. Install roof deck sections, accessories and related flashing in accordance with manufacturer's instructions. Provide roof slope for rain drainage without ponding water. Align and anchor roof deck units to structural support frames.

B. Assemble all components in a neat, workmanlike manner.

3.06 FLASHING

A. Flashings: Flashings required between covered system and adjoining structures are not work of this section. Refer to "Sheet Metal Flashing and Trim", Section 07 62 00.

3.07 CLEANING AND PROTECTION

A. Damaged Units: Replace roof deck panels and other components of the work which have been damaged or have deteriorated beyond successful minor repair.

B. Cleaning: Remove protective coverings at time in project construction sequence which will afford greatest protection of work. Clean finished surfaces as recommended by manufacturer. Maintain in a clean condition during construction.

C. Protection: Advise Contractor of protection and surveillance procedures, as required to ensure that work of this section will be without damage or deterioration at time of substantial completion.

END OF SECTION 10 73 23

Division 12 - Furnishings

SECTION 12 36 61 - QUARTZ COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Quartz countertops.
2. Setting materials and accessories.

B. Related Sections:
1. Section 06 22 00 - Millwork.
2. All Manufacturer Safety Data Sheets including Respirable crystalline silica.

1.2 REFERENCES

A. American National Standards Institute (ANSI):
1. A108.5 - Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex Portland Cement Mortar.
2. A118.4 - Latex-Portland Cement Mortar.

B. ASTM International (ASTM:
1. C97 - Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.
2. C99 - Standard Test Method for Modulus of Rupture of Dimension Stone.
3. C170 - Standard Test Method for Compressive Strength of Dimension Stone.
4. C241 - Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic.
5. C482 - Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement.
6. C484 - Standard Test Method for Thermal Shock Resistance of Glazed Ceramic Tile.
7. C531 - Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.
8. C648 - Standard Test Method for Breaking Strength of Ceramic Tile.
9. C650 - Standard Test Method for Resistance of Ceramic Tile to Chemical Substances.
10. C672/C672M - Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals.
11. C880 - Standard Test Method for Flexural Strength of Dimension Stone.
12. C1026 - Standard Test Method for Measuring the Resistance of Ceramic Tile to Freeze-Thaw Cycling.
13. C1028 - Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
14. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Shop Drawings: Include countertop layout, dimensions, materials, finishes, cutouts, and attachments.

B. Samples:
1. 2 each, a minimum of 6” x 6”inch quartz samples to be selected from the manufacturer’s full range of available colors.

2. 2 each, 3” inch long joint sealer samples in full range of manufacturer’s colors to match countertop selection.

1.4 QUALITY ASSURANCE

A. Fabricator and Installer Qualifications: Minimum 5 years documented experience in work of this Section.

1.5 WARRANTY

A. Provide manufacturer's 10 year warranty against defects in materials and workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Provide one of the following manufacturer:
1. SileStone
2. Definiti
3. Hanstone
4. Cambria (Basis of Design)
5. Or approved equal. Product must be approved in writing 5 days prior to bid date by the Architect.

2.2 MATERIALS

A. Quartz Sheet:
1. Product: Quartz Slab minimum slab size of 4’x 8’
2. Composition: Quartz aggregate, resin, and color pigments formed into flat slabs.
3. Color: See Finish Legend A700.
4. Thickness: 1 ¼”
5. Physical characteristics:
a. Water absorption: Maximum 0.03 percent, tested to ASTM C97.
b. Breaking strength: Minimum 480 lbf, tested to ASTM C648.
c. Stain resistance: Not affected by 10 percent hydrochloric acid or 10 percent KOH, tested to ASTM C650.
d. Thermal shock resistance: Pass 5 cycles, tested to ASTM C484.
e. Abrasive index: 65-Ha = 25, tested to ASTM C241.
f. Thermal expansion: 1.670 x 10^{-5} in/in/deg F, tested to ASTM C531.
g. Flame spread rating: Class 1, tested to ASTM E84.

2.3 ACCESSORIES

A. Adhesive: Type recommended by quartz manufacturer for countertop / slab installation.

B. Joint Sealer:
1. Latisil Tile and Stone Sealant by Laticrete International, Inc. or approved substitute.
2. Color: To be selected from manufacturer’s full color range.

2.4 FABRICATION

A. Ensure all workers are protected from Respirable Crystalline Silica when handling, fabricating, transporting and installing quartz products. Reference all current OSHA and NIOSH Safe Fabrication Resources, shown below as well as updated safety industry documents yet to be published.
OSHA NIOSH Hazard Alert
OSHA: Silica, Crystalline
CDC and NOISH: Silica
OSGA Respirable Crystalline Silica Focused Inspection Initiative
Natural Stone Institute: Silica
NEPSI: European Network on Silica
A.ST.A. Worldwide Statement on Health and Safety
Cal/OSHA Silica Standards and Resources

B. Cut quartz panels accurately to required shapes and dimensions.

C. Radius exposed edges.

D. Fabricate with hairline joints.

E. Cut holes for sinks &faucets.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean surfaces to receive countertops; remove loose and foreign matter than could interfere with adhesion.

3.2 INSTALLATION

A. Install countertops in accordance with manufacturer’s instructions and approved Shop Drawings. Only use moisture resistant plywood for stability/support if required by manufacturer. Particle Board will not be accepted by the Owner.
B. Adhere countertops to supports with continuous beads of adhesive.
C. Set plumb and level. Align adjacent pieces in same plane.

D. Install with hairline joints.

E. Fill joints between countertops and adjacent construction with joint sealer; finish smooth and flush.

3.3 INSTALLATION TOLERANCES

A. Maximum variation from level and plumb: 1/8 inch in 10 feet, noncumulative.

B. Maximum variation in plane between adjacent pieces at joint: Plus or minus 1/16 inch.

3.4 CLEANING

A. Clean countertops in accordance with manufacturer's instructions.

3.5 PROTECTION

A. Protect installed countertops with plywood or particle board sheet coverings.

END OF SECTION 12 36 61

Division 27 - Communications

Catawba County Resource Center

Auditorium AV Bid

2300 W Innes St.
Salisbury, NC 28144 United States
800-228-2922

Modified: 6/6/2025
Revision: 1

Model	Description	Part Number	QTY	RECEIVED
Auditorium: Audio System: Loudspeaker System				
D&B Audio				
10S - White	10S Loudspeaker - White	Z1618.901	4	
5D	5D Amplifier	Z2880.000	4	
8S - White	8S Loudspeaker - White	Z1617.001	8	
8S Horizontal Bracket - White	8S Horizontal Bracket - White	Z5408.001	8	
B8 Horizontal Bracket White	B8 Horizontal Bracket - White	Z5450.001	2	
Bi8 Ultra Compact Sub - White	Bi8 Subwoofer - White	Z0631.902	2	
Wall Mount M - White	Wall mount M - White	Z5402.001	4	
Extron				
DMP 128 C P AT	12x8 ProDSP Digital Matrix Processor w/ AEC, POTS and Dante features	60-1179-10	1	
Generic				
Rigging Materials	Rigging materials for the installation of the loudspeakers		1	
Windy City Wire				
12-02P-WHT	Speaker Wire 12/2 Plenum White. Bulk item.	12-02P-WHT	1	
Auditorium: Audio System: Wireless Microphones				
Generic				
BNC Connectors - RG8	Lot Item: BNC connectors for RG8 coaxial cable	Lot Item	1	
Liberty AV				
RG8 Wireless Antenna Cable	50 Ohm cable for wireless microphone antennas. Bulk Item.	RG8-CMR-BLK	1	
Neutrik				
XLR Connectors - 3 Pin Female	Lot Item: 3 Pole Female Cable Connector - Gold Contacts	WI3F-BK-LASER	1	
XLR Connectors - 3 Pin Male	Lot Item: 3 Pole Male Cable Connector - Gold Contacts	WI3M-BK-LASER	1	
RF Venue				

Diversity Architectural Antenna	RF Venue Diversity Architectural Antenna for UHF Wireless Microphones (White, 470 to 616 MHz)	D-ARC	1	

