

PROJECT TITLE PAGE

PROJECT MANUAL

FOR



APPALACHIAN STATE UNIVRESITY
2458 HIGHWAY 105 S,
BOONE, NORTH CAROLINA 28607

WATSON-BRUMIT HALL ROOF REPLACEMENT
150 UNIVERSITY DRIVE,
BOONE, NORTH CAROLINA 28607
REI PROJECT NO. 024CLT-033

SCO ID #: 24-27762-01A

03-25-2024

PREPARED BY:



1927 J.N. PEASE PLACE, SUITE 201, CHARLOTTE, NC 28262
NORTH CAROLINA FIRM LICENSE C-1520

SEALS PAGE

PART 1 GENERAL

1.1 SUMMARY

- A. Design Firm for Watson-Brumit Hall Roof Replacement with Project Manual dated 03-25-2024:
 - 1. REI Engineers, Inc., 1927 J.N. Pease Place, Suite 201, Charlotte, NC 28262.
 - 2. North Carolina Firm License C-1520



END OF SECTION

ADVERTISEMENT FOR BIDS

Sealed proposals will be received until 2:00 PM on May 16, 2024, at the Appalachian State University Planning, Design & Construction Office at 2458 Hwy 105 S, Boone, NC 28607, for the construction of:

Watson-Brumit Hall Roof Replacement.
(Project)

at which time and place bids will be opened and read.

Complete plans and specifications for this project can be obtained from REI Engineers, 1927 J N Pease Place, Charlotte, NC 28262, scaragher@reiengineers.com, 704-596-0331

(Designer Name and Address)

during normal office hours after April 26, 2024 (Date).

Plan Deposit: Zero dollars (\$0.00) for electronic copies, Fifty dollars (\$50.00) non-refundable cost for Hard Copies.

An open pre-bid meeting will be held for all interested bidders on May 2, 2024 at 11:00 AM at the ASU Planning, Design and Construction Office located at 2458 Hwy 105 S. Boone, NC 28607. The meeting will address project specific questions, issues, bidding procedures and bid forms. An optional site visit to the project location will follow the meeting.

The state reserves the unqualified right to reject any and all proposals.

Signed: Appalachian State University
(Owner)

NOTICE TO BIDDERS

Sealed proposals will be received by Appalachian State University in the Planning, Design & Construction Conference Room located at 2458 Hwy 105 S, Boone, NC 28607 up to 2:00 PM May 16, 2024 and immediately thereafter publicly opened and read for the furnishing of labor, material and equipment entering into the construction of

Watson-Brumit Hall Roof Replacement

Work consists of Roof Replacement including removal of existing roof system, flashings, and trim and replacing with thermoplastic-single ply roof system.

Bids will be received for single prime general construction. All proposals shall be lump sum.

Pre-Bid Meeting

An open pre-bid meeting will be held for all interested bidders on *May 2, 2024, at 11:00 AM at the ASU Planning, Design and Construction Office located at 2458 Hwy 105 S. Boone, NC 28607*. The meeting will address project specific questions, issues, bidding procedures and bid forms. An optional site visit to the project location will follow the meeting.

Complete plans, specifications and contract documents will be open for inspection in the offices of *Appalachian State University and REI Engineers* and in the plan rooms

Cherokee Business Development Center, PO Box 1200, Ginger Lynn Welch Complex, 810 Acquoni Road, Cherokee, NC 28719, Phone: 828-497 1666, FAX: 828-497-1665.

Electronic project documents may be obtained from the Engineer, REI Engineers, Inc. 1927 J.N. Pease Place, Suite 201, Charlotte, North Carolina 28626, Mr. Scott Caragher, Project Manager (scaragher@reiengineers.com) at no cost during normal office hours after February 1, 2024. Hard copy project documents may be purchased from the Engineers at a non-refundable cost of \$50.00.

or may be obtained by those qualified as prime bidders, upon deposit of fifty dollars (\$50.00) in cash or certified check. The full plan deposit will be returned to those bidders provided all documents are returned in good, usable condition within ten (10) days after the bid date.

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 A* or *Affidavit B* as applicable. Forms and instructions are included within the Proposal Form in the bid documents. Failure to complete these forms is grounds for rejection of the bid. (GS143-128.2c Effective 1/1/2002.)

All contractors are hereby notified that they must have proper license as required under the state laws governing their respective trades.

General contractors are notified that Chapter 87, Article 1, General Statutes of North Carolina, will be observed in receiving and awarding general contracts. General contractors submitting bids on this project must have license classification for "Building".

NOTE--SINGLE PRIME CONTRACTS: Under GS 87-1, a contractor that superintends or manages construction of any building, highway, public utility, grading, structure or improvement shall be deemed a "general contractor" and shall be so licensed; therefore, a single prime project that involves other trades will require the single prime contractor to hold a proper General Contractors license. **EXCEPT:** On public buildings

being bid single prime, where the total value of the general construction does not exceed 25% of the total construction value, contractors under GS87- Arts 2 and 4 (Plumbing, Mechanical & Electrical) may bid and contract directly with the Owner as the SINGLE PRIME CONTRACTOR and may subcontract to other properly licensed trades. [GS87-1.1- Rules .0210](#)

Each proposal shall be accompanied by a cash deposit or a certified check drawn on some bank or trust company, insured by the Federal Deposit Insurance Corporation, of an amount equal to not less than five percent (5%) of the proposal, or in lieu thereof a bidder may offer a bid bond of five percent (5%) of the bid executed by a surety company licensed under the laws of North Carolina to execute the contract in accordance with the bid bond. Said deposit shall be retained by the owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten days after the award or to give satisfactory surety as required by law.

A performance bond and a payment bond will be required for one hundred percent (100%) of the contract price.

Payment will be made based on ninety-five percent (95%) of monthly estimates and final payment made upon completion and acceptance of work.

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of 30 days.

The owner reserves the right to reject any or all bids and to waive informalities.

Designer:
REI Engineers
(Name)

1927 J.N. Pease Pl, Suite 201
Charlotte, NC 28262
(Address)

(704) 596-0331
(Phone)

Owner:
Appalachian State University
(Agency/Institution)

438 Academy Street, Boone, NC 28608

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PART 1 GENERAL

1.1 SUMMARY

A. The following drawings dated 03-25-2024 are included as part of the Contract Documents:

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2. G-002 Code Summary
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END OF SECTION

**INSTRUCTIONS TO BIDDERS
AND
GENERAL CONDITIONS OF THE CONTRACT**

STANDARD FORM FOR CONSTRUCTION PROJECTS

**UNIVERSITY OF NORTH CAROLINA
SYSTEM OFFICE**

Sixth Edition – June 2021

INSTRUCTIONS TO BIDDERS

For a proposal to be considered it must be in accordance with the following instructions:

1. PROPOSALS

Proposals must be made in strict accordance with the Form of Proposal provided therefor, and all blank spaces for bids, alternates and unit prices applicable to bidders work shall be properly filled in. When requested alternates are not bid, the proposer shall so indicate by the words "No Bid". Any blanks shall also be interpreted as "No Bid". The bidder agrees that bid on Form of Proposal detached from specifications will be considered and will have the same force and effect as if attached thereto. Photocopied or faxed proposals will not be considered. Numbers shall be stated both in writing and in figures for the base bids and alternates. If figures and writing differ, the written number will supersede the figures.

Any modifications to the Form of Proposal (including alternates and/or unit prices) will disqualify the bid and may cause the bid to be rejected.

The bidder shall fill in the Form of Proposal as follows:

- a. If the documents are executed by a sole owner, that fact shall be evidenced by the word "Owner" appearing after the name of the person executing them.
- b. If the documents are executed by a partnership, that fact shall be evidenced by the word "Co-Partner" appearing after the name of the partner executing them.
- c. If the documents are executed on the part of a corporation, they shall be executed by either the president or the vice president and attested by the secretary or assistant secretary in either case, and the title of the office of such persons shall appear after their signatures. The seal of the corporation shall be impressed on each signature page of the documents.
- d. If the proposal is made by a joint venture, it shall be executed by each member of the joint venture in the above form for sole owner, partnership or corporation, whichever form is applicable.
- e. All signatures shall be properly witnessed.
- f. If the contractor's license of a bidder is held by a person other than an owner, partner or officer of a firm, then the licensee shall also sign and be a party to the proposal. The title "Licensee" shall appear under his/her signature.

Proposals should be addressed as indicated in the Advertisement for Bids and be delivered enclosed in an opaque sealed envelope, marked "Proposal" and bearing the title of the work, name of the bidder, and the contractor's license number of the bidder. Bidders should clearly mark on the outside of the bid envelope which contract(s) they are bidding.

Bidder shall identify with appropriate attachments to 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 or an affidavit indicating work under contract will be self-performed, as required by G.S. 143-128.2 (c) and G.S. 143-128.2 (f). Failure to comply with these requirements is grounds for rejection of the bid.

For projects bid in the single-prime alternative, the names and license numbers of major subcontractors shall be listed on the proposal form.

It shall be the specific responsibility of the bidder to deliver his bid to the proper official at the selected place and prior to the announced time for the opening of bids. Later delivery of a bid for any reason, including delivery by any delivery service, shall disqualify the bid.

Unit prices quoted in the proposal shall include overhead and profit and shall be the full compensation for the contractor's cost involved in the work. See General Conditions, Article 19c-1.

2. EXAMINATION OF CONDITIONS

It is understood and mutually agreed that by submitting a bid the bidder acknowledges that he has carefully examined all documents pertaining to the work, the location, accessibility and general character of the site of the work and all existing buildings and structures within and adjacent to the site, and has satisfied himself as to the nature of the work, the condition of existing buildings and structures, the conformation of the ground, the character, quality and quantity of the material to be encountered, the character of the equipment, machinery, plant and any other facilities needed preliminary to and during prosecution of the work, the general and local conditions, the construction hazards, and all other matters, including, but not limited to, the labor situation which can in any way affect the work under the contract, and including all safety measures required by the Occupational Safety and Health Act of 1970 and all rules and regulations issued pursuant thereto. It is further mutually agreed that by submitting a proposal the bidder acknowledges that he has satisfied himself as to the feasibility and meaning of the plans, drawings, specifications and other contract documents for the construction of the work and that he accepts all the terms, conditions and stipulations contained therein; and that he is prepared to work in cooperation with other contractors performing work on the site.

Reference is made to contract documents for the identification of those surveys and investigation reports of subsurface or latent physical conditions at the site or otherwise affecting performance of the work which have been relied upon by the designer in preparing the documents. The owner will make copies of all such surveys and reports available to the bidder upon request.

Each bidder may, at his own expense, make such additional surveys and investigations as he may deem necessary to determine his bid price for the performance of the work. Any on-site investigation shall be done at the convenience of the owner. Any reasonable request for access to the site will be honored by the owner.

3. BULLETINS AND ADDENDA

Any addenda to specifications issued during the time of bidding are to be considered covered in the proposal and in closing a contract they will become a part thereof. It shall be the bidder's responsibility to ascertain prior to bid time the addenda issued and to see that his bid includes any changes thereby required.

Should the bidder find discrepancies in, or omission from, the drawings or documents or should he be in doubt as to their meaning, he shall at once notify the designer who will send written instructions in the form of addenda to all bidders. Notification should be no later than seven (7) days prior to the date set for receipt of bids. Neither the owner nor the designer will be responsible for any oral instructions.

All addenda should be acknowledged by the bidder(s) on the Form of Proposal. However, even if not acknowledged, by submitting a bid, the bidder has certified that he has reviewed all issued addenda and has included all costs associated within the bid.

4. BID SECURITY

Each proposal shall be accompanied by a cash deposit or a certified check drawn on some bank or trust company insured by the Federal Deposit Insurance Corporation, or a bid bond in an amount equal to not less than five percent (5%) of the proposal, said deposit to be retained by the owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten (10) days after the award or to give satisfactory surety as required by law (G.S. 143-129).

Bid bond shall be conditioned that the surety will, upon demand, forthwith make payment to the obligee upon said bond if the bidder fails to execute the contract. The owner may retain bid securities of any bidder(s) who may have a reasonable chance of award of contract for the full duration of time stated in the Notice to Bidders. Other bid securities may be released sooner, at the discretion of the owner. All bid securities (cash or certified checks) shall be returned to the bidders promptly after award of contracts, and no later than seven (7) days after expiration of the holding period stated in the Notice to Bidders. Standard Form of Bid Bond is included in these specifications and shall be used.

5. RECEIPT OF BIDS

Bids shall be received in strict accordance with requirements of the General Statutes of North Carolina. Bid security shall be required as prescribed by statute. Prior to the closing of the bid, the bidder will be permitted to change or withdraw his bid. Guidelines for opening of public construction bids are available from the owner.