Shure

MX410LP/C	Shure MX410 10" Gooseneck Mic with Cardioid Capsule, No Preamp, and 2-Color LED Ring on Bottom (Black)	MX410LP/C	1	
SB900B	Shure SB900B Rechargeable Lithium-Ion Battery for Bodypack Transmitters/Receivers	SB900B	5	
SBC200-US 2-Bay Drop-In Charger	Shure SBC200US Transmitter & Battery Charger with Power Supply	SBC200-US	2	
SBC250 Networked Charging Station	Shure SBC250 2-Bay Networked Charging Station (Global, No Power Supply)	SBC250	1	
UA506	Shure UA506 Rack Mount for Single ULX Series Receiver	UA506	1	
UA802	Shure UA802 2' BNC-to-BNC Coaxial Antenna Cable	UA802	2	
UA825	Shure UA825 25' BNC-to-BNC Remote Antenna Extension Cable	UA825	2	
ULXD1 - G50	Shure ULXD1 Digital Wireless Bodypack Transmitter with TA4M (G50: 470 to 534 MHz)	ULXD1=-G50	2	
ULXD2 - SM58 G50	Shure ULXD2 digital handheld transmitter with S58 capsule. G50 band.	ULXD2/SM58=-G50	2	
ULXD4 - G50	Shure ULXD4 Single-Channel Digital Wireless Receiver (G50: 470 to 534 MHz)	ULXD4=-G50	1	
ULXD4Q - G50	Shure ULXD4Q Quad-Channel Digital Wireless Receiver (G50: 470 to 534 MHz)	ULXD4Q=-G50	1	
ULXD8=-G50	Shure ULXD8 Digital Wireless Gooseneck Base Transmitter with No Mic (Black, G50: 470 to 534 MHz)	ULXD8=-G50	1	

Windy City Wire

22-1P Balanced Audio Wire	Balanced audio 22awg 1 pair cable. Bulk wire.	Bulk Wire	1	
CAT6 RJ45 Connectors	Lot Item: RJ45 connectors for CAT6	PTM-100028C	1	

Auditorium: Video System: Video Switching and Control

Extron

CAT6 Shielded Cable	XTP DTP 24 guage shielded twisted pair cable for XTP systems and DTP systems. Bulk Item	22-236-03	1	
DTP2 R 211 - DTP Receiver	Receives HDMI plus control and analog audio up to 330 feet (100 meters) over a shielded CAT^ cable. Includes stereo audio de-embedding, supports resolutions up to 4K/60 @ 4:4:4. HDCP 2.3 compliant.	60-1631-63	1	
Link License Upgrade	TLP control processor upgrade license to enable processor functions on TLP Pro touch screen control panels.	79-2577-01	2	
NAV E 401 D - Black	1G Pro AV over IP Encoder - HDMI and Ethernet – Decorator-Style Wallplate. Black.	60-1525-07	2	
Shielded RJ45 Connectors	Lot Item: Shielded CAT6 A RJ45 connectors for XTP and DTP systems	101-005-02	1	
TLP Pro 1025M - White	10" capacitive touchscreen with 1280x800 resolution and 24-bit color depth, Gorilla Glass screen, quad-core processor, Zoom integration control. Available with and without a camera. White in color.	60-1566-03	2	

Auditorium: Video System: LED Video Walls

Absen

NX1.8 LED Video Wall	173" diagonal 1.87mm pitch LED video wall, 2048 x 1152 native resolution. Includes trim kit, spare parts, cables and hardware for mounting to a wall frame. 3483 watts power draw, 370lbs.	Quote Needed	2	

Chief

PAC525FW	White in-wall storage box with flange 10.26"x15.4"x 3.88”	PAC525FW	2	

Generic

LED Video Wall Support Frame	LED wall support system		2	

Windy City Wire

CAT6-Black	Cat6 Black. Bulk wire.	CAT6-BLK	1	

Auditorium: Video System: Floor Boxes and Custom Panels

Generic

Custom AV Panel	Custom AV panel for flush mounted 8"x8" back box.	Custom	2	

Auditorium: Video System: Misc. Hardware

LynTec

PDS-12	Contact closure controlled power relay panel - 12 ckts	PDS-12	1	
Rack Panel Switch	Locking Rack Plate Switch Set. One SS-2 switch set on a single rack plate with locking switch, two keys , and a tumbler lock position label. Key may be removed in either locked or unlocked position.	SS-2LRP	1	

Auditorium: Technical Lighting Systems: Essential Wash Fixtures

ETC

ETC ColorSource PAR jr Deep Blue White	72 W PAR Fixture Deep Blue (White)	CSPARJRDB-1	10	

Rapco

3' White DMX Cable - 5 Pin	Lot Item: 3' white DMX cable. 5-pin.	NBDMX5-3.WI	1	
3' White Powercon Edison	Lot Item: 3' NAC3FCA powerCON to 15A Edison Power Cable	PWRCON/15M-3.W-I	1	
3' White Powercon Jumper	Lot Item: Powercon to Powercon jumper cable, 3'	PWRCON20-3.W-I	1	

The Light Source

MAW Clamp White	Mega-clamp, white powder coat	MAW	10	
SCW Safety Cable White	Safety cable, white powder coat	SCW	10	

Auditorium: Technical Lighting Systems: Lighting Battens and Hardware

Generic

Rigging Materials	Rigging hardware as needed to support the installation of megabattens	Bulk Materials	1	

The Light Source

6'8" Mega Batten-White	Mega batten with 1 ckt, power connection via whip with Edison plug	Custom Quote	2	
Folding Batten Clamp - White	Mega-folding batten clamp - white powder.	MFBATW	4	
MBAT-THR.500W	.500 (1/2") threaded rod hanger - white.	MBAT-TRH.500W	4	

Auditorium: Technical Lighting Systems: Misc. Hardware

Windy City Wire

DMX wire	DMX wire - Black 1000' Per Box	241PDIGICOM-BLK	1	

Auditorium: House Lighting Systems: Control Systems

Interactive Technologies

12V Power Supply with Pigtail	Interactive Technologies AC-12P 12V Power Supply with Pigtail	AC-12P	1	
CueServer 3 Flex	Din rail mountable lighting playback controller with 4 expandable ports and touch screen panel for additional functionality	CS-3440	1	
Large DIN Enclosure	Large enclosure with DIN rail and power supply for lighting controllers. 24"x16"x7"	DE-2416	1	
Quad Relay Module	Quad form relay module	SM-RELAY4	1	
Terminal Block Isolated DMX Smart Module	Terminal Block Isolated DMX Smart Module	SM-DMX-TB	2	

Rack Room

Bittree

CAT6 Shielded RJ45 Patch Panel	24 port CAT6 pass-thru patch panel for Shielded CAT6	DSKP124B-C6FS	2	

C2G

Shielded CAT6A Patch Cable	Lot Item: Shielded CAT6A patch cables	Lot Item	1	

Middle Atlantic

D3	3RU Drawer	D3	1	
DWR-16-26PD	DWR sectional wall mount rack with plexglassi door, 26'' depth, 16 space	DWR-186-26PD	1	
DWR-RR16	Heavy-gauge 10-32 threaded rackrail, 16 RU, sold in pairs	DWR-RR16	1	
EB1 - 1U rack blank	Lot Item: EB series flanged panel, 1 space	EB1	1	
EB2 - 2U rack blank	Lot Item: EB series flanged panel, 2 space	EB2	1	

EB4 - 4U rack blank	Lot Item: EB series flanged panel, 4 space	EB4	1	
LBP-2A	Lot Item: L-Shaped horizontal lacer bar, 2'' offset, pack of 10	LBP-2A	1	
LT-CABUTL-DUAL	Dual LED Work Light with Interconnect Cable	LT-CABUTL-DUAL	1	
PD-915R-PL	9 outlet 15amp surge/spike protected rackmount power distribution.	PD-915R-PL	1	

Netgear

M4250-40G8XF-POE+		M4250-40G8XF-POE+	1	

Windy City Wire

CAT6 RJ45 Connectors	Lot Item: RJ45 connectors for CAT6	PTM-100028C	1	

Pre-Function AV Systems: Distributed Displays

Chief

PAC525FCW	White in-wall storage box with flange and cover 10.26"x15.4"x 3.88”	PAC525FCW	2	

Misc. Items

Generic

Freight & Logistics	All freight and shipping expenses to be covered by AV Contractor	Freight & Logistics	1	
Lift Delivery & Pickup	Lift Delivery & Pickup		1	
Lift Rental	The lift rental shall be covered by the AV Contractor	Lift Rental	1	
Misc. Materials	AV Contractor to provide connectors, patch cables, labels, trim rings, rack hardware, consumables etc. as needed to complete the project	Freight & Logistics	1	

Division 31 - Earthwork

SECTION 312316.13 - TRENCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating trenches for utilities
2. Compacted fill from top of utility bedding
3. Backfilling and compaction.

B. Related Sections:

1. Section 033000 - Cast-In-Place Concrete: Concrete materials.
2. Section 310513 - Soils for Earthwork: Soils for fill.
3. Section 310516 - Aggregates for Earthwork: Aggregates for fill.
4. Section 312213 - Rough Grading: Topsoil and subsoil removal from site surface.
5. Section 312316 - Excavation: General building excavation.
6. Section 312323 - Fill: General backfilling.
7. Section 329119 - Landscape Grading: Filling of topsoil over backfilled trenches to finish grade elevation.
8. Section 331116 - Site Water Utility Distribution Piping:
9. Section 333100 - Sanitary Utility Sewerage Piping: Sanitary sewer piping and bedding from building to **utility service.**
10. Section 334100 - Storm Utility Drainage Piping: Storm sewer piping and bedding from building to **utility service**

1.2 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3).
2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.3 DEFINITIONS

A. Utility: Any buried pipe, duct, conduit, or cable.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with **State requirements**

1.6 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.7 COORDINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

A. Subsoil Fill: Type as specified in Section.

B. Structural Fill: as specified in Section.

C. Granular Fill: Type as specified in Section.

D. Concrete: **Structural concrete as specified in Section 033000**

PART 3 - EXECUTION

3.1 LINES AND GRADES

A. Lay pipes to lines and grades indicated on Drawings.

1. **Architect/Engineer** & **Owner** reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.

B. Use laser-beam instrument with qualified operator to establish lines and grades.

****** [OR] ******

C. Maintain grade alignment of pipe using string line parallel with grade line and vertically above centerline of pipe.

1. Establish string line on level batter boards at intervals of not more than 25 feet (7.5 meters).
2. Install batter boards spanning trench, rigidly anchored to posts driven into ground on both sides of trench.
3. Set three adjacent batter boards before laying pipe to verify grades and line.
4. Determine elevation and position of string line from elevation and position of offset points or stakes located along pipe route.
5. Do not locate pipe using side lines for line or grade.

3.2 PREPARATION

A. Call Local Utility Line Information service not less than **three** working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum locations.

C. Protect plant life, lawns, and other features remaining as portion of final landscaping.

D. Protect bench marks, **existing structures, fences,** sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

E. Maintain and protect above and below grade utilities indicated to remain.

F. Establish temporary traffic control **and detours** when trenching is performed in public right-of-way. Relocate controls **and reroute traffic** as required during progress of Work.

3.3 TRENCHING

A. Excavate subsoil required for utilities to **utility service.**

B. Remove lumped subsoil, boulders, and rock. Remove larger material as specified in Section **312318.**

C. Do not advance open trench more than **200** ahead of installed pipe.

D. Cut trenches **sufficiently wide to enable installation and allow inspection.** Remove water or materials that interfere with Work.

E. Excavate bottom of trenches wider than outside diameter of pipe.

F. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and **pipe**.

G. When Project conditions permit, slope side walls of excavation starting **2** feet above top of pipe. When side walls can not be sloped, provide sheeting and shoring to protect excavation as specified in this section.

H. When subsurface materials at bottom of trench are loose or soft, **excavate to greater depth as directed by Architect/Engineer until suitable material is encountered**

I. Cut out soft areas of subgrade not capable of compaction in place.

J. Correct areas over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by **Architect/Engineer**.

K. Remove excess subsoil not intended for reuse, from site.

3.4 SHEETING AND SHORING

A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.

B. Support trenches more than **5** feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.

C. Design sheeting and shoring to be removed at completion of excavation work.

D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.

E. Repair damage to [**new**] [**and**] [**existing**] Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.5 BACKFILLING

A. Backfill trenches to contours and elevations with unfrozen fill materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

C. Place geotextile fabric prior to placing **subsequent fill materials.**

D. Place fill material in continuous layers and compact **in accordance with schedule at end of this section**.

E. Employ placement method that does not disturb or damage **foundation perimeter drainage**, utilities in trench.

F. Maintain optimum moisture content of fill materials to attain required compaction density.

G. Protect open trench to prevent danger to **Owner or the public**.

3.6 TOLERANCES

A. Section 014000 - Quality Requirements: Tolerances.

B. Top Surface of Backfilling **Under Paved Areas 1 inch** from required elevations.

C. Top Surface of General Backfilling: Plus or minus **1 inch** from required elevations.

3.7 FIELD QUALITY CONTROL

A. Section [**014000 - Quality Requirements**] [**017000 - Execution and Closeout Requirements**]: Field inspecting, testing, adjusting, and balancing.

B. Perform laboratory material tests in accordance with [**ASTM D1557.**] [**ASTM D698.**] [**AASHTO T180.**]

C. Perform in place compaction tests in accordance with the following:

1. Density Tests: [**ASTM D1556,**] [**ASTM D2167,**] or [**ASTM D2922**].
2. Moisture Tests: ASTM D3017.

D. When tests indicate Work does not meet specified requirements, [**remove Work, replace, compact, and retest.**]

3.8 PROTECTION OF FINISHED WORK

A. Section 017000 - Execution and Closeout Requirements: Protecting finished work.

B. Reshape and re-compact fills subjected to vehicular traffic during construction.

3.9 SCHEDULE

A. Storm and Sanitary Piping:

1. Cover pipe and bedding with Fill
2. Compact uniformly to minimum **95**.

B. Duct Bank:

1. Cover duct and bedding with fill.
2. Compact uniformly to minimum **95**.

END OF SECTION 312316.13

Division 32 – Exterior Improvements

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections.

1.2 SUMMARY

A. Section Includes:

1. Hot-mix asphalt paving.

B. Related Requirements:

1. Section 312000 "Earth Moving" for subgrade preparation, fill material, separation geotextiles, unbound-aggregate subbase and base courses, and aggregate pavement shoulders.

2. Seal coat to meet NCDOT Standard Specifications per section 657 and 660

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Hot-mix asphalt designs.

1.5 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each paving material, by a qualified testing agency.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of the North Carolina Department of Transportation for asphalt paving work.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. Coarse Aggregate: ASTM D692/D692M, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.

B. Fine Aggregate: ASTM D1073 or AASHTO M 29, sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.

C. Mineral Filler: ASTM D242/D242M or AASHTO M 17, rock or slag dust, hydraulic cement, or other inert material.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: ASTM D6373 or AASHTO M 320 binder designation PG 64-22.

B. Asphalt Cement: ASTM D3381/D3381M for viscosity-graded material.

C. Tack Coat: ASTM D977 or AASHTO M 140 emulsified asphalt, or ASTM D2397/D2397M or AASHTO M 208 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

2.3 MIXES

A. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes approved by the North Carolina Department of Transportation and complying with the following requirements:

1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
2. Base Course: I-19.0B.
3. Surface Course: S-9.5B.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. Ensure that prepared subgrade is ready to receive paving. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces.

B. Herbicide Treatment: Apply herbicide in accordance with manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

1. Mix herbicide with prime coat if formulated by manufacturer for that purpose.

C. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.2 HOT-MIX ASPHALT PLACEMENT

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.
2. Place hot-mix asphalt surface course in single lift.
3. Spread mix at a minimum temperature of 250 deg F.
4. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.3 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces and apply tack coat to joints.
2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
3. Offset transverse joints, in successive courses, a minimum of 24 inches.
4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method in accordance with AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations**.**

3.4 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
   1. Average Density, Rice Test Method: 92 percent of reference maximum theoretical density in accordance with ASTM D2041/D2041M, but not less than 90 percent or greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

G. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.5 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce thickness indicated within the following tolerances:

   1. Base Course and Binder Course: Plus or minus 1/2 inch.
   2. Surface Course: Plus 1/4 inch, no minus.

B. Pavement Surface Smoothness: Compact each course to produce surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

   1. Base Course and Binder Course: 1/4 inch.
   2. Surface Course: 1/8 inch.
   3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Replace and compact hot-mix asphalt where core tests were taken.

C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.7 WASTE HANDLING

A. General: Handle asphalt-paving waste in accordance with approved waste management plan required in Section 017419 "Construction Waste Management and Disposal."

END OF SECTION 321216

SECTION 321313 - CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections.

1.2 SUMMARY

A. Section Includes:

1. Curbs and gutters.
2. Walks.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type of product, ingredient, or admixture requiring color selection.

C. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.4 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless otherwise indicated.

2.2 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.

1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

A. Plain-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, fabricated from as-drawn steel wire into flat sheets.

B. Deformed-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, flat sheet.

C. Reinforcing Bars: ASTM A615/A615M, Grade 60; deformed.

D. Joint Dowel Bars: ASTM A615/A615M, Grade 60 plain-steel bars. Cut bars true to length with ends square and free of burrs.

E. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded-wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified.

2.4 CONCRETE MATERIALS

A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:

1. Portland Cement: ASTM C150/C150M, gray portland cement, Type I/II.
2. Fly Ash: ASTM C618.

B. Normal-Weight Aggregates: ASTM C33/C33M, Class 4S, uniformly graded. Provide aggregates from a single source.

C. Air-Entraining Admixture: ASTM C260/C260M.

D. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

E. Water: Potable and complying with ASTM C94/C94M.

2.5 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.