6. OPENING OF BIDS

Upon opening, all bids shall be read aloud. Once bidding is closed, there shall not be any withdrawal of bids by any bidder and no bids may be returned by the designer to any bidder. After the opening of bids, no bid may be withdrawn, except under the provisions of General Statute 143-129.1, for a period of thirty days unless otherwise specified. Should the successful bidder default and fail to execute a contract, the contract may be awarded to the next lowest and responsible bidder. The owner reserves the unqualified right to reject any and all bids. Reasons for rejection may include, but shall not be limited to, the following:

- a. If the Form of Proposal furnished to the bidder is not used or is altered.
- b. If the bidder fails to insert a price for all bid items, alternate and unit prices requested.
- c. If the bidder adds any provisions reserving the right to accept or reject any award.
- d. If there are unauthorized additions or conditional bids, or irregularities of any kind which tend to make the proposal incomplete, indefinite or ambiguous as to its meaning.
- e. If the bidder fails to complete the proposal form where information is requested so the bid may be properly evaluated by the owner.
- f. If the unit prices contained in the bid schedule are unacceptable to the owner.
- g. If the bidder fails to comply with other instructions stated herein.

7. BID EVALUATION

The award of the contract will be made to the lowest responsible bidder as soon as practical. The owner may award on the basis of the base bid and any alternates the owner chooses.

Before awarding a contract, the owner may require the apparent low bidder to qualify himself to be a responsible bidder by furnishing any or all of the following data:

- a. The latest financial statement showing assets and liabilities of the company or other information satisfactory to the owner.
- b. A listing of completed projects of similar size.
- c. Permanent name and address of place of business.
- d. The number of regular employees of the organization and length of time the organization has been in business under present name.
- e. The name and home office address of the surety proposed and the name and address of the responsible local claim agent.
- f. The names of members of the firms who hold appropriate trade licenses, together with license numbers.
- g. If prequalified, contractor information may be reviewed and evaluated comparatively to submitted prequalification package.

Failure or refusal to furnish any of the above information, if requested, shall constitute a basis for disqualification of any bidder.

In determining the lowest responsible, responsive bidder, the owner shall take into consideration the bidder's compliance with the requirements of G.S. 143-128.2(c), the past performance of the bidder on construction contracts for the State with particular concern given to completion times, quality of work, cooperation with other contractors, and cooperation with the designer and owner. Failure of the low bidder to furnish affidavit and/or documentation as required by G.S. 143-128.2(c) shall constitute a basis for disqualification of the bid.

Should the owner adjudge that the apparent low bidder is not the lowest responsible, responsive bidder by virtue of the above information, said apparent low bidder will be so notified and his bid security shall be returned to him.

8. PERFORMANCE BOND

The successful bidder, upon award of contract, shall furnish a performance bond in an amount equal to 100 percent of the contract price. See Article 35, General Conditions.

9. PAYMENT BOND

The successful bidder, upon award of contract, shall furnish a payment bond in an amount equal to 100 percent of the contract price. See Article 35, General Conditions.

10. PAYMENTS

Payments to the successful bidders (contractors) will be made on the basis of monthly estimates of completed work. See Article 31, General Conditions.

11. PRE-BID CONFERENCE

Prior to the date set for receiving bids, the Designer may arrange and conduct a Pre-Bid Conference for all prospective bidders. The purpose of this conference is to review project requirements and to respond to questions from prospective bidders and their subcontractors or material suppliers related to the intent of bid documents. Attendance by prospective bidders shall be as required by the "Notice to Bidders".

12. SUBSTITUTIONS

In accordance with the provisions of G.S. 133-3, material, product, or equipment substitutions proposed by the bidders to those specified herein can only be considered during the bidding phase until ten (10) days prior to the receipt of bids when submitted to the Designer with sufficient data to confirm material, product, or equipment equality. Proposed substitutions submitted after this time will be considered only as potential change order.

Submittals for proposed substitutions shall include the following information:

- a. Name, address and telephone number of manufacturer and supplier as appropriate.
- b. Trade name, model or catalog designation.
- c. Product data including performance and test data, reference standards, and technical descriptions of material, product, or equipment. Include color samples and samples of available finishes as appropriate.
- d. Detailed comparison with specified products including performance capabilities, warranties, and test results.
- e. Other pertinent data including data requested by the Designer to confirm product equality.

If a proposed material, product, or equipment substitution is deemed equal by the Designer to those specified, all bidders of record will be notified by Addendum.

GENERAL CONDITIONS OF THE CONTRACT

The use or reproduction of this document or any part thereof is authorized for and limited to use on projects of the University of North Carolina, and is distributed by, through and at the discretion of UNC System Office, Chapel Hill, North Carolina, for that distinct and sole purpose.

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ARTICLE 1 - DEFINITIONS

- a. The **contract documents** consist of the Notice to Bidders; Instructions to Bidders; General Conditions of the Contract; special conditions if applicable; Supplementary General Conditions; the drawings and specifications, including all bulletins, addenda or other modifications of the drawings and specifications incorporated into the documents prior to their execution; the proposal; the contract; the performance bond; the payment bond; insurance certificates; the approval of the university attorney; and the certificate of the Office of State Budget and Management. All of these items together form the contract.
- b. The **owner** is the State of North Carolina through the agency named in the contract.
- c. The **designer(s)** are those referred to within this contract, or their authorized representatives. The designer(s), as referred to herein, shall mean architect and/or engineer. They will be referred to hereinafter as if each were of the singular number, masculine gender.
- d. The **contractor** as referred to hereinafter, shall be deemed to be either of the several contracting parties called the "Party of the First Part" in either of the several contracts in connection with the total project. Where, in special instances hereinafter, a particular contractor is intended, an adjective precedes the word "contractor," as "general," "heating," etc. For the purposes of a single prime contract, the term Contractor shall be deemed to be the single contracting entity identified as the "Party of the First Part" in the single Construction Contract. Any references or adjectives that name or infer multiple prime contractors shall be interpreted to mean the single prime Contractor.
- e. A **subcontractor** as the term is used herein, shall be understood to be one who has entered into a direct contract with a contractor, and includes one who furnishes materials worked to a special design in accordance with plans and specifications covered by the contract, but does not include one who only sells or furnishes materials not requiring work so described or detailed.
- f. **Written notice** shall be defined as notice in writing delivered in person to the contractor, or to a partner of the firm in the case of a partnership, or to a member of the contracting organization, or to an officer of the organization in the case of a corporation, or sent to the last known business address of the contracting organization by registered mail.
- g. **Work** as used herein as a noun, is intended to include materials, labor and workmanship of the appropriate contractor.
- h. The **project** is the total construction work to be performed under the contract documents by the several contractors.

- i. **Project expediter**, as used herein, is an entity stated in the contract documents, designated to effectively facilitate scheduling and coordination of work activities. See Article 14(f) for responsibilities of a Project Expediter. **For the purposes of a single prime contract, the single prime contractor shall be designated as the Project Expediter.**
- j. **Change order** as used herein, shall mean a written order to the contractor subsequent to the signing of the contract authorizing a change in the contract. The change order shall be signed by the contractor and designer and approved by the owner in that order (Article 19).
- k. **Field Order**, as used herein, shall mean a written approval for the contractor to proceed with the work requested by owner prior to issuance of a formal Change Order. The field order shall be signed by the contractor, designer, and owner .
- l. **Time of completion** as stated in the contract documents, is to be interpreted as consecutive calendar days measured from the date established in the written Notice to Proceed, or such other date as may be established herein (Article 23).
- m. **Liquidated damages** as stated in the contract documents, is an amount reasonably estimated in advance to cover the consequential damages associated with the Owner's economic loss in not being able to use the Project for its intended purposes at the end of the contract's completion date as amended by change order, if any, by reason of failure of the contractor(s) to complete the work within the time specified. Liquidated damages does not include the Owner's extended contract administration costs (including but not limited to additional fees for architectural and engineering services, testing services, inspection services, commissioning services, etc.), such other damages directly resulting from delays caused solely by the contractor, or consequential damages that the Owner identified in the bid documents that may be impacted by any delay caused solely by the Contractor (e.g., if a multi-phased project-subsequent phases, delays in start of other projects that are dependent on the completion of this Project, extension of leases and/or maintenance agreements for other facilities).
- n. **Surety** as used herein, shall mean the bonding company or corporate body which is bound with and for the contractor, and which engages to be responsible for the contractor and his acceptable performance of the work.
- o. **Routine written communications between the Designer and the Contractor** are any communication other than a "request for information" provided in letter, memo, or transmittal format, sent by mail, courier, electronic mail, or facsimile. Such communications cannot be identified as "request for information."
- p. **Clarification or Request for information (RFI)** is a request from the Contractor seeking an interpretation or clarification by the Designer relative to the contract documents. The RFI, which shall be labeled (RFI), shall clearly and concisely set forth the issue or item requiring clarification or interpretation and why the response is needed. The RFI must set forth the Contractor's interpretation or understanding of the contract documents requirements in question, along with reasons for such an understanding.
- q. **Approval** means written or imprinted acknowledgement that materials, equipment or methods of construction are acceptable for use in the work.
- r. **Inspection** shall mean examination or observation of work completed or in progress to determine its compliance with contract documents.

- s. **“Equal to” or “approved equal”** shall mean materials, products, equipment, assemblies, or installation methods considered equal by the bidder in all characteristics (physical, functional, and aesthetic) to those specified in the contract documents. Acceptance of equal is subject to the approval of the Designer and Owner.
- t. **“Substitution” or “substitute”** shall mean materials, products, equipment, assemblies, or installation methods deviating in at least one characteristic (physical, functional, or aesthetic) from those specified, but which in the opinion of the bidder would improve competition and/or enhance the finished installation. Acceptance of substitution is subject to the approval of the Designer and Owner.
- u. **Provide** shall mean furnish and install complete in place, new, clean, operational, and ready for use.
- v. **Indicated and shown** shall mean provide as detailed, or called for, and reasonably implied in the contract documents.
- w. **Special inspector** is one who inspects materials, installation, fabrication, erection or placement of components and connections requiring special expertise to ensure compliance with the approved construction documents and referenced standards.
- x. **Commissioning** is a quality assurance process that verifies and documents that building components and systems operate in accordance with the project design documents.
- y. **Designer Final Inspection** is the inspection performed by the design team to determine the completeness of the project in accordance with approved plans and specifications. This inspection occurs prior to SCO final inspection.
- z. **SCO Final Inspection** is the inspection performed by the State Construction Office to determine the completeness of the project in accordance with North Carolina Building Codes.
- aa. **Beneficial Occupancy** is requested by the owner and is occupancy or partial occupancy of the building or project after all life safety items have been completed as determined by the State Construction Office. Life safety items include but are not limited to fire alarm, sprinkler, egress and exit lighting, fire rated walls, egress paths and security.
- bb. **Final Acceptance** is the date on which the State Construction Office approves the project as complying with the North Carolina Building Codes and the owner accepts the construction as totally complete. This includes certification by the Designer that all punch list items are completed.

ARTICLE 2 - INTENT AND EXECUTION OF DOCUMENTS

- a. The drawings and specifications are complementary, one to the other. That which is shown on the drawings or called for in the specifications shall be as binding as if it were both called for and shown. The intent of the drawings and specifications is to establish the scope of all labor, materials, transportation, equipment, and any and all other things necessary to provide a bid for a complete job. In case of discrepancy or disagreement in the contract documents, the order of precedence shall be: Form of Contract, specifications, large-scale detail drawings, small-scale drawings.

- b. The wording of the specifications shall be interpreted in accordance with common usage of the language except that words having a commonly used technical or trade meaning shall be so interpreted in preference to other meanings.
- c. The contractor shall execute each copy of the proposal, contract, performance bond and payment bond as follows:
 - 1. If the documents are executed by a sole owner, that fact shall be evidenced by the word "Owner" appearing after the name of the person executing them.
 - 2. If the documents are executed by a partnership, that fact shall be evidenced by the word "Co-Partner" appearing after the name of the partner executing them.
 - 3. If the documents are executed on the part of a corporation, they shall be executed by either the president or the vice president and attested by the secretary or assistant secretary in either case, and the title of the office of such persons shall appear after their signatures. The seal of the corporation shall be impressed on each signature page of the documents.
 - 4. If the documents are made by a joint venture, they shall be executed by each member of the joint venture in the above form for sole owner, partnership or corporation, whichever form is applicable to each particular member.
 - 5. All signatures shall be properly witnessed.
 - 6. If the contractor's license is held by a person other than an owner, partner or officer of a firm, then the licensee shall also sign and be a party to the contract. The title "Licensee" shall appear under his/her signature.
 - 7. The bonds shall be executed by an attorney-in-fact. There shall be attached to each copy of the bond a certified copy of power of attorney properly executed and dated.
 - 8. Each copy of the bonds shall be countersigned by an authorized individual agent of the bonding company licensed to do business in North Carolina. The title "Licensed Resident Agent" shall appear after the signature.
 - 9. The seal of the bonding company shall be impressed on each signature page of the bonds.
 - 10. The contractor's signature on the performance bond and the payment bond shall correspond with that on the contract. The date of the performance and payment bond shall not be prior to the date of the contract.