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. BASF Corporation.
b. Bon Tool Co.
c. Brickform; a division of Solomon Colors.
d. ChemMasters, Inc.
e. Dayton Superior.
f. Euclid Chemical Company (The); an RPM company.
g. Kaufman Products, Inc.
h. Lambert Corporation.
i. Laticrete International, Inc.
j. Metalcrete Industries.
k. Nox-Crete Products Group.
l. Sika Corporation.
m. SpecChem, LLC.
n. TK Products.
o. Vexcon Chemicals Inc.

B. White, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 2, Class B, dissipating.

1. Manufacturers: available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Anti-Hydro International, Inc.
b. ChemMasters, Inc.
c. Dayton Superior.
d. Euclid Chemical Company (The); an RPM company.
e. Kaufman Products, Inc.
f. Lambert Corporation.
g. Laticrete International, Inc.
h. SpecChem, LLC.
i. Vexcon Chemicals Inc.
j. W.R. Meadows, Inc.

2.6 RELATED MATERIALS

A. Joint Fillers: ASTM D1752, cork or self-expanding cork in preformed strips.

2.7 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:

1. Fly Ash or Pozzolan: 25 percent.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content: 6 percent plus or minus 1-1/2 percent.

D. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

E. Concrete Mixtures: Normal-weight concrete.

1. Compressive Strength (28 Days): Reinforced concrete pavements, sidewalks, and curbs and gutters, 4000 psi.
2. Maximum W/C Ratio at Point of Placement: .45.
3. Slump Limit: 5 inches, plus or minus 1 inch.

2.8 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C94M. Furnish batch certificates for each batch discharged and used in the Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.

1. Completely proof-roll subbase in one direction. Limit vehicle speed to 3 mph.
2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of ½ inch according to requirements in Section 312000 "Earth Moving."

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT INSTALLATION

A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

3.5 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.

1. Locate expansion joints at intervals of 50 feet unless otherwise indicated.
2. Extend joint fillers full width and depth of joint.
3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness.

E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4 inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

A. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

B. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

C. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

D. Screed paving surface with a straightedge and strike off.

E. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

3.7 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface, perpendicular to line of traffic, to provide a uniform, fine-line texture.

3.8 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by curing compound as follows:

1. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas that have been subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

3.9 PAVING TOLERANCES

A. Comply with tolerances in ACI 117 and as follows:

1. Elevation: 3/4 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Surface: Gap below 10-feet-long; unleveled straightedge not to exceed 1/2 inch.
4. Joint Spacing: 3 inches.
5. Contraction Joint Depth: Plus 1/4 inch, no minus.
6. Joint Width: Plus 1/8 inch, no minus.

3.10 REPAIR AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.

B. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

C. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321313

SECTION 321723 - PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections.

1.2 SUMMARY

A. Section Includes:

1. Painted markings applied to asphalt paving.
2. Painted markings applied to concrete surfaces.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include technical data and tested physical and performance properties.

B. Shop Drawings: For pavement markings.

1. Indicate pavement markings, colors, lane separations, defined parking spaces, and dimensions to adjacent work.

C. Samples: For each exposed product and for each color and texture specified; on rigid backing, 8 inches square.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of NC Department of Transportation for pavement-marking work.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for alkyd materials and 55 deg F for water-based materials, and not exceeding 95 deg F.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

1. Aexcel Inc.
2. Benjamin Moore & Co.
3. Columbia Paint & Coatings, Inc.; a subsidiary of Sherwin-Williams Company (The).
4. Conco Paints.
5. Diamond Vogel Paints.
6. Dunn-Edwards Corporation (a Nippon Paint Holdings Co. Ltd. company).
7. Ennis-Flint.
8. McCormick Paints.
9. PPG Paints.
10. Sherwin-Williams Company (The).

2.2 PAVEMENT-MARKING PAINT

A. Pavement-Marking Paint, Acrylic: Acrylic, waterborne emulsion, lead and chromate free, ready mixed, complying with FS TT-P-1952F, Type II, with drying time of less than 45 minutes.

1. Color: White.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that pavement is dry and in suitable condition to begin pavement marking according to manufacturer’s written instructions.

B. Proceed with pavement marking only after unsatisfactory conditions have been corrected.

3.2 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow asphalt paving or concrete surfaces to age for a minimum of 30 days before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

1. Apply graphic symbols and lettering with paint-resistant, die-cut stencils, firmly secured to asphalt paving or concrete surface. Mask an extended area beyond edges of each stencil to prevent paint application beyond stencil. Apply paint so that it does not run beneath stencil.

END OF SECTION 321723

Division 33 – Utilities

SECTION 330563 - CONCRETE VAULTS AND CHAMBERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Precast concrete vaults and chambers.
2. Drainage system junction boxes.
3. Drainage system sedimentation chambers.
4. Knock-out boxes.
5. End walls.
6. Pipe ends.
7. Frames and covers.
8. Access hatches.

B. Related Requirements:

1. Section 031000 - Concrete Forming and Accessories: Erection and bracing of forms.
2. Section 032000 - Concrete Reinforcing: Reinforcing steel as required by this Section.
3. Section 033000 - Cast-in-Place Concrete: Concrete type for concrete vault or chamber construction.
4. Section 040513 - Masonry Mortaring: Mortaring as specified in this Section.
5. Section 040516 - Masonry Grouting: Grouting as specified in this Section.
6. Section 042000 - Unit Masonry: Product requirements for clay brick units for use in vault or chamber construction.
7. Section 312316 - Excavation: Excavating for vaults or chambers, and foundation slabs.
8. Section 312323 - Fill: Backfilling after vault or chamber installation.
9. Section 316219 - Timber Piles: Pile support systems.
10. Section 333100 - Sanitary Sewerage Piping: Piping connections to vaults or chambers.
11. Section 333111 - Public Sanitary Sewerage Gravity Piping: Piping connections to vaults or chambers.
12. Section 334200 - Stormwater Conveyance: Piping connections to vaults or chambers.
13. Section 334211 - Stormwater Gravity Piping: Piping connections to vaults or chambers.
14. Section 334213 - Stormwater Culverts: Corrugated-steel, aluminum, concrete, PE, and PVC pipe culverts; and concrete box sections.
15. Section 337119 - Electrical Underground Ducts, Ductbanks, and Manholes: Electrical and communications utility structures.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Section 012000 - Price and Payment Procedures: Contract Sum/Price modification procedures.

B. Precast Concrete Boxes:

1. Basis of Measurement: By each
2. Basis of Payment: Includes excavating, concrete foundation slab, box, cover frame and cover, to **indicated depth** and forming and sealing inlets and outlets.

1.3 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO HB-17 - Standard Specifications for Highway Bridges.
2. AASHTO M 306 - Standard Specification for Drainage, Sewer, Utility, and Related Castings.

B. American Concrete Institute:

1. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.

C. American Welding Society:
1. AWS D1.1/D1.1M - Structural Welding Code - Steel.
2. AWS D1.4/D1.4M - Structural Welding Code - Reinforced Steel.

D. ASTM International:

E. The Society for Protective Coatings:

1. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer information regarding frames and covers, **steps,** component construction, features, configuration.

C. Shop Drawings:

1. Indicate vault or chamber locations, elevations, sections, sizes and elevations of penetrations,
2. Indicate design, construction and installation details, typical reinforcement and additional reinforcement at openings.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.

1.5 QUALITY ASSURANCE

A. Obtain precast concrete vaults and chambers from single source.

B. Perform structural design according to ACI 318 (318M).

C. Perform Work according to NPCA Quality Control Manual for Precast and Prestressed Concrete Plants.

D. Material and Fabrication:

1. Single-Cell Box Culverts: Comply with ASTM C1433 (C1433M).
2. Multiple-Cell Box Culverts: Comply with <_____>.
3. Three-Sided Structures: Comply with ASTM C1504 (C1504M).
4. Other Structures: Comply with ASTM C913.

E. Welding:

1. Structural Steel: Comply with AWS D1/1/D1.1M.
2. Reinforcing Steel: Comply with AWS D1.4/D1.4M.

F. Perform Work according to NCDOT standards.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Concrete Products: Do not deliver products until concrete has cured five days or has attained minimum 75 percent of specified 28-day compressive strength.

C. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

D. Handling:

1. Comply with manufacturer instructions for unloading, storing, and moving vaults or chambers.
2. Lift vaults or chambers from designated lifting points.

E. Storage:

1. Store materials according to manufacturer instructions.
2. Store vaults and chambers to prevent damage to Owner's property or other public or private property.
3. Repair property damaged from materials storage.

F. Protection:

1. Protect materials in clean location remote from construction operations areas.

2. Provide additional protection according to manufacturer instructions.

1.7 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

1.8 WARRANTY

A. Section 017000 - Execution and Closeout Requirements: Requirements for warranties.

B. Furnish five-year manufacturer's warranty for concrete vaults, chambers, and appurtenances.

PART 2 - PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

A. Minimum Loading: Comply with [**ASTM C857**] [**and**] [**ASTM C890**].

2.2 PRECAST CONCRETE VAULTS AND CHAMBERS

A. Fabricator List:
1. Furnish materials according to NCDOT standards.

B. Material of Construction: Reinforced precast concrete.

2.3 FRAMES AND COVERS

A. Manufacturers:
1. Furnish materials according to NCDOT standards.

2.4 MATERIALS

A. Concrete:

1. Portland Cement:

a. Comply with ASTM C150/C150M.

2. Fine and Coarse Aggregates: Comply with ASTM C33/C33M, except that gradation requirements do not apply.

B. Admixtures:

1. Manufacturers:
   a. Furnish materials according to NCDOT standards.

2. Air Entrainment: Comply with ASTM C260/C260M.
3. Chemical Admixtures:

   a. Comply with ASTM C494 (C494M).

C. Concrete Reinforcement:

1. Reinforcing Steel:

   a. Comply with NCDOT Standards.

2.5 FABRICATION

A. Comply with ACI 318 (318M) and NPCA Quality Control Manual for Precast and Prestressed Concrete Plants.

B. Fabricate vaults, chambers and openings to size and configuration as **indicated on Drawings**.

C. Forms:

1. Fabricate to provide uniform precast concrete units with consistent dimensions.
2. Clean after each use.

D. Reinforcing:

1. Install reinforcement by tying or welding to make rigid assemblies.
2. Secure reinforcement to prevent displacement while placing concrete.

E. Position and secure embedded items to prevent displacement while placing concrete.

F. Deposit concrete in forms and consolidate concrete without segregating aggregate.

G. Provide initial curing by retaining moisture using one of following methods:

1. Cover with PE sheets.
2. Cover with burlap or other absorptive material and keep continually moist.
3. Apply curing compound according to manufacturer instructions.

H. Provide final curing according to manufacturer's standard.

I. Remove forms without damaging concrete.

2.6 MIXES

A. Concrete:

1. Normal Weight: Select proportions according to ACI 2111.1 and 318 (318M).

2.7 FINISHES

A. Reinforcing Steel:

1. Galvanized Finish: Comply with ASTM A767/A767M, Class [**I**] [**II**].
2. Epoxy-Coated Finish: Comply with ASTM A775/A775M.

B. Wire and Wire Fabric:

1. Epoxy-Coated Finish: Comply with ASTM A884/A884M, [**Class A**] [**Class B**].

C. Concrete:

1. Formed Surfaces Not Exposed to View: As formed.
2. Unformed Surfaces:

a. Finish with vibrating screed or hand float.
b. Items Permitted: Color variations, minor indentations, chips, and spalls.
c. Items Not Permitted: Major imperfections, honeycomb, or other such defects.

D. Steel:

1. Galvanizing:

a. Comply with ASTM A123/A123M.
b. Hot-dip galvanize after fabrication.

2.8 ACCESSORIES

A. Membrane Curing Compound: Comply with ASTM C309, Type [**I**] [**I-D**] [**2**], Class [**A**] [**B**].

B. Step Rungs:

1. Per City of Hickory and NCDOT

C. Joint Sealants and Joint Gaskets:

1. Gasket Joints for Circular Concrete Pipe:

a. Comply with ASTM C443 (C443M).

2. External Sealing Bands:

a. Comply with ASTM C877 (C877M).

3. Preformed Joint Sealants for Concrete Pipe and Box Sections: Comply with ASTM C990 (C990M).
4. Elastomeric Joint Sealants:

a. Comply with ASTM C920.

D. Pipe Entry Connectors: Comply with ASTM C923 (C923M).

E. Grout:

1. Cement Type: Portland cement, sand, and water mixture with stiff consistency to suit intended purpose.
2. Nonshrink Type:

a. Description: Premixed compound consisting of nonmetallic aggregate, cement, and water-reducing and plasticizing agents.
b. Comply with ASTM C1107/C1107M.

F. Bituminous Coating:

1. Manufacturers:
a. Furnish materials according to NCDOT standards.

2.9 SOURCE QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for testing, inspection, and analysis.

B. Testing:

1. Perform testing according to NCDOT

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify that items provided by other Sections of Work are properly sized and located.

C. Verify correct size and elevation of excavation.

D. Verify that subgrade [**and bedding are**] [**is**] properly prepared, [**compacted,**] and ready to receive Work of this Section.

3.2 PREPARATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Mark each vault or chamber by indentation or using waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers shown on Drawings to indicate its intended use.

C. Coordinate placement of inlet and outlet pipe or duct sleeves required by other Sections.

D. Do not install vault or chamber if Site conditions induce loads exceeding weight capacity of vault or chamber.

E. Inspect vaults and chambers immediately prior to placement in excavation to verify that they are internally clean and free from damage; remove and replace damaged units.

3.3 INSTALLATION

A. According to ASTM C891 and NCDOT

END OF SECTION 330563

SECTION 333100 - SANITARY SEWERAGE PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sanitary sewerage piping.
2. Bedding and cover materials.

B. Related Requirements:

1. Section 221300 - Facility Sanitary Sewerage: Product and execution requirements for sanitary waste and vent piping at building.
2. Section 310513 - Soils for Earthwork: Soil for backfill in trenches.
3. Section 310516 - Aggregates for Earthwork: Aggregate for backfill in trenches.
4. Section 312316 - Excavation: Requirements for excavation and backfill as required by this Section.
5. Section 312316.13 - Trenching: Requirements for trenching as required by this Section.
6. Section 312323 - Fill: Requirements for backfilling as required by this Section.
7. Section 330130.61 - Packer Injection Grouting: Grout sealing of piping.
8. Section 330505.31 - Hydrostatic Testing; 330505.41 - Air Testing: Testing of pressurized sewerage piping
9. Section 330505.33 - Infiltration and Exfiltration Testing: Infiltration testing of gravity-flow sewerage piping.
10. Section 330505.43 - Mandrel Testing: Deflection testing of plastic sewerage piping.
11. Section 330561 - Concrete Manholes: Manholes for sanitary sewerage piping.
12. Section 330573 - Polyethylene Manholes: Manholes for sanitary sewerage piping.
13. Section 330576 - Fiberglass Manholes: Manholes for sanitary sewerage piping.
14. Section 330597 - Identification and Signage for Utilities: Pipe markers.

1.2 DEFINITIONS

A. Bedding: Fill placed under, beside, and directly over pipe, prior to subsequent backfill operations.

1.3 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. American Water Works Association:

1. AWWA C104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
2. AWWA C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
3. AWWA C110 - Ductile-Iron and Gray-Iron Fittings.
4. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
5. AWWA C150 - Thickness Design of Ductile-Iron Pipe.
6. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast.
7. AWWA C153 - Ductile-Iron Compact Fittings.

C. ASTM International:

1. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.
2. ASTM C14 - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe.
3. ASTM C14M - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe (Metric).
4. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
5. ASTM C76M - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe (Metric).
6. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
7. ASTM C443M - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets (Metric).
8. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
9. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
10. ASTM C923M - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals (Metric).
11. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3).
12. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3).
13. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
14. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
15. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
16. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
17. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
18. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings.

19. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
20. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
21. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

1.4 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with termination of sanitary sewer connection outside building, connection to municipal sewer utility service, and trenching.

1.5 PREINSTALLATION MEETINGS

A. Section 013000 - Administrative Requirements: Requirements for preinstallation meeting.

B. Convene minimum one week prior to commencing Work of this Section.

1.6 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer information indicating pipe material to be used, pipe accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Source Quality-Control Submittals: Indicate results of factory tests and inspections.

E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

F. Qualifications Statement:

1. Submit qualifications for manufacturer and installer.

1.7 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record finished locations of pipe runs, connections, manholes, cleanouts, and invert elevations.

C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.8 QUALITY ASSURANCE

A. Perform Work according to AWWA standards.

B. Maintain 1 copy of each standard affecting Work of this Section on Site.

1.9 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum [three experience.

B. Installer: Company specializing in performing Work of this Section with minimum three years' experience.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

C. Storage:

1. Store materials according to manufacturer instructions.
2. Store valves in shipping containers with labeling in place.

D. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Block individual and stockpiled pipe lengths to prevent moving.
3. Provide additional protection according to manufacturer instructions.