ARTICLE 3 - CLARIFICATIONS AND DETAIL DRAWINGS

- a. In such cases where the nature of the work requires clarification by the designer, such clarification shall be furnished by the designer with reasonable promptness by means of written instructions or detail drawings, or both. Clarifications and drawings shall be consistent with the intent of contract documents, and shall become a part thereof.
- b. The contractor(s) and the designer shall prepare, if deemed necessary, a schedule fixing dates upon which foreseeable clarifications will be required. The schedule will be subject to addition or change in accordance with progress of the work. The designer shall furnish

drawings or clarifications in accordance with that schedule. The contractor shall not proceed with the work without such detail drawings and/or written clarifications.

ARTICLE 4 - COPIES OF DRAWINGS AND SPECIFICATIONS

The designer or owner shall furnish free of charge to the contractors electronic copies of plans and specifications. If requested by the contractor, paper copies of plans and specifications shall be furnished free of charge as follows:

- a. General contractor - Up to twelve (12) sets of general contractor drawings and specifications, up to six (6) sets of which shall include drawings and specifications of all other contracts, plus a clean set of black line prints on white paper of all appropriate drawings, upon which the contractor shall clearly and legibly record all work-in-place that is at variance with the contract documents.
- b. Each other contractor - Up to six (6) sets of the appropriate drawings and specifications, up to three (3) sets of which shall include drawings and specifications of all other contracts, plus a clean set of black line prints on white paper of all appropriate drawings, upon which the contractor shall clearly and legibly record all work-in-place that is at variance with the contract documents.
- c. Additional sets shall be furnished at cost, including mailing, to the contractor upon request by the contractor. This cost shall be stated in the bidding documents.
- d. For the purposes of a single-prime contract, the contractor shall receive up to 30 sets of drawings and specifications, plus a clean set of black line prints on white paper of all appropriate drawings, upon which the contractor shall clearly and legibly record all work-in-place that is at variance with the contract documents.

ARTICLE 5 - SHOP DRAWINGS, SUBMITTALS, SAMPLES, DATA

- a. Within 15 consecutive calendar days after the notice to proceed, each prime contractor shall submit a schedule for submission of all shop drawings, product data, samples, and similar submittals through the Project Expediter to the Designer. This schedule shall indicate the items, relevant specification sections, other related submittal data, and the date when these items will be furnished to the designer.
- b. The Contractor(s) shall review, approve and submit to the Designer all Shop Drawings, Coordination Drawings, Product Data, Samples, Color Charts, and similar submittal data required or reasonably implied by the Contract Documents. Required Submittals shall bear the Contractor's stamp of approval, any exceptions to the Contract Documents shall be noted on the submittals, and copies of all submittals shall be of sufficient quantity for the Designer to retain up to three (3) copies of each submittal for his own use plus additional copies as may be required by the Contractor. Submittals shall be presented to the Designer in accordance with the schedule submitted in paragraph (a) so as to cause no delay in the activities of the Owner or of separate Contractors.
- c. The Designer shall review required submittals promptly, noting desired corrections if any, and retaining two (2) copies (one for the Designer, one for the owner) for his use. The remaining copies of each submittal shall be returned to the Contractor not later than twenty (20) days from the date of receipt by the Designer, for the Contractor's use or for corrections and resubmittal as noted by the Designer. When resubmittals are required, the submittal procedure shall be the same as for the original submittals.

- d. Approval of shop drawings/submittals by the Designer shall not be construed as relieving the Contractor from responsibility for compliance with the design or terms of the contract documents nor from responsibility of errors of any sort in the shop drawings, unless such lack of compliance or errors first have been called in writing to the attention of the Designer by the Contractor.

ARTICLE 6 - WORKING DRAWINGS AND SPECIFICATIONS AT THE JOB SITE

- a. The contractor shall maintain, in readable condition at his job office, one complete set of working drawings and specifications for his work including all shop drawings. Such drawings and specifications shall be available for use by the designer, his authorized representative, the owner or State Construction Office..
- b. The contractor shall maintain at the job office, a day-to-day record of work-in-place that is at variance with the contract documents. Such variations shall be fully noted on project drawings by the contractor and submitted to the designer upon project completion and no later than 30 days after final acceptance of the project.
- c. The contractor shall maintain at the job office a record of all required tests that have been performed, clearly indicating the scope of work inspected and the date of approval or rejection.

ARTICLE 7 - OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

All drawings and specifications are instruments of service and remain the property of the State of North Carolina. The use of these instruments on work other than this contract without permission of the owner is prohibited. All copies of drawings and specifications other than contract copies shall be returned to the owner upon request after completion of the work.

ARTICLE 8 - MATERIALS, EQUIPMENT, EMPLOYEES

- a. The contractor shall, unless otherwise specified, supply and pay for all labor, transportation, materials, tools, apparatus, lights, power, heat, sanitary facilities, water, scaffolding and incidentals necessary for the completion of his work, and shall install, maintain and remove all equipment of the construction, other utensils or things, and be responsible for the safe, proper and lawful construction, maintenance and use of same, and shall construct in the best and most workmanlike manner, a complete job and everything incidental thereto, as shown on the plans, stated in the specifications, or reasonably implied therefrom, all in accordance with the contract documents.
- b. All materials shall be new and of quality specified, except where reclaimed material is authorized herein and approved for use. Workmanship shall at all times be of a grade accepted as the best practice of the particular trade involved, and as stipulated in written standards of recognized organizations or institutes of the respective trades except as exceeded or qualified by the specifications.
- c. Upon notice, the contractor shall furnish evidence as to quality of materials.
- d. Products are generally specified by ASTM or other reference standard and/or by manufacturer's name and model number or trade name. When specified only by reference standard, the Contractor may select any product meeting this standard, by any manufacturer. When several products or manufacturers are specified as being equally acceptable, the Contractor has the option of using any product and manufacturer

combination listed. However, the contractor shall be aware that the cited examples are used only to denote the quality standard of product desired and that they do not restrict bidders to a specific brand, make, manufacturer or specific name; that they are used only to set forth and convey to bidders the general style, type, character and quality of product desired; and that equivalent products will be acceptable. Request for substitution of materials, items or equipment shall be submitted to the designer for approval or disapproval; such approval or disapproval shall be made by the designer prior to the opening of bids. Alternate materials may be requested after the award if it can clearly be demonstrated that it is an added benefit to the owner and the designer and owner approve.

- e. The designer is the judge of equality for proposed substitution of products, materials or equipment.
- f. If at any time during the construction and completion of the work covered by these contract documents, the language, conduct, or attire of any workman of the various crafts be adjudged a nuisance by the owner or designer, or if any workman be considered detrimental to the work, the contractor shall order such parties removed immediately from grounds.

ARTICLE 9 - ROYALTIES, LICENSES AND PATENTS

It is the intention of the contract documents that the work covered herein will not constitute in any way infringement of any patent whatsoever unless the fact of such patent is clearly evidenced herein. The contractor shall protect and save harmless the owner against suit on account of alleged or actual infringement. The contractor shall pay all royalties and/or license fees required on account of patented articles or processes, whether the patent rights are evidenced hereinafter.

ARTICLE 10 - PERMITS, INSPECTIONS, FEES, REGULATIONS

- a. The contractor shall give all notices and comply with all laws, ordinances, codes, rules and regulations bearing on the conduct of the work under this contract. If the contractor observes that the drawings and specifications are at variance therewith, he shall promptly notify the designer in writing. See Instructions to Bidders, Paragraph 3, Bulletins and Addenda. Any necessary changes required after contract award shall be made by change order in accordance with Article 19. If the contractor performs any work knowing it to be contrary to such laws, ordinances, codes, rules and regulations, and without such notice to the designer, he shall bear all cost arising therefrom. Additional requirements implemented after bidding will be subject to equitable negotiations.
- b. All work under this contract shall conform to the North Carolina State Building Code and other state, local and national codes as are applicable. The cost of all required inspections and permits shall be the responsibility of the contractor and included within the bid proposal. All water taps, meter barrels, vaults and impact fees shall be paid by the contractor unless otherwise noted.
- c. Projects constructed by the State of North Carolina or by any agency or institution of the state are not subject to inspection by any county or municipal authorities and are not subject to county or municipal building codes. The contractor shall, however, cooperate with the county or municipal authorities by obtaining building permits. Permits shall be obtained at no cost.

- d. Projects involving local funding may be subject also to county and municipal building codes and inspection by local authorities. The Contractor shall pay the cost of these permits and inspections as noted in the specifications.

ARTICLE 11 - PROTECTION OF WORK, PROPERTY AND THE PUBLIC

- a. The contractors shall be jointly responsible for the entire site and the building or construction of the same and provide all the necessary protections, as required by the owner or designer, and by laws or ordinances governing such conditions. They shall be responsible for any damage to the owner's property, or of that of others on the job, by them, their personnel, or their subcontractors, and shall make good such damages. They shall be responsible for and pay for any damages caused to the owner. All contractors shall have access to the project at all times.
- b. The contractor shall provide cover and protect all portions of the structure when the work is not in progress, provide and set all temporary roofs, covers for doorways, sash and windows, and all other materials necessary to protect all the work on the building, whether set by him, or any of the subcontractors. Any work damaged through the lack of proper protection or from any other cause, shall be repaired or replaced without extra cost to the owner.
- c. No fires of any kind will be allowed inside or around the operations during the course of construction without special permission from the designer and owner.
- d. The contractor shall protect all trees and shrubs designated to remain in the vicinity of the operations by building substantial boxes around same. He shall barricade all walks, roads, etc., as directed by the designer to keep the public away from the construction. All trenches, excavations or other hazards in the vicinity of the work shall be well barricaded and properly lighted at night.
- e. The contractor shall provide all necessary safety measures for the protection of all persons on the job, including the requirements of the A.G.C. *Accident Prevention Manual in Construction*, as amended, and shall fully comply with all state laws or regulations and North Carolina State Building Code requirements to prevent accident or injury to persons on or about the location of the work. He shall clearly mark or post signs warning of hazards existing, and shall barricade excavations, elevator shafts, stairwells and similar hazards. He shall protect against damage or injury resulting from falling materials and he shall maintain all protective devices and signs throughout the progress of the work.
- f. The contractor shall adhere to the rules, regulations and interpretations of the North Carolina Department of Labor relating to Occupational Safety and Health Standards for the Construction Industry (Title 29, Code of Federal Regulations, Part 1926, published in Volume 39, Number 122, Part II, June 24, 1974, *Federal Register*), and revisions thereto as adopted by General Statutes of North Carolina 95-126 through 155.
- g. The contractor shall designate a responsible member of his organization as safety officer/inspector, to inspect the project site for unsafe health and safety hazards, to report these hazards to the contractor for correction, and whose duties also include accident prevention on the project, and to provide other safety and health measures on the project site as required by the terms and conditions of the contract. The name of the safety inspector shall be made known to the designer and owner at the time of the preconstruction conference and in all cases prior to any work starting on the project.

- h. In the event of emergency affecting the safety of life, the protection of work, or the safety of adjoining properties, the contractor is hereby authorized to act at his own discretion, without further authorization from anyone, to prevent such threatened injury or damage. Any compensation claimed by the contractor on account of such action shall be determined as provided for under Article 19(b).
- i. Any and all costs associated with correction of damage caused to adjacent properties of the construction site or staging area shall be borne by the contractor. These costs shall include but not be limited to correction of damage caused by flooding, mud, sand, stone, debris, and discharging of waste products.

ARTICLE 12 - SEDIMENTATION POLLUTION CONTROL ACT OF 1973

- a. Any land-disturbing activity performed by the contractor(s) in connection with the project shall comply with all erosion control measures set forth in the contract documents and any additional measures which may be required in order to ensure that the project is in full compliance with the Sedimentation Pollution Control Act of 1973, as implemented by Title 15, North Carolina Administrative Code, Chapter 4, Sedimentation Control, Subchapters 4A, 4B and 4C, as amended (15 N.C.A.C. 4A, 4B and 4C).
- b. Upon receipt of notice that a land-disturbing activity is in violation of said act, the contractor(s) shall be responsible for ensuring that all steps or actions necessary to bring the project in compliance with said act are promptly taken.
- c. The contractor(s) shall be responsible for defending any legal actions instituted pursuant to N.C.G.S. 113A-64 against any party or persons described in this article.
- d. To the fullest extent permitted by law, the contractor(s) shall indemnify and hold harmless the owner, the designer and the agents, consultants and employees of the owner and designer, from and against all claims, damages, civil penalties, losses and expenses, including, but not limited to, attorneys' fees, arising out of or resulting from the performance of work or failure of performance of work, provided that any such claim, damage, civil penalty, loss or expense is attributable to a violation of the Sedimentation Pollution Control Act. Such obligation shall not be construed to negate, abridge or otherwise reduced any other right or obligation of indemnity which would otherwise exist as to any party or persons described in this article.