1.11 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 SANITARY SEWERAGE PIPING

A. Cast-Iron Soil Pipe:

1. Comply with ASTM A74.
2. Type: Service.
3. Inside Nominal Diameter: 6 & 8 inches.
4. End Connections: Bell and spigot.
5. Fittings: Cast iron.
6. Joints:

    a. Joint Devices: Rubber gasket.
    b. Comply with ASTM C564.

B. Ductile-Iron Pipe:

1. Comply with AWWA C150 or AWWA C151.
2. Minimum Pressure Class: 150.
3. Minimum Special Thickness Class: 50.
4. End Connections: Bell and spigot.
5. Outside Coating:

    a. Type: Asphaltic.
    b. Minimum Uniform Thickness: [1] mil.
    c. Comply with AWWA C151.
6. Lining:

a. Cement mortar lined.
b. Comply with AWWA C104.

7. Lining:

a. Seal coating applied to lining at following thickness:
1) Nominal Pipe Sizes 6 through 12 Inches: 1/8 inch.
2) Nominal Pipe Sizes 14 through 24 Inches: inch.

8. Lining:

a. Type: Asphaltic sealcoat.
b. Minimum Uniform Thickness: [1] mil.
c. Comply with AWWA C104.

9. PE Encasement: Comply with AWWA C105.
10. Fittings:

a. Material: Ductile iron, Class 50, 52, 54 or greater.
b. Comply with AWWA C153 or AWWA C110.
c. Lining: Cement-mortar lined according to AWWA C104; Seal coat lined and coated with bituminous paint.

11. Coating:

a. Coat pipe and fittings exposed inside of structures with two coats of bituminous paint to achieve minimum dry film thickness of mils per coat.
b. As specified in Section 099000 - Painting and Coating.

12. Joints:

a. Rubber gasket joint devices.
b. Comply with AWWA C111.

C. Concrete Pipe:

1. Comply with ASTM C14, Class 1, 2, 3.
2. Type: Nonreinforced.
3. Inside Nominal Diameter: inches.
4. End Connections: Bell and spigot.
5. Fittings:

a. Concrete pipe.
b. Comply with ASTM C14.

6. Joints:

a. Rubber compression gasket.
b. Comply with ASTM C443.

D. Reinforced Concrete Pipe:

1. Comply with ASTM C76, Class I; II; III; IV; V.
2. Reinforcement: Mesh; Bar.
3. Inside Nominal Diameter: inches.
4. End Connections: Bell and spigot.

5. Fittings: Reinforced concrete.
6. Joints:

    a. Rubber compression gasket.
    b. Comply with ASTM C443.

E. Plastic Pipe:

1. Material: PVC.
2. Comply with ASTM D2729.
3. Inside Nominal Diameter: inches.
4. End Connections: Bell and spigot with solvent-sealed ends.
5. Fittings: PVC.
6. Joints:

    a. Solvent welded with solvent cement conforming to ASTM D2564.
    b. Comply with ASTM D2855.

F. Plastic Pipe:

1. Material: PVC.
2. Comply with ASTM D3034, SDR-35.
3. Inside Nominal Diameter: inches,
4. End Connections: Bell and spigot with rubber-ring-sealed gasket joint.
5. Fittings: PVC.
6. Joints:

    a. Elastomeric gaskets.
    b. Comply with ASTM F477.

G. Plastic Pipe:

1. Material: PVC, Schedule 40; 80; 120.
2. Comply with ASTM D1785.
3. Inside Nominal Diameter: inches
4. End Connections: Bell and spigot with solvent-sealed ends.
5. Fittings:

    a. Material: PVC.
    b. Comply with ASTM D2466.
6. Joints:

    a. Solvent welded with solvent cement according to ASTM D2564.
    b. Comply with ASTM D2855.

2.2 MANHOLES

A. As specified in Section 330561 - Concrete Manholes; 330573 - Polyethylene Manholes; 330576 - Fiberglass Manholes.

2.3 FLEXIBLE COUPLINGS

A. Manufacturers:

1.
2. Substitutions: As specified in Section 016000 - Product Requirements
3. Furnish materials according to AWWA standards.

B. Description:

1. Material: Resilient, chemical-resistant, elastomeric PVC.
2. Attachment: Two Series-300 stainless-steel clamps, screws, and housings.

2.4 FLEXIBLE PIPE BOOTS FOR MANHOLE PIPE ENTRANCES

A. Manufacturers:

1. Substitutions: As specified in Section 016000 - Product Requirements
2. Furnish materials according to AWWA standards.

B. Description:

1. Material: EPDM.
2. Comply with ASTM C923.
3. Attachment: Series-300 stainless-steel clamp and hardware.

2.5 MATERIALS

A. Bedding and Cover:

1. Bedding: Fill Type A1; A2; A3; A4, as specified in Section 310516 - Aggregates for Earthwork.
2. Cover: Fill Type A1; A2; A3; A4, as specified in Section 310516 - Aggregates for Earthwork.
3. Soil Backfill from Above Pipe to Finish Grade:

    a. Soil Type S1; S2, as specified in Section 310513 - Soils for Earthwork.
    b. Subsoil with no rocks more than 6 inches in diameter, frozen earth, or foreign matter.

2.6 MIXES

A. Grout: As specified in Section 330130.61 - Packer Injection Grouting

2.7 ACCESSORIES

A. Pipe Markers: As specified in Section 330597 - Identification and Signage for Utilities.

2.8 SOURCE QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for testing, inspection, and analysis.

B. Provide shop inspection and testing of pipe.

C. Owner Inspection:

1. Make completed pipe sections available for inspection at manufacturer's factory prior to packaging for shipment.
2. Notify Owner at least [seven days before inspection is allowed.

D. Owner Witnessing:

1. Allow witnessing of factory inspections and tests at manufacturer's test facility.
2. Notify Owner at least seven days before inspections and tests are scheduled.

E. Certificate of Compliance:

1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify that trench cut; excavation base is ready to receive Work of this Section.

C. Verify that excavations, dimensions, and elevations are as indicated on Drawings.

3.2 PREPARATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Correct over-excavation with fine aggregate.

C. Remove large stones or other hard materials that could damage pipe or impede consistent backfilling or compaction.

D. Protect and support existing sewer lines, utilities, and appurtenances.

E. Utilities:

1. Maintain profiles of utilities.
2. Coordinate with other utilities to eliminate interference.
3. Notify Architect/Engineer if crossing conflicts occur.

3.3 INSTALLATION

A. Bedding:

1. Excavate pipe trench as specified in Section 312316.13 – Trenching
2. Place bedding material at trench bottom.
3. Level materials in continuous layer not exceeding 6 inches.

4. Maintain optimum moisture content of bedding material to attain required compaction density.

B. Piping:

1. Install pipe, fittings, and accessories according to ASTM D2321, and seal joints watertight.
2. Lay pipe to slope gradients as indicated on Drawings.
3. Begin at downstream end of system and progress upstream.
4. Bedding: Install at sides and over top of pipe, to minimum compacted thickness of [12] inches.
5. Bedding: As indicated on Drawings.
6. Lay bell-and-spigot pipe with bells upstream.
7. Backfill and compact as specified in Section 312316.13 - Trenching.
8. Do not displace or damage pipe when compacting.
9. Connect to building sanitary sewer outlet and municipal sewer system
10. Pipe Markers: As specified in Section 330597 - Identification and Signage for Utilities.
11. Install Site sanitary sewage system piping to within 5 feet of building, and connect to building sanitary waste system as specified in Section 221300 - Facility Sanitary Sewerage.
12. Installation Standards: Install Work according to AWWA standards.

C. Manholes: As specified in Section 330561 - Concrete Manholes; 330573 - Polyethylene Manholes; 330576 - Fiberglass Manholes.

D. Backfilling:

1. Backfill around sides and to top of pipe with cover fill in minimum lifts of 6 Tamp fill in place, and compact to [95 percent of maximum density.
2. Place and compact material immediately adjacent to pipes to avoid damage to pipe and prevent pipe misalignment.
3. Maintain optimum moisture content of bedding material as required to attain specified compaction density.

E. Backfilling: As specified in Section 312323 - Fill.

3.4 TOLERANCES

A. Section 014000 - Quality Requirements: Requirements for tolerances.

B. Maximum Variation from Indicated Slope: 1/8 inch in 10 feet.

3.5 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.

B. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.

C. Request inspection by Architect/Engineer prior to and immediately after placing bedding.

D. Testing:

1. If tests indicate that Work does not meet specified requirements, remove Work, replace, and retest.
2. Perform testing on Site sanitary sewage system according to local code & State & Municipality; Highway; Public Work's standards.
3. Pipe Testing:
    a. Pressure Testing: As specified in Section 330505.31 - Hydrostatic Testing & 330505.41 - Air Testing.
    b. Infiltration and Exfiltration Testing: As specified in Section 330505.33 - Infiltration and Exfiltration Testing.
    c. Deflection Testing: As specified in Section 330505.43 - Mandrel Testing.
4. Compaction Testing:
    a. Comply with AASHTO T 180; ASTM D698; ASTM D1557; ASTM D6938.

3.6 PROTECTION

A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

C. Cap open ends of piping during periods of Work stoppage.

3.7 ATTACHMENTS

A. Sanitary Sewer Main: From 5 feet beyond east building wall, to municipal sewer under Oak Street. Size: 8 inches.

B. Cleanout: Near west side of main sidewalk on sanitary sewer main.

END OF SECTION 333100

SECTION 333111 - PUBLIC SANITARY SEWERAGE GRAVITY PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sanitary sewerage piping.
2. Connection to existing manholes.
3. Wye branches and tees.
4. Sanitary laterals.
5. Pile support systems.
6. Bedding and cover materials.

B. Related Requirements:

1. Section 310513 - Soils for Earthwork: Soils for backfill in trenches.
2. Section 310516 - Aggregates for Earthwork: Aggregate for backfill in trenches.
3. Section 312316 - Excavation: Product and execution requirements for excavation and backfill required by this Section.
4. Section 312316.13 - Trenching: Execution requirements for trenching required by this Section.
5. Section 312323 - Fill: Requirements for backfilling as required by this Section.
6. Section 330130.61 - Packer Injection Grouting: Grout sealing of piping.
7. Section 330505.33 - Infiltration and Exfiltration Testing: Infiltration testing of gravity-flow sewerage piping.
8. Section 330505.43 - Mandrel Testing: Deflection testing of plastic sewerage piping.
9. Section 330561 - Concrete Manholes: Manholes for sanitary sewerage piping.
10. Section 330573 - Polyethylene Manholes: Manholes for sanitary sewerage piping.
11. Section 330576 - Fiberglass Manholes: Manholes for sanitary sewerage piping.
12. Section 330597 - Identification and Signage for Utilities: Pipe markers.

1.2 DEFINITIONS

A. ABS: Acrylonitrile butadiene styrene.

B. Bedding: Fill placed under, beside, and directly over pipe, prior to subsequent backfill operations.

C. EPDM: Ethylene-propylene-diene terpolymer.

1.3 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. American Water Works Association:

1. AWWA C104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
2. AWWA C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
3. AWWA C110 - Ductile-Iron and Gray-Iron Fittings.
4. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
5. AWWA C150 - Thickness Design of Ductile-Iron Pipe.
6. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast.
7. AWWA C153 - Ductile-Iron Compact Fittings.

C. ASTM International:

1. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.
2. ASTM A123/ (A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products).
3. ASTM C14 - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe.
4. ASTM C14M - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe (Metric).
5. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
6. ASTM C76M - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe (Metric).
7. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
8. ASTM C443M - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets (Metric).
9. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
10. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
11. ASTM C923M - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals (Metric).
12. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3).
13. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3).
14. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
15. ASTM D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.

16. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
17. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
18. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
19. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
20. ASTM D2751 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.
21. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings.
22. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
23. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
24. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

1.4 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with municipal; county; sewerage; utilities; authority; department.

C. Notify affected utility companies at least 72 hours prior to construction.

1.5 PREINSTALLATION MEETINGS

A. Section 013000 - Administrative Requirements: Requirements for preinstallation meeting.

B. Convene minimum one week prior to commencing Work of this Section.

C. Attendance Roster: Include affected utility companies and appropriate local county officials.

1.6 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer catalog cuts and other information indicating proposed materials, accessories, details, and construction information.

C. Permits: Submit copies of State construction permit, roadway opening permit, soil erosion permit.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Test and Evaluation Reports: Submit reports indicating field tests made and results obtained.

F. Manufacturer Instructions:

1. Indicate special procedures required to install specified products.
2. Submit detailed description of procedures for connecting new sewer to existing sewer line and directional drilling installation.
3. Submit detailed description of procedures for connecting new sewer to existing sewer line and pipe jacking installation.

G. Source Quality-Control Submittals: Indicate results of shop & factory tests and inspections.

H. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

I. Qualifications Statement:

1. Submit qualifications for manufacturer and installer.

1.7 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record invert elevations and actual locations of pipe runs, connections , manholes, and cleanouts.

C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.8 QUALITY ASSURANCE

A. Perform Work according to AWWA standards.

B. Maintain 1 copy of each standard affecting Work of this Section on Site.

1.9 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three YEARS experience.

B. Installer: Company specializing in performing Work of this Section with minimum three Years' experience.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

C. Storage:

1. Store materials according to manufacturer instructions.
2. Store valves in shipping containers with labeling in place.

D. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Block individual and stockpiled pipe lengths to prevent moving.
3. Provide additional protection according to manufacturer instructions.

1.11 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 SANITARY SEWERAGE PIPING

A. Cast-Iron Soil Pipe:

1. Comply with ASTM A74.
2. Type: Service.
3. Inside Nominal Diameter: 6 & 8 inches.
4. End Connections: Bell and spigot Plain.
5. Fittings: Cast iron.
6. Joints:

    a. Joint Devices: Rubber gasket.
    b. Comply with ASTM C564.

B. Ductile-Iron Pipe:

1. Comply with AWWA C150 or AWWA C151.
2. Minimum Pressure Class: 150.
3. Minimum Special Thickness Class: 50.
4. End Connections: Bell and spigot.
5. Outside Coating:

    a. Type: Asphaltic.
    b. Minimum Uniform Thickness: [1] mil.
    c. Comply with AWWA C151.
6. Lining:

    a. Cement mortar lined.
    b. Comply with AWWA C104.
7. Lining:

    a. Seal coating applied to lining at following thickness:
        1) Nominal Pipe Sizes 6 through 12 Inches: 1/8 inch.
        2) Nominal Pipe Sizes 14 through 24 Inches: inch.
8. Lining:

    a. Type: Asphaltic sealcoat.
    b. Minimum Uniform Thickness: [1] mil.
    c. Comply with AWWA C104.
9. PE Encasement: Comply with AWWA C105.
10. Fittings:

    a. Material: Ductile iron, Class 50, 52, 54 or greater.
    b. Comply with AWWA C153 or AWWA C110.

c. Lining: Cement-mortar lined according to AWWA C104; Seal coat lined and coated with bituminous paint.

11. Coating:

a. Coat pipe and fittings exposed inside of structures with two coats of bituminous paint to achieve minimum dry film thickness of mils per coat.
b. As specified in Section 099000 - Painting and Coating.

12. Joints:

a. Rubber gasket joint devices.
b. Comply with AWWA C111.

C. Concrete Pipe:

1. Comply with ASTM C14, Class 1 2 3.
2. Material: Nonreinforced.
3. Inside Nominal Diameter: 6 & 8 inches.
4. End Connections: Bell and spigot.
5. Fittings:

a. Concrete pipe.
b. Comply with ASTM C14.

6. Joints:

a. Rubber compression gasket.
b. Comply with ASTM C443.

D. Reinforced Concrete Pipe:

1. Comply with ASTM C76, Class I; II; III; IV.
2. Reinforcement: Mesh; Bar.
3. Inside Nominal Diameter: 6 & 8 inches.
4. End Connections: Bell and spigot.
5. Fittings: Reinforced concrete.
6. Joints:

a. Rubber compression gasket.
b. Comply with ASTM C443.

E. Plastic Pipe:

1. Material: ABS.
2. Comply with ASTM D2751.
3. Inside Nominal Diameter: 6& 8 inches.
4. End Connections: Bell-and-spigot style, with solvent-sealed ends.
5. Fittings: ABS.
6. Joints:

a. Solvent welded.
b. Comply with ASTM D2235.

F. Plastic Pipe:

1. Material: PVC.
2. Comply with ASTM D2729.
3. Inside Nominal Diameter in inches.
4. End Connections: Bell-and-spigot style, with solvent-sealed ends.
5. Fittings: PVC.
6. Joints:

    a. Solvent welded with solvent cement complying with ASTM D2564.
    b. Comply with ASTM D2855.

G. Plastic Pipe:

1. Material: PVC.
2. Comply with ASTM D3034, SDR-35.
3. Inside Nominal Diameter: inches.
4. End Connections: Bell-and-spigot style, with rubber-ring-sealed gasket joint.
5. Fittings: PVC.
6. Joints:

    a. Elastomeric gaskets.
    b. Comply with ASTM F477.

H. Plastic Pipe:

1. Material: PVC, Schedule 40; 80; 120.
2. Comply with ASTM D1785.
3. Inside Nominal Diameter: inches.
4. End Connections: Bell-and-spigot style, with solvent-sealed ends.
5. Fittings:

    a. Material: PVC.
    b. Comply with ASTM D2466.
6. Joints:

    a. Solvent welded with solvent cement complying with ASTM D2564.
    b. Comply with ASTM D2855.