ARTICLE 13 - INSPECTION OF THE WORK

- a. It is a condition of this contract that the work shall be subject to inspection during normal working hours and during any time work is in preparation and progress by the designer, designated official representatives of the owner, State Construction Office, and those persons required by state law to test special work for official approval. The contractor shall therefore provide safe access to the work at all times for such inspections.
- b. All instructions to the contractor will be made only by or through the designer or his designated project representative. Observations made by official representatives of the owner shall be conveyed to the designer for review and coordination prior to issuance to the contractor.
- c. All work shall be inspected by the designer, special inspector and/or State Construction Office prior to being covered by the contractor. Contractor shall give a minimum notice of two weeks unless otherwise agreed to by all parties. If inspection fails, after the first

re-inspection all costs associated with additional inspections shall be borne by the contractor.

- d. Where special inspection or testing is required by virtue of any state laws, instructions of the designer, specifications or codes, the contractor shall give adequate notice to the designer of the time set for such inspection or test, if the inspection or test will be conducted by a party other than the designer. Such special tests or inspections will be made in the presence of the designer, or his authorized representative, and it shall be the contractor's responsibility to serve ample notice of such tests.
- e. All laboratory tests shall be paid by the owner unless provided otherwise in the contract documents except the general contractor shall pay for laboratory tests to establish design mix for concrete, and for additional tests to prove compliance with contract documents where materials have tested deficient except when the testing laboratory did not follow the appropriate ASTM testing procedures.
- f. Should any work be covered up or concealed prior to inspection and approval by the designer, special inspector, and/or State Construction Office such work shall be uncovered or exposed for inspection, if so requested by the designer in writing. Inspection of the work will be made upon notice from the contractor. All cost involved in uncovering, repairing, replacing, recovering and restoring to design condition, the work that has been covered or concealed will be paid by the contractor involved.

ARTICLE 14 - CONSTRUCTION SUPERVISION AND SCHEDULE

- a. Throughout the progress of the work, each contractor shall keep at the job site a competent superintendent and supervisory staff satisfactory to the designer and the owner. The superintendent and supervisory staff shall not be changed without the consent of the designer and owner unless said superintendent ceases to be employed by the contractor or ceases to be competent as determined by the contractor, designer and owner. The superintendent and other staff designated by the contractor in writing shall have authority to act on behalf of the contractor, and instructions, directions or notices given to him shall be as binding as if given to the contractor. However, directions, instructions and notices shall be confirmed in writing.
- b. The contractor shall examine and study the drawings and specifications and fully understand the project design, and shall provide constant and efficient supervision to the work. Should he discover any discrepancies of any sort in the drawings or specifications, he shall report them to the designer without delay. He will not be held responsible for discrepancies in the drawings and/or specifications, but shall be held responsible to report them should they become known to him.
- c. All contractors shall be required to cooperate and consult with each other during the construction of this project. Prior to installation of work, all contractors shall jointly prepare coordination drawings, showing locations of various ductworks, piping, motors, pumps, and other mechanical or electrical equipment, in relation to the structure, walls and ceilings. These drawings shall be submitted to the designer through the Project Expediter for information only. Each contractor shall lay out and execute his work to cause the least delay to other contractors. Each contractor shall be financially responsible for any damage to other contractor's work and for undue delay caused to other contractors on the project.
- d. The contractor is required to attend job site progress conferences as called by the designer. The contractor shall be represented at these job progress conferences by both

home office and project personnel. These representatives shall have authority to act on behalf of the contractor. These meetings shall be open to subcontractors, material suppliers and any others who can contribute toward maintaining required job progress. It shall be the principal purpose of these meetings, or conferences, to effect coordination, cooperation and assistance in every practical way toward the end of maintaining progress of the project on schedule and to complete the project within the specified contract time. Each contractor shall be prepared to assess progress of the work as required in his particular contract and to recommend remedial measures for correction of progress as may be appropriate. The designer or his authorized representative shall be the coordinator of the conferences and shall preside as chairman. The contractor shall turn over a copy of his daily reports to the designer and owner at the job site project conference. The owner will determine the daily report format.

- e. The contractor(s) shall employ an engineer or a land surveyor licensed in the State of North Carolina to lay out the work and to establish a bench mark in a location where same will not be disturbed and where direct instruments sights may be taken.
- f. The designer shall designate a project expeditor on projects involving two or more prime contracts. The project expeditor shall be designated in the Supplementary General Conditions. The Project Expediter shall have at a minimum the following responsibilities:
 - 1. Prepare the project construction schedule and shall allow all prime contractors (multi-prime contract) and subcontractors (single-prime contract) performing general, plumbing, HVAC, and electrical work equal input into the preparation of the initial construction schedule.
 - 2. Maintain a project progress schedule for all contractors.
 - 3. Give adequate notice to all contractors to ensure efficient continuity of all phases of the work.
 - 4. Notify the designer of any changes in the project schedule.
 - 5. Recommend to the owner whether payment to a contractor shall be approved.
- g. It shall be the responsibility of the Project Expediter to cooperate with and obtain from several prime contractors and subcontractors on the job, their respective work activities and integrate these activities into a project construction schedule in form of a detailed bar chart or Critical Path Method (CPM) schedule. Each prime contractor shall provide work activities within fourteen (14) days of request by the Project Expediter. A "work activity", for scheduling purposes, shall be any component or contractual requirement of the project requiring at least one (1) day, but not more than fourteen (14) days, to complete or fulfill. The project construction schedule shall graphically show all salient features of the work required to construct the project from start to finish and within the allotted time established in the contract. The time (in days) between the contractor's early completion and contractual completion dates is part of the project total float time; and shall be used as such, unless amended by a change order. On a multi-prime project, each prime contractor shall review the proposed construction schedule and approve same in writing. The Project Expediter shall submit the proposed construction schedule to the designer for comments. The complete Project construction schedule shall be of the type set forth in the Supplementary General Condition or subparagraph (1) or (2) below, as appropriate:

1. For a project with total contracts of \$500,000 or less, a bar chart schedule will satisfy the above requirement. The schedule shall indicate the estimated starting and completion dates for each major element of the work.
2. For a project with total contracts over \$500,000, a Critical Path Method (CPM) schedule shall be utilized to control the planning and scheduling of the Work. The CPM schedule shall be the responsibility of the Project Expediter and shall be paid for by the Project Expediter.

Bar Chart Schedule, Where a bar chart schedule is required, it shall be time-scaled in weekly increments, shall indicate the estimated starting and completion dates for each major element of the work by trade and by area, level, or zone, and shall schedule dates for all salient features, including but not limited to the placing of orders for materials, submission of shop drawings and other Submittals for approval, approval of shop drawings by designers, the manufacture and delivery of material, the testing and the installation of materials, supplies and equipment, and all Work activities to be performed by the Contractor. The Contractor shall allow sufficient time in his schedule for all commissioning, required inspections and completion of final punch list(s). Each Work activity will be assigned a time estimate by the Contractor. One day shall be the smallest time unit used.

CPM Schedule, Where a CPM schedule is required, it shall be in time-scaled precedence format using the Project Expediter's logic and time estimates. The CPM schedule shall be drawn or plotted with activities grouped or zoned by Work area or subcontract as opposed to a random (or scattered) format. The CPM schedule shall be time-scaled on a weekly basis and shall be drawn or plotted at a level of detail and logic which will schedule all salient features of the work to be performed by the Contractor. The Contractor shall allow sufficient time in his schedule for all commissioning, required inspections and completion of final punch list(s). Each Work activity will be assigned a time estimate by the Contractor. One day shall be the smallest time unit used.

The CPM schedule will identify and describe each activity, state the duration of each activity, the calendar dates for the early and late start and the early and late finish of each activity, and clearly highlight all activities on the critical path. "Total float" and "free float" shall be indicated for all activities. Float time shall not be considered for the exclusive use or benefit of either the Owner or the Contractor, but must be allocated in the best interest of completing the Work within the Contract time. Extensions to the Contract time, when granted by Change Order, will be granted only when equitable time adjustment exceeds the Total Float in the activity or path of activities affected by the change.

Early Completion of Project, The Contractor may attempt to complete the project prior to the Contract Completion Date. However, such planned early completion shall be for the Contractor's convenience only and shall not create any additional rights of the Contractor or obligations of the Owner under this Contract, nor shall it change the Time for Completion or the Contract Completion Date. The Contractor shall not be required to pay liquidated damages to the Owner because of its failure to complete by its planned earlier date. Likewise, the Owner shall not pay the Contractor any additional compensation for early completion nor will the Owner owe the Contractor any compensation should the Owner, its officers, employees, or agents cause the Contractor not to complete earlier than the date required by the Contract Documents.

- h. The proposed project construction schedule shall be presented to the designer no later than fifteen (15) days after written notice to proceed. No application for payment will be processed until this schedule is accepted by the designer and owner.
- i. The approved project construction schedule shall be distributed to all contractors and displayed at the job site by the Project Expediter.
- j. The several contractors shall be responsible for their work activities and shall notify the project expediter of any necessary changes or adjustments to their work. The project Expediter shall maintain the project construction schedule, making biweekly adjustments, updates, corrections, etc., that are necessary to finish the project within the Contract time, keeping all contractors and the designer fully informed. Copy of a bar chart schedule annotated to show the current progress shall be submitted by the Contractor(s) to the designer, along with monthly request for payment. For project requiring CPM schedule, the Contractor shall submit a biweekly report of the status of all activities. The bar chart schedule or biweekly status report shall show the actual Work completed to date in comparison with the original Work scheduled for all activities. If any activities of the work of several contractors are behind schedule, the contractor must indicate in writing, what measures will be taken to bring each such activity back on schedule and to ensure that the Contract Completion Date is not exceeded. A plan of action and recovery schedule shall be developed and submitted to the designer by the Project Expediter, when (1) the contractor's report indicates delays, that are in the opinion of the designer or the owner, of sufficient magnitude that the contractor's ability to complete the work by the scheduled completion is brought into question; (2) the updated construction schedule is thirty (30) days behind the planned or baseline schedule and no legitimate time extensions, as determined by the designer, are in process; and (3) the contractor desires to make changes in the logic (sequencing of work) or the planned duration of future activities of the CPM schedule which, in the opinion of the designer or the owner, are of a major nature. The plan of action, when required shall be submitted to the Owner for review within two (2) business days of the Contractor receiving the Owner's written demand. The recovery schedule, when required, shall be submitted to the Owner within five (5) calendar days of the Contractor's receiving the Owner's written demand. Failure to provide an updated construction schedule or a recovery schedule may be grounds for rejection of payment applications or withholding of funds as set forth in Article 33.
- k. The project expediter shall notify each contractor of such events or time frames that are critical to the progress of the job. Such notice shall be timely and reasonable. Should the progress be delayed due to the work of any of the several contractors, it shall be the duty of the project expediter to immediately notify the contractor(s) responsible for such delay, the designer, the owner and other prime contractors. The designer shall determine the contractor(s) who caused the delays notify the bonding company of the responsible contractor(s) of the delays and shall make a recommendation to the owner regarding further action.
- l. Designation as project expediter entails an additional project control responsibility and does not alter in any way the responsibility of the contractor so designated, nor the responsibility of the other contractors involved in the project. The project expediter's superintendent(s) shall be in attendance at the project site at all times when work is in progress unless conditions are beyond the control of the contractor or until termination of the contract in accordance with the contract documents. It is understood that such superintendent shall be acceptable to the owner and designer and shall be the one who will be continued in that capacity for the duration of the project unless he ceases to be on the contractor's payroll or the owner otherwise agrees. The time commitment of the project superintendent to the project shall be such as to insure satisfactory construction

progress & coordination as determined by the project designer and owner and may be as stipulated in the Supplementary General Conditions.

ARTICLE 15 - SEPARATE CONTRACTS AND CONTRACTOR RELATIONSHIPS

- a. Public contracts may be delivered by the following construction delivery methods: single-prime, dual (single-prime and separate-prime), construction manager at risk, and alternative contracting method as approved by the State Building Commission. The owner reserves the right to prepare separate specifications, receive separate bids, and award separate contracts for such other major items of work as may be in the best interest of the State. For the purposes of a single prime contract, refer to Article 1 – Definitions.
- b. All contractors shall cooperate with each other in the execution of their work, and shall plan their work in such manner as to avoid conflicting schedules or delay of the work. See Article 14, Construction Supervision.
- c. If any part of contractor's work depends upon the work of another contractor, defects which may affect that work shall be reported to the designer in order that prompt inspection may be made and the defects corrected. Commencement of work by a contractor where such condition exists will constitute acceptance of the other contractor's work as being satisfactory in all respects to receive the work commenced, except as to defects which may later develop. The designer shall be the judge as to the quality of work and shall settle all disputes on the matter between contractors.
- d. Any mechanical or electrical work such as sleeves, inserts, chases, openings, penetrations, etc., which is located in the work of the general contractor shall be built in by the general contractor. The respective mechanical and electrical contractors shall set all sleeves, inserts and other devices that are to be incorporated into the structure in cooperation and under the supervision of the general contractor. The responsibility for the exact location of such items shall be that of the mechanical and/or electrical contractor.
- e. The designer and the owner shall have access to the work whenever it is in preparation and progress during normal working hours. The contractor shall provide facilities for such access so the designer may perform his functions under the contract documents.
- f. Should a contractor cause damage to the work or property of another contractor, he shall be directly responsible, and upon notice, shall promptly settle the claim or otherwise resolve the dispute.

ARTICLE 16 - SUBCONTRACTS AND SUBCONTRACTORS

- a. Within thirty (30) days after award of the contract, the contractor shall submit to the designer and to the owner a list giving the names and addresses of subcontractors and equipment and material suppliers he proposes to use, together with the scope of their respective parts of the work. Should any subcontractor be disapproved by the designer, the designer shall submit his reasons for disapproval in writing to the owner for the owner's consideration with a copy to the contractor. If the owner concurs with the designer's recommendation, the contractor shall submit a substitute for approval. The designer shall act promptly in the approval of subcontractors, and when approval of the list is given, no changes of subcontractors will be permitted except for cause or reason considered justifiable by the designer.

- b. The designer will furnish to any subcontractor, upon request, evidence regarding amounts of money paid to the contractor on account of the subcontractor's work.
- c. The contractor is and remains fully responsible for his own acts or omissions as well as those of any subcontractor or of any employee of either. The contractor agrees that no contractual relationship exists between the subcontractor and the owner in regard to the contract, and that the subcontractor acts on this work as an agent or employee of the contractor.
- d. The owner reserves the right to limit the amount of portions of work to be subcontracted as hereinafter specified.

ARTICLE 17 - CONTRACTOR AND SUBCONTRACTOR RELATIONSHIPS

The contractor agrees that the terms of these contract documents shall apply equally to each subcontractor as to the contractor, and the contractor agrees to take such action as may be necessary to bind each subcontractor to these terms. The contractor further agrees to conform to the Code of Ethical Conduct as adopted by the Associated General Contractors of America, Inc., with respect to contractor-subcontractor relationships, and that payments to subcontractors shall be made in accordance with the provisions of G.S. 143-134.1 titled "Interest on final payments due to prime contractors: payments to subcontractors."

- a. On all public construction contracts which are let by a board or governing body of the state government or any political subdivision thereof, except contracts let by the Department of Transportation pursuant to G.S. 136-28.1, the balance due prime contractors shall be paid in full within 45 days after respective prime contracts of the project have been accepted by the owner, certified by the architect, engineer or designer to be completed in accordance with terms of the plans and specifications, or occupied by the owner and used for the purpose for which the project was constructed, whichever occurs first. Provided, however, that whenever the architect or consulting engineer in charge of the project determines that delay in completion of the project in accordance with terms of the plans and specifications is the fault of the contractor, the project may be occupied and used for the purposes for which it was constructed without payment of any interest on amounts withheld past the 45 day limit. No payment shall be delayed because of the failure of another prime contractor on such project to complete his contract. Should final payment to any prime contractor beyond the date such contracts have been certified to be completed by the designer or architect, accepted by the owner, or occupied by the owner and used for the purposes for which the project was constructed, be delayed by more than 45 days, said prime contractor shall be paid interest, beginning on the 46th day, at the rate of one percent (1%) per month or fraction thereof unless a lower rate is agreed upon on such unpaid balance as may be due. In addition to the above final payment provisions, periodic payments due a prime contractor during construction shall be paid in accordance with the payment provisions of the contract documents or said prime contractor shall be paid interest on any such unpaid amount at the rate stipulated above for delayed final payments. Such interest shall begin on the date the payment is due and continue until the date on which payment is made. Such due date may be established by the terms of the contract. Funds for payment of such interest on state-owned projects shall be obtained from the current budget of the owning department, institution or agency. Where a conditional acceptance of a contract exists, and where the owner is retaining a reasonable sum pending correction of such conditions, interest on such reasonable sum shall not apply.
- b. Within seven days of receipt by the prime contractor of each periodic or final payment, the prime contractor shall pay the subcontractor based on work completed or service

provided under the subcontract. Should any periodic or final payment to the subcontractor be delayed by more than seven days after receipt of periodic or final payment by the prime contractor, the prime contractor shall pay the subcontractor interest, beginning on the eighth day, at the rate of one percent (1%) per month or fraction thereof on such unpaid balance as may be due.

- c. The percentage of retainage on payments made by the prime contractor to the subcontractor shall not exceed the percentage of retainage on payments made by the owner to the prime contractor. Any percentage of retainage on payments made by the prime contractor to the subcontractor that exceeds the percentage of retainage on payments made by the owner to the prime contractor shall be subject to interest to be paid by the prime contractor to the subcontractor at the rate of one percent (1%) per month or fraction thereof.
- d. Nothing in this section shall prevent the prime contractor at the time of application and certification to the owner from withholding application and certification to the owner for payment to the subcontractor for unsatisfactory job progress; defective construction not remedied; disputed work; third-party claims filed or reasonable evidence that claim will be filed; failure of subcontractor to make timely payments for labor, equipment and materials; damage to prime contractor or another subcontractor; reasonable evidence that subcontract cannot be completed for the unpaid balance of the subcontract sum; or a reasonable amount for retainage not to exceed the initial percentage retained by owner.

ARTICLE 18 - DESIGNER'S STATUS

- a. The designer shall provide general administration of the performance of construction contracts, including liaison and necessary inspection of the work to ensure compliance with plans and specifications. He is the agent of the owner only for the purpose of constructing this work and to the extent stipulated in the contract documents. He has authority to direct work to be performed, to stop work, to order work removed, or to order corrections of faulty work where any such action by the designer may be necessary to assure successful completion of the work.
- b. The designer is the impartial interpreter of the contract documents, and, as such, he shall exercise his powers under the contract to enforce faithful performance by both the owner and the contractor, taking sides with neither.
- c. Should the designer cease to be employed on the work for any reason whatsoever, then the owner shall employ a competent replacement who shall assume the status of the former designer.
- d. The designer and his consultants will make inspections of the project. They will inspect the progress, the quality and the quantity of the work.
- e. The designer and the owner shall have access to the work whenever it is in preparation and progress during normal working hours. The contractor shall provide facilities for such access so the designer and owner may perform their functions under the contract documents.
- f. Based on the designer's inspections and evaluations of the project, the designer shall issue interpretations, directives and decisions as may be necessary to administer the project. His decisions relating to artistic effect and technical matters shall be final, provided such decisions are within the limitations of the contract.

ARTICLE 19 - CHANGES IN THE WORK

- a. The owner may have changes made in the work covered by the contract. These changes will not invalidate and will not relieve or release the contractor from any guarantee given by him pertinent to the contract provisions. These changes will not affect the validity of the guarantee bond and will not relieve the surety or sureties of said bond. All extra work shall be executed under conditions of the original contract.
- b. Except in an emergency endangering life or property, no change shall be made by the contractor except upon receipt of an approved change order or written field order from the designer, countersigned by the owner. No claim for adjustments of the contract price shall be valid unless this procedure is followed.
A field order, transmitted by fax or hand-delivered, may be used where the change involved impacts the critical path of the work. A formal change order shall be issued as expeditiously as possible.

In the event of emergency endangering life or property, the contractor may be directed to proceed on a time and material basis whereupon the contractor shall proceed and keep accurately on such form as specified by the designer or owner, a correct account of costs together with all proper invoices, payrolls and supporting data. Upon completion of the work the change order will be prepared as outlined below under either c.1 or c.2 or both.

- c. In determining the values of changes, either additive or deductive, contractors are restricted to the use of the following methods:
 1. Where the extra work involved is covered by unit prices quoted in the proposal, or subsequently agreed to by the contractor, designer and owner, the value of the change shall be computed by application of unit prices based on quantities, estimated or actual as agreed on the items involved, except in such cases where a quantity exceeds the estimated quantity allowance in the contract by one hundred percent (100%) or more. In such cases, either party may elect to proceed under subparagraph c2 herein. If neither party elects to proceed under c2, then unit prices shall apply.
 2. The contracting parties shall negotiate and agree upon the equitable value of the change prior to issuance of the change order, and the change order shall stipulate the corresponding lump sum adjustment to the contract price.
- d. Under Paragraph b and c.2. above, the allowances for overhead and profit combined shall be as follows: all contractors (the single contracting entity (prime), his subcontractors (first tier), or their subcontractors (second tier, third tier, etc.) shall be allowed a maximum of ten percent (10%) on work they each self-perform; the prime contractor shall be allowed a maximum of five percent (5%) on contracted work of his first tier subcontractor; first tier, second tier, third tier, etc. subcontractors shall be allowed a maximum of two and one-half percent (2.5%) on the contracted work of their subcontractors. Under c.1. no additional allowances shall be made for overhead and profit. In the case of deductible change orders, under c.2. and b. above, the contractor shall include no less than five percent (5%) profit, but no allowances for overhead.
- e. The term "net cost" as used herein shall mean the difference between all proper cost additions and deductions. The "cost" as used herein shall be limited to the following:

1. The actual costs of materials and supplies incorporated or consumed as part of the work.
2. The actual costs of labor expended on the project site. Labor expended in coordination, change order negotiation, record document maintenance, shop drawing revision or other tasks necessary to the administration of the project are considered overhead whether they take place in an office or on the project site.
3. The actual costs of labor burden, limited to the costs of social security (FICA) and Medicare/Medicaid taxes; unemployment insurance costs; health/dental/vision insurance premiums; paid employee leave for holidays, vacation, sick leave, and/or petty leave, not to exceed a total of 30 days per year; retirement contributions; worker's compensation insurance premiums; and the costs of general liability insurance when premiums are computed based on payroll amounts; the total of which shall not exceed thirty percent (30%) of the actual costs of labor.
4. The actual costs of rental for tools, excluding hand tools; equipment; machinery; vehicles; and temporary facilities required for the work.
5. The actual costs of premiums for bonds, insurance, permit fees, and sales or use taxes related to the work.

Overtime and extra pay for holidays and weekends may be a cost item only to the extent approved by the owner.

- f. Should concealed conditions be encountered in the performance of the work below grade, or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the contract documents, the contract sum and time for completion may be equitably adjusted by change order upon claim by either party made within thirty (30) days after the condition has been identified. The cost of such change shall be arrived at by one of the foregoing methods. All change orders shall be supported by a unit cost breakdown showing method of arriving at net cost as defined above.
- g. In all change orders, the procedure will be for the designer to request proposals for the change order work in writing. The contractor will provide such proposal and supporting data in suitable format. The designer shall verify correctness. Delay in the processing of the change order due to a lack of proper submittal by the contractor of all required supporting data shall not constitute grounds for a time extension or basis for a claim. Within fourteen (14) days after receipt of the contractor's accepted proposal including all supporting documentation required by the designer, the designer shall prepare the change order and forward to the contractor for his signature or otherwise respond, in writing, to the contractor's proposal. Within seven (7) days after receipt of the change order executed by the contractor, the designer shall certify the change order by his signature, and forward the change order and all supporting data to the owner for the owner's approval. The owner shall approve and execute the change order within seven (7) days of receipt. In case of emergency or extenuating circumstances, approval of changes may be obtained verbally by telephone or field orders approved by all parties, then shall be substantiated in writing as outlined under normal procedure.
- h. At the time of signing a change order, the contractor shall be required to certify as follows:

"I certify that my bonding company will be notified forthwith that my contract has been changed by the amount of this change order, and that a copy of the approved change order will be mailed upon receipt by me to my surety."

- i. A change order, when issued, shall be full compensation, or credit, for the extra work included, omitted or substituted. It shall show on its face the adjustment in time for completion of the project as a result of the change in the work.
- j. If, during the progress of the work, the owner requests a change order and the contractor's terms are unacceptable, the owner may require the contractor to perform such work on a time and material basis whereupon the contractor shall proceed and keep accurately on such form as specified by the designer or owner a correct account of the cost together with all proper invoices, payrolls and supporting data. Upon completion of the work a change order will be prepared with allowances for overhead and profit per paragraph d. above and "net cost" and "cost" per paragraph c. above. Without prejudice, nothing in this paragraph shall preclude the owner from performing or having performed that portion of the work requested in the change order.