2.2 MANHOLES

A. As specified in Section 330561 - Concrete Manholes; 330573 - Polyethylene Manholes ; 330576 - Fiberglass Manholes.

2.3 FLEXIBLE COUPLINGS

A. Manufacturers:

1. Substitutions: As specified in Section 016000 - Product Requirements.
2. Furnish materials according to AWWA standards.

B. Description:

1. Material: Resilient, chemical-resistant, elastomeric PVC.
2. Attachment: Two Series-300 stainless-steel clamps, screws, and housings.

2.4 FLEXIBLE PIPE BOOTS FOR MANHOLE PIPE ENTRANCES

A. Manufacturers:

1. Substitutions: As specified in Section 016000 - Product Requirements
2. Furnish materials according to AWWA standards.

B. Description:

1. Material: EPDM.
2. Comply with ASTM C923.
3. Attachment: Series-300 stainless-steel clamp and hardware.

2.5 PILE SUPPORT SYSTEMS

A. Timber Piles: As specified in Section 316219 - Timber Piles.

B. Timber for Cradle:

1. Well-seasoned southern yellow pine; Douglas fir.
2. As specified in Section 061300 - Heavy Timber Construction.
3. Surfaced on four sides with preservative treatment.

C. Preservative Treatment for Timber: As specified in Section 316219 - Timber Piles.

2.6 CONCRETE ENCASEMENT AND CRADLES

A. Concrete:

1. As specified in Section 033000 - Cast-in-Place Concrete.

2. Strength: [4,000] Psi at 28 days.
3. Air entrained if necessary
4. Finish: Rough troweled.

2.7 MATERIALS

A. Bedding and Cover:

1. Bedding: as specified in Section 310516 - Aggregates for Earthwork.
2. Cover: Fill Type as specified in Section 310516 - Aggregates for Earthwork.
3. Soil Backfill from Above Pipe to Finish Grade:

a. Soil Type S1; S2, as specified in Section 310513 - Soils for Earthwork.
b. Subsoil with no rocks more than 6 inches in diameter, frozen earth, or foreign matter.

2.8 MIXES

A. Grout: As specified in Section 330130.61 - Packer Injection Grouting.

2.9 FINISHES

A. Galvanizing:

1. Hot-dip galvanize after fabrication.
2. Comply with ASTM A123/A123M.

2.10 ACCESSORIES

A. Pile Support Brackets: galvanized] structural steel, thoroughly coated with bituminous paint.

B. Pipe Markers: As specified in Section 330597 - Identification and Signage for Utilities.

2.11 SOURCE QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for testing, inspection, and analysis.

B. Provide shop inspection and testing of pipe.

C. Owner Inspection:

1. Make completed pipe sections available for inspection at manufacturer's factory prior to packaging for shipment.
2. Notify Owner at least seven days before inspection is allowed.

D. Owner Witnessing:

1. Allow witnessing of factory inspections and tests at manufacturer's test facility.
2. Notify Owner at least seven days before inspections and tests are scheduled.

E. Certificate of Compliance:

1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify that trench cut & excavation base is ready to receive Work of this Section.

C. Verify that excavations, dimensions, and elevations are as indicated on Drawings.

3.2 PREPARATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Correct over-excavation with fine aggregate.

C. Remove large stones or other hard materials that could damage pipe or impede consistent backfilling or compaction.

D. Protect and support existing sewer lines, utilities, and appurtenances.

E. Utilities:

1. Maintain profiles of utilities.
2. Coordinate with other utilities to eliminate interference.
3. Notify Architect/Engineer if crossing conflicts occur.

3.3 INSTALLATION

A. Bedding:

1. Excavate pipe trench as specified in Section 312316.13 – Trenching
2. Excavate to lines and grades as indicated on Drawings, or as required to accommodate installation of encasement.
3. Dewater excavations to maintain dry conditions and to preserve final grades at bottom of excavation.
4. Provide sheeting and shoring as specified in Section 312316.13 – Trenching
5. Pile Support Systems:
    a. Install pile support systems as specified in Section 316219 - Timber Piles.
    b. Install utilities on pile support systems as indicated on Drawings.
    c. Install piles [6] o.c., for utility support.
6. Placement:
    a. Place bedding material at trench bottom.
    b. Level materials in continuous layer not exceeding 6-inch compacted depth.
    c. Compact to [95] percent of maximum density.

B. Piping:

1. Install pipe, fittings, and accessories according to ASTM D2321, and seal joints watertight.
2. Lay pipe to slope gradients as indicated on Drawings.
3. Begin at downstream end of system and progress upstream.
4. Bedding: Install at sides and over top of pipe, to minimum compacted thickness of 12 inches.
5. Bedding: As indicated on Drawings.
6. Lay bell-and-spigot pipe with bells upstream.
7. PE Pipe Encasement: Comply with AWWA C105, Method [A] [B].
8. Backfill and compact as specified in Section 312316.13 - Trenching.
9. Do not displace or damage pipe when compacting.
10. Connect pipe to existing sewer system at existing manhole
11. Pipe Markers: As specified in Section 330597 - Identification and Signage for Utilities.
12. Installation Standards: Install Work according to standards.

C. Manholes: As specified in Section 330561 - Concrete Manholes;

D. Connections to Existing Manholes:

1. Drilling:

    a. Core drill existing manhole to clean opening.
    b. Use of pneumatic hammers, chipping guns, sledge hammers are not permitted.
2. Install watertight neoprene gasket and seal with nonshrink concrete grout.
3. Encasement:

    a. Concrete encase new sewer pipe minimum of 24 inches to nearest pipe joint.
    b. Use epoxy binder between new and existing concrete.
4. Prevent construction debris from entering existing sewer line when making connection.

E. Wye Branches and Tees:

1. Concurrent with pipe-laying operations, install wye branches and pipe tees at locations indicated on Drawings.
2. Use standard fittings of same material and joint type as sewer main.
3. Maintain minimum [5] -foot separation distance between wye connection and manhole.
4. Use saddle wye or tee with stainless-steel clamps for taps into existing piping.
5. Mount saddles with solvent cement or gasket and secure with metal bands.
6. Lay out holes with template, and cut holes with mechanical cutter.

F. Sanitary Laterals:

1. Construct laterals from wye branch to terminal point at right-of-way.
2. Where depth of main pipeline warrants, construct riser-type laterals from wye branch.
3. Minimum Depth of Cover over Piping: [2feet.
4. Minimum Separation Distance between Laterals: [5] feet.
5. Install watertight plug, braced to withstand pipeline test pressure thrust, at termination of lateral.
6. Marker Stake:

    a. Install temporary marker stake extending from end of lateral to [12] inches above finished grade.
    b. Paint top [6inches of stake with fluorescent orange paint.

G. Backfilling:

1. Backfill around sides and to top of pipe with cover fill in minimum lifts of [6inches.
2. Tamp fill in place, and compact to [95] percent of maximum density.
3. Place and compact material immediately adjacent to pipes to avoid damage to pipe and prevent pipe misalignment.
4. Maintain optimum moisture content of bedding material as required to attain specified compaction density.

H. Backfilling: As specified in Section 312323 - Fill.

3.4 TOLERANCES

A. Section 014000 - Quality Requirements: Requirements for tolerances.

B. Maximum Variation from Indicated Slope: [1/8] inch in [10] feet.

3.5 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.

B. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.

C. Request inspection by Architect/Engineer prior to and immediately after placing bedding.

D. Testing:

1. If tests indicate that Work does not meet specified requirements, remove Work, replace, and retest.
2. Perform testing on Site sanitary sewage system according to local code, State, Municipality, Highways, and Public Work's standards.
3. Pipe Testing:
    a. Pressure Testing: As specified in Section 330505.31 - Hydrostatic Testing 330505.41 - Air Testing.
    b. Infiltration and Exfiltration Testing: As specified in Section 330505.33 - Infiltration and Exfiltration Testing.
    c. Deflection Testing: As specified in Section 330505.43 - Mandrel Testing.
4. Compaction Testing:
    a. Comply with AASHTO T 180; ASTM D698; ASTM D1557; ASTM D6938.
    b. Testing Frequency:.

3.6 PROTECTION

A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

C. Cap open ends of piping during periods of Work stoppage.

3.7 ATTACHMENTS

A. Sanitary Sewer Main: Centerline of Oak Street right-of-way from between centerline intersections of First and Second Avenues.

B. Cleanouts: Extend service laterals with cleanouts to property lines. Locate cleanouts with 2-by-4 stake extending 6 inches above ground. Paint top 4 inches with orange survey paint.

END OF SECTION 333111