ARTICLE 20 - CLAIMS FOR EXTRA COST

- a. Should the contractor consider that as a result of instructions given by the designer, he is entitled to extra cost above that stated in the contract, he shall give written notice thereof to the designer within seven (7) days. The written notice shall clearly state that a claim for extra cost is being made and shall provide a detailed justification for the extra cost. The contractor shall not proceed with the work affected until further advised, except in emergency involving the safety of life or property, which condition is covered in Article 19(b) and Article 11(h). No claims for extra compensation shall be considered unless the claim is so made. The designer shall render a written decision within seven (7) days of receipt of claim.
- b. The contractor shall not act on instructions received by him from persons other than the designer, and any claims for extra compensation or extension of time on account of such instruction will not be honored. The designer shall not be responsible for misunderstandings claimed by the contractor of verbal instructions which have not been confirmed in writing, and in no case shall instructions be interpreted as permitting a departure from the contract documents unless such instruction is confirmed in writing and supported by a properly authorized change order.
- c. Should a claim for extra compensation by the contractor that complies with the requirements of (a) above be denied by the designer or owner, and cannot be resolved by a representative of The University of North Carolina System Office, the contractor may request a mediation in connection with G.S. 143-128(f1) in the dispute resolution rules adopted by the State Building Commission (1 N.C.A.C. 30H .0101 through .1001). If the contractor is unable to resolve its claims as a result of mediation, the contractor may pursue his claim in accordance with the provisions of G.S. 143-135.3 and the following:
 - 1. A contractor who has not completed a contract with an institution of The University of North Carolina and who has not received the amount he claims is due under the contract may submit a verified written claim to the Associate Vice President for Finance & University Property Officer of The University of North Carolina System Office for the amount the contractor claims is due. If the claim remains unresolved after review by the Associate Vice President for Finance, the contractor may submit the verified written claim to the Director of the State Construction Office of the Department of Administration for the amount the contractor claims is due. The

Director may deny, allow or compromise the claim, in whole or in part. A claim under this subsection is not a contested case under Chapter 150B of the General Statutes.

2. (a) A contractor who has completed a contract with an institution of University of North Carolina for construction or repair work and who has not received the amount he claims is due under the contract may submit a verified written claim to the Associate Vice President for Finance & University Property Officer of The University of North Carolina System Office for the amount the contractor claims is due. If the claim remains unresolved after review by the Associate Vice President for Finance, the contractor may submit the verified written claim to the Director of the State Construction Office of the Department of Administration for the amount the contractor claims is due. The claim shall be submitted within sixty (60) days after the contractor receives a final statement of the Associate Vice President's disposition of his claim and shall state the factual basis for the claim.
- (b) The Director shall investigate a submitted claim within ninety (90) days of receiving the claim, or within any longer time period upon which the Director and the contractor agree. The contractor may appear before the Director, either in person or through counsel, to present facts and arguments in support of his claim. The Director may allow, deny or compromise the claim, in whole or in part. The Director shall give the contractor a written statement of the Director's decision on the contractor's claim.
- (c) A contractor who is dissatisfied with the Director's decision on a claim submitted under this subsection may commence a contested case on the claim under Chapter 150B of the General Statutes. The contested case shall be commenced within sixty (60) days of receiving the director's written statement of the decision.
- (d) As to any portion of a claim that is denied by the director, the contractor may, in lieu of the procedures set forth in the preceding subsection of this section, within six (6) months of receipt of the director's final decision, institute a civil action for the sum he claims to be entitled to under the contract by filing a verified complaint and the issuance of a summons in the Superior Court of Wake County or in the superior court of any county where the work under the contract was performed. The procedure shall be the same as in all civil actions except that all issues shall be tried by the judge, without a jury.

ARTICLE 21 - MINOR CHANGES IN THE WORK

The designer will have the authority to order minor changes in the work not involving an adjustment in the contract sum or time for completion, and not inconsistent with the intent of the contract documents. Such changes shall be effected by written order, copied to the owner, and shall be binding on the owner and the contractor.

ARTICLE 22 - UNCORRECTED FAULTY WORK

Should the correction of faulty or damaged work be considered inadvisable or inexpedient by the owner and the designer, the owner shall be reimbursed by the contractor. A change order will be issued to reflect a reduction in the contract sum.

ARTICLE 23 - TIME OF COMPLETION, DELAYS, EXTENSION OF TIME

- a. The time of completion is stated in the Supplementary General Conditions and in the Form of Construction Contract. The Project Expediter, upon notice of award of contract, shall prepare a construction schedule to complete the project within the time of completion as required by Article 14.
- b. The contractors shall commence work to be performed under this agreement on a date to be specified in a written Notice to Proceed from the designer and shall fully complete all work hereunder within the time of completion stated. Time is of the essence and the contractor acknowledges the owner will likely suffer financial damage for failure to complete the work within the time of completion. For each day in excess of the above number of days, the contractor(s) shall pay the owner the sum stated as liquidated damages reasonably estimated in advance to cover the losses to be incurred by the owner by reason of failure of said contractor(s) to complete the work within the time specified, such time being in the essence of this contract and a material consideration thereof.
- c. In the event of multiple prime contractors, the designer shall be the judge as to the division of responsibility between the contractor(s), based on the construction schedule, weekly reports and job records, and shall apportion the amount of liquidated damages to be paid by each of them, according to delay caused by any or all of them.
- d. If the contractor is delayed at any time in the progress of his work solely by any act or negligence of the owner, the designer, or by any employee of either; by any separate contractor employed by the owner; by changes ordered in the work; by labor disputes at the project site; by abnormal weather conditions not reasonably anticipated for the locality where the work is performed; by unavoidable casualties; by any causes beyond the contractor's control; or by any other causes which the designer and owner determine may justify the delay, then the contract time may be extended by change order only for the time which the designer and owner may determine is reasonable.

Time extensions will not be granted for rain, wind, snow or other natural phenomena of normal intensity for the locality where work is performed. For purpose of determining extent of delay attributable to unusual weather phenomena, a determination shall be made by comparing the weather for the contract period involved with the average of the preceding five (5) year climatic range during the same time interval based on the National Oceanic and Atmospheric Administration National Weather Service statistics for the locality where work is performed and on daily weather logs kept on the job site by the contractor reflecting the effect of the weather on progress of the work and initialed by the designer's representative. No weather delays shall be considered after the building is dried in unless work claimed to be delayed is on the critical path of the baseline schedule or approved updated schedule. Time extensions for weather delays, acts of God, labor disputes, fires, delays in transportation, unavoidable casualties or other delays which are beyond the control of the owner do not entitle the contractor to compensable damages for delay. Any contractor claim for compensable damages for delays is limited to delays caused solely by the owner or its agents. Contractor caused delays shall be accounted for before owner or designer caused delays in the case of concurrent delays.

- e. Request for extension of time shall be made in writing to the designer with copies to the owner within twenty (20) days following cause of delay. In case of continuing cause for delay, the contractor shall notify the designer in writing with copies to the owner of the delay within twenty (20) days of the beginning of the delay and only one claim is necessary.

- f. The contractor shall notify his surety in writing of extension of time granted.
- g. No claim for time extension shall be allowed on account of failure of the designer to furnish drawings or instructions until twenty (20) days after demand for such drawings and/or instructions. See Article 5c. Demand must be in written form clearly stating the potential for delay unless the drawings or instructions are provided. Any delay granted will begin after the twenty (20) day demand period is concluded.

ARTICLE 24 - PARTIAL UTILIZATION BENEFICIAL OCCUPANCY

- a. The owner may desire to occupy or utilize all or a portion of the project prior to completion of the project.
- b. Should the owner request a utilization of the building or portion thereof, the designer shall perform a designer final inspection of the area after being notified by the contractor that the area is ready for such. After the contractor has completed designer final inspection punch list and the designer has verified, the designer shall schedule a beneficial occupancy inspection at a time and date acceptable to the owner, contractor(s) and State Construction Office. If beneficial occupancy is granted by the owner and State Construction Office, in such areas the following will be established:
 - 1. The beginning of guarantees and warranties period for the equipment necessary to provide support in the area.
 - 2. The owner assumes all responsibilities for utility costs for the entire building
 - 3. Contractor will obtain consent of surety.
 - 4. Contractor will obtain endorsement from insurance company permitting beneficial occupancy.
- c. The owner shall have the right to exclude the contractor from any part of the project which the designer has so certified to be substantially complete, but the owner will allow the contractor reasonable access to complete or correct work to bring it into compliance with the contract.
- d. Occupancy by the owner under this article will in no way relieve the contractor from his contractual requirement to complete the project within the specified time. The contractor will not be relieved of liquidated damages because of beneficial occupancy. The designer may prorate liquidated damages based on the percentage of project occupied.

ARTICLE 25 - FINAL INSPECTION, ACCEPTANCE AND PROJECT CLOSEOUT

- a. Upon notification from the contractor(s) that the project is complete and ready for inspection, the designer shall make a designer final inspection to verify that the project is complete and ready for owner and SCO final inspection. Prior to owner & SCO final inspection, the contractor(s) shall complete all items requiring corrective measures noted at the designer final inspection. The designer shall schedule a SCO final inspection at a time and date acceptable to the owner, contractor(s) and State Construction Office.
- b. At the SCO final inspection, the designer and his consultants shall, if job conditions warrant, record a list of items that are found to be incomplete or not in accordance with the contract documents. At the conclusion of the SCO final inspection, the designer, the

owner and State Construction Office representatives shall make one of the following determinations:

1. That the project is completed and accepted.
 2. That the project will be accepted subject to correction of the list of discrepancies (punch list). All punch list items must be completed within thirty (30) days of SCO final inspection or the owner may invoke Article 28, Owner's Right to Do Work.
 3. That the project is not complete and another date for a SCO final inspection will be established.
- c. Within fourteen (14) days of final acceptance per Paragraph b1 or within fourteen (14) days after completion of punch list per Paragraph b2 above, the designer shall certify the work and issue applicable certificate(s) of compliance.
- d. Any discrepancies listed or discovered after the date of SCO final inspection and acceptance under Paragraphs b1 or b2 above, shall be handled in accordance with Article 42, Guarantee.
- e. The final acceptance date will establish the following:
1. The beginning of guarantees and warranties period.
 2. The date on which the contractor's insurance coverage for public liability, property damage and builder's risk may be terminated.
 3. That no liquidated damages (if applicable) shall be assessed after this date.
 4. The termination date of utility cost to the contractor.
- f. Prior to issuance of final acceptance date, the contractor shall have his authorized representatives visit the project and give full instructions to the owner's designated personnel regarding operating, maintenance, care, and adjustment of all equipment and special construction elements. In addition, the contractor shall provide the owner a complete instructional video (media format acceptable to the owner) on the operation, maintenance, care, and adjustment of all equipment and special construction elements.

ARTICLE 26 - CORRECTION OF WORK BEFORE FINAL PAYMENT

- a. Any work, materials, fabricated items or other parts of the work which have been condemned or declared not in accordance with the contract by the designer shall be promptly removed from the work site by the contractor, and shall be immediately replaced by new work in accordance with the contract at no additional cost to the owner. Work or property of other contractors or the owner, damaged or destroyed by virtue of such faulty work, shall be made good at the expense of the contractor whose work is faulty.
- b. Correction of condemned work described above shall commence within twenty-four (24) hours after receipt of notice from the designer, and shall make satisfactory progress, as determined by the designer, until completed.
- c. Should the contractor fail to proceed with the required corrections, then the owner may complete the work in accordance with the provisions of Article 28.

ARTICLE 27 - CORRECTION OF WORK AFTER FINAL PAYMENT

See Article 35, Performance Bond and Payment Bond, and Article 42, Guarantee. Neither the final certificate, final payment, occupancy of the premises by the owner, nor any provision of the contract, nor any other act or instrument of the owner, nor the designer, shall relieve the contractor from responsibility for negligence, or faulty material or workmanship, or failure to comply with the drawings and specifications. The contractor shall correct or make good any defects due thereto and repair any damage resulting therefrom which may appear during the guarantee period following final acceptance of the work except as stated otherwise under Article 42, Guarantee. The owner will report any defects as they may appear to the contractor and establish a time limit for completion of corrections by the contractor. The owner will be the judge as to the responsibility for correction of defects.

ARTICLE 28 - OWNER'S RIGHT TO DO WORK

If, during the progress of the work or during the period of guarantee, the contractor fails to prosecute the work properly or to perform any provision of the contract, the owner, after seven (7) days' written notice sent by certified mail, return receipt requested, to the contractor from the designer, may perform or have performed that portion of the work. The cost of the work may be deducted from any amounts due or to become due to the contractor, such action and cost of same having been first approved by the designer. Should the cost of such action of the owner exceed the amount due or to become due the contractor, then the contractor or his surety, or both, shall be liable for and shall pay to the owner the amount of said excess.

ARTICLE 29 - ANNULMENT OF CONTRACT

If the contractor fails to begin the work under the contract within the time specified, or the progress of the work is not maintained on schedule, or the work is not completed within the time above specified, or fails to perform the work with sufficient workmen and equipment or with sufficient materials to ensure the prompt completion of said work, or shall perform the work unsuitably or shall discontinue the prosecution of the work, or if the contractor shall become insolvent or be declared bankrupt or commit any act of bankruptcy or insolvency, or allow any final judgment to stand against him unsatisfied for a period of forty-eight (48) hours, or shall make an assignment for the benefit of creditors, or for any other cause whatsoever shall not carry on the work in an acceptable manner, the owner may give notice in writing, sent by certified mail, return receipt requested, to the contractor and his surety of such delay, neglect or default, specifying the same, and if the contractor within a period of seven (7) days after such notice shall not proceed in accordance therewith, then the owner shall, declare this contract in default, and, thereupon, the surety shall promptly take over the work and complete the performance of this contract in the manner and within the time frame specified. In the event the surety shall fail to take over the work to be done under this contract within seven (7) days after being so notified and notify the owner in writing, sent by certified mail, return receipt requested, that he is taking the same over and stating that he will diligently pursue and complete the same, the owner shall have full power and authority, without violating the contract, to take the prosecution of the work out of the hands of said contractor, to appropriate or use any or all contract materials and equipment on the grounds as may be suitable and acceptable and may enter into an agreement, either by public letting or negotiation, for the completion of said contract according to the terms and provisions thereof or use such other methods as in his opinion shall be required for the completion of said contract in an acceptable manner. All costs and charges incurred by the owner, together with the costs of completing the work under contract, shall be deducted from any monies due or which may become due said contractor and surety. In case the expense so incurred

by the owner shall be less than the sum which would have been payable under the contract, if it had been completed by said contractor, then the said contractor and surety shall be entitled to receive the difference, but in case such expense shall exceed the sum which would have been payable under the contract, then the contractor and the surety shall be liable and shall pay to the owner the amount of said excess.

ARTICLE 30 - CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE THE CONTRACT

- a. Should the work be stopped by order of a court having jurisdiction, or by order of any other public authority for a period of three months, due to cause beyond the fault or control of the contractor, or if the owner should fail or refuse to make payment on account of a certificate issued by the designer within forty-five (45) days after receipt of same, then the contractor, after fifteen (15) days' written notice sent by certified mail, return receipt requested, to the owner and the designer, may suspend operations on the work or terminate the contract.
- b. The owner shall be liable to the contractor for the cost of all materials delivered and work performed on this contract plus ten (10) percent overhead and profit and shall make such payment. The designer shall be the judge as to the correctness of such payment.

ARTICLE 31 - REQUEST FOR PAYMENT

- a. Not later than the fifth day of the month, the contractor shall submit to the designer a request for payment for work done during the previous month. The request shall be in the form agreed upon between the contractor and the designer, but shall show substantially the value of work done and materials delivered to the site during the period since the last payment, and shall sum up the financial status of the contract with the following information:
 1. Total of contract including change orders.
 2. Value of work completed to date.
 3. Less five percent (5%) retainage, provided however, that after fifty percent (50%) of the contractor's work has been satisfactorily completed on schedule, with approval of the owner and written consent of the surety, further requirements for retainage will be waived only so long as work continues to be completed satisfactorily and on schedule.
 4. Less previous payments.
 5. Current amount due.
- b. The contractor, upon request of the designer, shall substantiate the request with invoices of vouchers or payrolls or other evidence.
- c. Prior to submitting the first request, the contractor shall prepare for the designer a schedule showing a breakdown of the contract price into values of the various parts of the work, so arranged as to facilitate payments to subcontractors in accordance with Article 17, Contractor and Subcontractor Relationships. The contractor(s) shall list the value of each subcontractor and supplier, identifying each minority business subcontractor and supplier as listed in Affidavit C, if applicable.

- d. When payment is made on account of stored materials and equipment, such materials must be stored on the owner's property, and the requests for payments shall be accompanied by invoices or bills of sale or other evidence to establish the owner's title to such materials and equipment. Such payments will be made only for materials that have been customized or fabricated specifically for this project. Raw materials or commodity products including but not limited to piping, conduit, CMU, metal studs and gypsum board may not be submitted. Responsibility for such stored materials and equipment shall remain with the contractor regardless of ownership title. Such stored materials and equipment shall not be removed from the owner's property. Should the space for storage on-site be limited, the contractor, at his option, shall be permitted to store such materials and/or equipment in a suitable space off-site. Should the contractor desire to include any such materials or equipment in his application for payment, they must be stored in the name of the owner in an independent, licensed, bonded warehouse approved by the designer and the owner and located as close to the site as possible. The warehouse selected must be approved by the contractor's bonding and insurance companies; the material to be paid for shall be assigned to the owner and shall be inspected by the designer. Upon approval by the designer and owner of the storage facilities and materials and equipment, payment therefore will be certified. Responsibility for such stored materials and equipment shall remain with the contractor. Such stored materials and equipment shall not be moved except for transportation to the project site. Under certain conditions, the designer may approve storage of materials at the point of manufacture, which conditions shall be approved by the designer and the owner prior to approval for the storage and shall include an agreement by the storing party which unconditionally gives the State absolute right to possession of the materials at any time. Bond, security and insurance protection shall continue to be the responsibility of the contractor(s).
- e. On projects requiring a Critical Path Method (CPM) construction schedule, the project expeditor will submit with each monthly pay application to the designer a current CPM schedule in a computerized precedence network format on a compact disc. The schedule will include all construction activities to be accomplished during the project to be properly sequenced and coordinated with elements of the work. The schedule shall be assembled from input presented and mutually coordinated by all the contractors (and/or subcontractors) and integrated into a single, overall schedule. The project expeditor will show all the scheduled work activities, including their subcontractors, and the sequence and interdependence (predecessors and successors) of the activities. The schedule shall show the total project duration including milestone dates. The critical path shall be clearly indicated. The schedule shall be in such a format that it can be read (imported) in Microsoft Project or Primavera P6. Failure to submit the construction schedule on compact disc media in an acceptable format will result in the pay application being denied.
- f. In the event of beneficial occupancy, retainage of funds due the contractor(s) may be reduced with the approval of the owner to an equitable amount to cover the list of items to be completed or corrected. Retainage may not be reduced to less than two and one-half (2 1/2) times the estimated value of the work to be completed or corrected. Reduction of retainage must be with the consent and approval of the contractor's bonding company.

ARTICLE 32 - CERTIFICATES OF PAYMENT AND FINAL PAYMENT

- a. Within five (5) days from receipt of request for payment from the contractor, the designer shall issue and forward to the owner a certificate for payment. This certificate shall indicate the amount requested or as approved by the designer. If the certificate is

not approved by the designer, he shall state in writing to the contractor and the owner his reasons for withholding payment.

- b. No certificate issued or payment made shall constitute an acceptance of the work or any part thereof. The making and acceptance of final payment shall constitute a waiver of all claims by the owner except:
 - 1. Claims arising from unsettled liens or claims against the contractor.
 - 2. Faulty work or materials appearing after final payment.
 - 3. Failure of the contractor to perform the work in accordance with drawings and specifications, such failure appearing after payment.
 - 4. As conditioned in the performance bond and payment bond.
- c. The making and acceptance of final payment shall constitute a waiver of all claims by the contractor except those claims previously made and remaining unsettled (Article 20(c)).
- d. Prior to submitting request for final payment to the designer for approval, the contractor shall fully comply with all requirements specified in the "project closeout" section of the specifications. These requirements include but are not limited to the following:
 - 1. Submittal of Product and Operating Manuals, Warranties and Bonds, Guarantees, Maintenance Agreements, As-Built Drawings, Certificates of Inspection or Approval from agencies having jurisdiction. (The designer must approve the Manuals prior to delivery to the owner).
 - 2. Transfer of Required attic stock material and all keys in an organized manner.
 - 3. Record of Owner's training.
 - 4. Resolution of any final inspection discrepancies.
 - 5. Granting access to contractor's records, if owner's internal auditors have made a request for such access pursuant to Article 52.
- e. The contractor shall forward to the designer, the final application for payment along with the following documents:
 - 1. List of minority business subcontractors and material suppliers showing breakdown of contract amounts and total actual payments to subcontractors and material suppliers.
 - 2. Affidavit of Release of Liens.
 - 3. Affidavit of contractors of payment to material suppliers and subcontractors. (See Article 36).
 - 4. Consent of Surety to Final Payment.
 - 5. Certificates of state agencies required by state law.

- f. The designer will not authorize final payment until the work under contract has been certified by designer, certificates of compliance issued, and the contractor has complied with the closeout requirements. The designer shall forward the contractor's final application for payment to the owner along with respective certificate(s) of compliance required by law.

ARTICLE 33 - PAYMENTS WITHHELD

- a. The designer with the approval of the owner may withhold payment for the following reasons:
 - 1. Faulty work not corrected.
 - 2. The unpaid balance on the contract is insufficient to complete the work in the judgment of the designer.
 - 3. To provide for sufficient contract balance to cover liquidated damages that will be assessed.
- b. The owner may authorize the withholding of payment for the following reasons:
 - 1. Claims filed against the contractor or evidence that a claim will be filed.
 - 2. Evidence that subcontractors have not been paid.
- c. The owner may withhold all or a portion of the contractor's general conditions costs set forth in the approved schedule of values if the contractor has failed to comply with: (1) a request to access its records by the owner's internal auditors pursuant to Article 52; (2) a request for a plan of action and/or recovery schedule under Article 14j; (3) a request to provide electronic copies of contractor's baseline schedule and/or updates with all logic used to create schedules in the original format of the scheduling software; and (4) contractor's failure to have its superintendent on the project as provided in Article 14.1 and/or as stipulated in the Supplementary General Conditions.
- d. When grounds for withholding payments have been removed, payment will be released. Delay of payment due the contractor without cause will make owner liable for payment of interest to the contractor in accordance with G.S. 143-134.1. As provided in G.S. 143-134.1(e) the owner shall not be liable for interest on payments withheld by the owner 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.

ARTICLE 34 - MINIMUM INSURANCE REQUIREMENTS

The work under this contract shall not commence until the contractor has obtained all required insurance and verifying certificates of insurance have been approved in writing by the owner. These certificates shall document that coverage afforded under the policies will not be cancelled, reduced in amount or coverages eliminated until at least thirty (30) days after mailing written notice, by certified mail, return receipt requested, to the insured and the owner of such alteration or cancellation. If endorsements are needed to comply with the notification or other requirements of this article copies of the endorsements shall be submitted with the certificates.

- a. **Worker's Compensation and Employer's Liability**

The contractor shall provide and maintain, until final acceptance, workmen's compensation insurance, as required by law, as well as employer's liability coverage with minimum limits of \$100,000.

b. Public Liability and Property Damage

The contractor shall provide and maintain, until final acceptance, comprehensive general liability insurance, including coverage for premises operations, independent contractors, completed operations, products and contractual exposures, as shall protect such contractors from claims arising out of any bodily injury, including accidental death, as well as from claims for property damages which may arise from operations under this contract, whether such operations be by the contractor or by any subcontractor, or by anyone directly or indirectly employed by either of them and the minimum limits of such insurance shall be as follows:

Bodily Injury:	\$500,000 per occurrence
Property Damage:	\$100,000 per occurrence / \$300,000 aggregate

In lieu of limits listed above, a \$500,000 combined single limit shall satisfy both conditions.

Such coverage for completed operations must be maintained for at least two (2) years following final acceptance of the work performed under the contract.

c. Property Insurance (Builder's Risk/ Installation Floater)

The contractor shall purchase and maintain property insurance until final acceptance, upon the entire work at the site to the full insurable value thereof. This insurance shall include the interests of the owner, the contractor, the subcontractors and subcontractors in the work and shall insure against the perils of fire, wind, rain, flood, extended coverage, and vandalism and malicious mischief. If the owner is damaged by failure of the contractor to purchase or maintain such insurance, then the contractor shall bear all reasonable costs properly attributable thereto; the contractor shall effect and maintain similar property insurance on portions of the work stored off the site when request for payment per articles so includes such portions.

d. Deductible

Any deductible, if applicable to loss covered by insurance provided, is to be borne by the contractor

e. Other Insurance

The contractor shall obtain such additional insurance as may be required by the owner or by the General Statutes of North Carolina including motor vehicle insurance, in amounts not less than the statutory limits.

f. Proof of Carriage

The contractor shall furnish the owner with satisfactory proof of carriage of the insurance required before written approval is granted by the owner.

ARTICLE 35 - PERFORMANCE BOND AND PAYMENT BOND

- a. Each contractor shall furnish a performance bond and payment bond executed by a surety company authorized to do business in North Carolina. The bonds shall be in the full contract amount. Bonds shall be executed in the form bound with these specifications.
- b. All bonds shall be countersigned by an authorized agent of the bonding company who is licensed to do business in North Carolina.

ARTICLE 36 - CONTRACTOR'S AFFIDAVIT

The final payment of retained amount due the contractor on account of the contract shall not become due until the contractor has furnished to the owner through the designer an affidavit signed, sworn and notarized to the effect that all payments for materials, services or subcontracted work in connection with his contract have been satisfied, and that no claims or liens exist against the contractor in connection with this contract. In the event that the contractor cannot obtain similar affidavits from subcontractors to protect the contractor and the owner from possible liens or claims against the subcontractor, the contractor shall state in his affidavit that no claims or liens exist against any subcontractor to the best of his (the contractor's) knowledge, and if any appear afterward, the contractor shall save the owner harmless.

ARTICLE 37 - ASSIGNMENTS

The contractor shall not assign any portion of this contract nor subcontract in its entirety. Except as may be required under terms of the performance bond or payment bond, no funds or sums of money due or become due the contractor under the contract may be assigned.

ARTICLE 38 - USE OF PREMISES

- a. The contractor(s) shall confine his apparatus, the storage of materials and the operations of his workmen to limits indicated by law, ordinances, permits or directions of the designer and owner and shall not exceed those established limits in his operations.
- b. The contractor(s) shall not load or permit any part of the structure to be loaded with a weight that will endanger its safety.
- c. The contractor(s) shall enforce the designer's and owner's instructions regarding signs, advertisements, fires and smoking.
- d. No firearms, any type of alcoholic beverages, or drugs (other than those prescribed by a physician) will be permitted at the job site.

ARTICLE 39 - CUTTING, PATCHING AND DIGGING

- a. The contractor shall do all cutting, fitting or patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by work of other contractors shown upon or reasonably implied by the drawings and specifications for the completed structure, as the designer may direct.
- b. Any cost brought about by defective or ill-timed work shall be borne by the party responsible therefor.

- c. No contractor shall endanger any work of another contractor by cutting, digging or other means. No contractor shall cut or alter the work of any other contractor without the consent of the designer and the affected contractor(s).

ARTICLE 40 - UTILITIES, STRUCTURES, SIGNS

- a. The contractor shall provide necessary and adequate facilities for water, electricity, gas, oil, sewer and other utility services which may be necessary and required for completion of the project including all utilities required for testing, cleaning, balancing and sterilization of designated plumbing, mechanical and electrical systems. Any permanent meters installed shall be listed in the contractor's name until work has a final acceptance. The contractor will be solely responsible for all utility costs prior to final acceptance unless stipulated otherwise in the project specifications. The contractor shall contact all affected utility companies prior to bid to determine their requirements to provide temporary and permanent service and include all costs associated with providing those services in their bid unless otherwise stipulated. Coordination of the work of the utility companies during construction is the sole responsibility of the contractor.
- b. Meters shall be relisted in the owner's name on the day following final acceptance of the work, and the owner shall pay for services used after that date.
- c. The owner shall be reimbursed for all metered utility charges after the meter is relisted in the owner's name and prior to completion and acceptance of the work of **all** contractors. Reimbursement shall be made by the contractor whose work has not been completed and accepted. If the work of two or more contractors has not been completed and accepted, reimbursement to the owner shall be paid by the contractors involved on the basis of assessments by the designer.
- d. Prior to the operation of permanent systems, the General Contractor will provide temporary power, lighting, water, and heat to maintain space temperature above freezing, as required for construction operations.
- e. All contractors shall have the permanent building systems in sufficient readiness for furnishing temporary climatic control at the time a building is enclosed and secured. The HVAC systems shall maintain climatic control throughout the enclosed portion of the building sufficient to allow completion of the interior finishes of the building. A building shall be considered enclosed and secured when windows, doorways (exterior, mechanical, and electrical equipment rooms), and hardware are installed; and other openings have protection which will provide reasonable climatic control. The appropriate time to start the mechanical systems and climatic condition shall be jointly determined by the contractor(s), the designer and the owner. Use of the equipment in this manner shall be subject to the approval of the designer and owner and shall in no way affect the warranty requirements of the contractor(s).
- f. The electrical contractor shall have the building's permanent power wiring distribution system in sufficient readiness to provide power as required by the HVAC contractor for temporary climatic control.
- g. The electrical contractor shall have the building's permanent lighting system ready at the time the general contractor begins interior painting and shall provide adequate lighting in those areas where interior painting and finishing is being performed.

- h. Each prime contractor shall be responsible for his permanently fixed service facilities and systems in use during progress of the work. The following procedures shall be strictly adhered to:
 - 1. Prior to acceptance of work by the State Construction Office and owner, each contractor shall remove and replace any parts of the permanent building systems damaged through use during construction.
 - 2. Temporary filters as recommended by the equipment manufacturer in order to keep the equipment and ductwork clean and free of dust and debris shall be installed in each of the heating and air conditioning units and at each return grille during construction. New filters shall be installed in each unit prior to the owner's acceptance of the work.
 - 3. Extra effort shall be maintained to keep the building and the site adjacent to the building clean and under no circumstances shall air systems be operated if finishing operations are creating dust in excess of what would be considered normal if the building were occupied.
 - 4. It shall be understood that any warranty on equipment presented to the owner shall extend from the day of final acceptance by the owner. The cost of warranting the equipment during operation in the finishing stages of construction shall be borne by the contractor whose system is utilized.
 - 5. The electrical contractor shall have all lamps in proper working condition at the time of final project acceptance.
- i. The General Contractor shall provide, if required and where directed, a shed for toilet facilities and shall furnish and install in this shed all water closets required for a complete and adequate sanitary arrangement. These facilities will be available to other contractors on the job and shall be kept in a neat and sanitary condition at all times. Chemical toilets are acceptable.
- j. The General Contractor shall, if required by the Supplementary General Conditions and where directed, erect a temporary field office, complete with lights, telephone, heat and air conditioning. A portion of this office shall be partitioned off, of sufficient size, for the use of a resident inspector, should the designer so direct.
- k. On multi-story construction projects, the General Contractor shall provide temporary elevators, lifts, or other special equipment for the general use of all contractors. The cost for such elevators, lifts or other special equipment and the operation thereof shall be included in the General Contractor's bid.
 - l. The General Contractor will erect one sign on the project if required. The sign shall be of sound construction, and shall be neatly lettered with black letters on white background. The sign shall bear the name of the project, and the names of prime contractors on the project, and the name of the designer and consultants. Directional signs may be erected on the owner's property subject to approval of the owner with respect to size, style and location of such directional signs. Such signs may bear the name of the contractor and a directional symbol. No other signs will be permitted except by permission of the owner.

ARTICLE 41 - CLEANING UP

- a. The contractors shall keep the building and surrounding area reasonably free from rubbish at all times, and shall remove debris from the site on a timely basis or when directed to do so by the designer or General Contractor. The General Contractor shall provide an onsite refuse container(s) for the use of all contractors. Each contractor shall remove their rubbish and debris from the building on a daily basis. The General Contractor shall broom clean the building as required to minimize dust and dirt accumulation.
- b. The General Contractor shall provide and maintain suitable all-weather access to the building.
- c. Before final inspection and acceptance of the building, each contractor shall clean his portion of the work, including glass, hardware, fixtures, masonry, tile and marble (using no acid), clean and wax all floors as specified, and completely prepare the building for use by the owner, with no cleaning required by the owner.

ARTICLE 42 - GUARANTEE

- a. The contractor shall unconditionally guarantee materials and workmanship against patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve (12) months following the date of final acceptance of the work or beneficial occupancy; and shall replace such defective materials or workmanship without cost to the owner.
- b. Where items of equipment or material carry a manufacturer's warranty for any period in excess of twelve (12) months, then the manufacturer's warranty shall apply for that particular piece of equipment or material. The contractor shall replace such defective equipment or materials, without cost to the owner, within the manufacturer's warranty period.
- c. Additionally, the owner may bring an action for latent defects caused by the negligence of the contractor which is hidden or not readily apparent to the owner at the time of beneficial occupancy or final acceptance, whichever occurred first, in accordance with applicable law.
- d. Guarantees for roof, equipment, materials, and supplies shall be stipulated in the specifications sections governing such roof, equipment, materials, or supplies.

ARTICLE 43 - CODES AND STANDARDS

Wherever reference is given to codes, standard specifications or other data published by regulating agencies including, but not limited to, national electrical codes, North Carolina state building codes, federal specifications, ASTM specifications, various institute specifications, etc., it shall be understood that such reference is to the latest edition including addenda published prior to the date of the contract documents.

ARTICLE 44 - INDEMNIFICATION

To the fullest extent permitted by law, the contractor shall indemnify and hold harmless the owner, the designer and the agents, consultants and employees of the owner and designer, from and against all claims, damages, losses and expenses, including, but not limited to, attorneys' fees, arising out of or resulting from the performance or failure of performance of the work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other

than the work itself) including the loss of use resulting therefrom, and (2) is caused in whole or in part by any negligent act or omission of the contractor, the contractor's subcontractor, or the agents of either the contractor or the contractor's subcontractor. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this article.

ARTICLE 45 - TAXES

- a. Federal excise taxes do not apply to materials entering into state work (Internal Revenue Code, Section 3442(3)).
- b. Federal transportation taxes do not apply to materials entering into state work (Internal Revenue Code, Section 3475(b) as amended).
- c. North Carolina sales tax and use tax, as required by law, do apply to materials entering into state work, and such costs shall be included in the bid proposal and contract sum.
- d. Local option sales and use taxes, as required by law, do apply to materials entering into state work as applicable, and such costs shall be included in the bid proposal and contract sum.
- e. **Accounting Procedures for Refund of County Sales & Use Tax**

Amount of county sales and use tax paid per contractor's statements:

Contractors performing contracts for state agencies shall give the state agency for whose project the property was purchased a signed statement containing the information listed in G.S. 105-164.14(e).

The Department of Revenue has agreed that in lieu of obtaining copies of sales receipts from contractors, an agency may obtain a certified statement from the contractor setting forth the date, the type of property and the cost of the property purchased from each vendor, the county in which the vendor made the sale and the amount of local sales and use taxes paid thereon. If the property was purchased out-of-state, the county in which the property was delivered should be listed. The contractor should also be notified that the certified statement may be subject to audit.

In the event the contractors make several purchases from the same vendor, such certified statement must indicate the invoice numbers, the inclusive dates of the invoices, the total amount of the invoices, the counties, and the county sales and use taxes paid thereon.

Name of taxing county: The position of a sale is the retailer's place of business located within a taxing county where the vendor becomes contractually obligated to make the sale. Therefore, it is important that the county tax be reported for the county of sale rather than the county of use.

When property is purchased from out-of-state vendors and the county tax is charged, the county should be identified where delivery is made when reporting the county tax.

Such statement must also include the cost of any tangible personal property withdrawn from the contractor's warehouse stock and the amount of county sales or use tax paid thereon by the contractor.

Similar certified statements by his subcontractors must be obtained by the general contractor and furnished to the claimant.

Contractors are not to include any tax paid on supplies, tools and equipment which they use to perform their contracts and should include only those building materials, supplies, fixtures and equipment which actually become a part of or annexed to the building or structure.

ARTICLE 46 - EQUAL OPPORTUNITY CLAUSE

The non-discrimination clause contained in Section 202 (Federal) Executive Order 11246, as amended by Executive Order 11375, relative to equal employment opportunity for all persons without regard to race, color, religion, sex or national origin, and the implementing rules and regulations prescribed by the secretary of Labor, are incorporated herein.

ARTICLE 47 - EMPLOYMENT OF INDIVIDUALS WITH DISABILITIES

The contractors agree not to discriminate against any employee or applicant for employment because of physical or mental disabilities in regard to any position for which the employee or applicant is qualified. The contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified individuals with such disabilities without discrimination based upon their physical or mental disability in all employment practices.

ARTICLE 48 - ASBESTOS-CONTAINING MATERIALS (ACM)

The State of North Carolina has attempted to address all asbestos-containing materials that are to be disturbed in the project. However, there may be other asbestos-containing materials in the work areas that are not to be disturbed and do not create an exposure hazard. Contractors are reminded of the requirements of instructions under Instructions to Bidders and General Conditions of the Contract, titled Examination of Conditions. Statute 130A, Article 19, amended August 3, 1989, established the Asbestos Hazard Management Program that controls asbestos abatement in North Carolina. The latest edition of *Guideline Criteria for Asbestos Abatement* from the State Construction Office is to be incorporated in all asbestos abatement projects for the Capital Improvement Program.

ARTICLE 49 - MINORITY BUSINESS PARTICIPATION

GS 143-128.2 establishes a ten percent (10%) goal for participation by minority business in total value of work for each State building project. The document *Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts* including Affidavits and Appendix E are hereby incorporated and made a part of this contract.

ARTICLE 50 – CONTRACTOR EVALUATION

The Contractor's overall work performance on the project shall be fairly evaluated in accordance with the State Building Commission policy and procedures, for determining qualifications to bid on future State capital improvement projects. In addition to final evaluation, interim evaluation may be prepared during the progress of project. The document, Contractor Evaluation Procedures, is hereby incorporated and made a part of this contract. The owner may request the contractor's comments to evaluate the designer.

ARTICLE 51- GIFTS

Pursuant to General Statute 133-32, it is unlawful for any vendor or contractor (i.e. architect, bidder, contractor, construction manager, design professional, engineer, subcontractor, supplier, etc.) to make gifts or give favors to any State employee. This prohibition covers those vendors and contractors who: (1) have a contract with a government agency; or (2) have performed under such a contract during the past year; or (3) anticipate bidding on such a contract in the future. For additional information regarding the specific requirements and exemptions, vendors and contractors are encouraged to review General Statute 133-32.

The contractor is prohibited from making gifts to any of the owner's employees, owner's project representatives (architect, engineers, construction manager and their employees), employees of the State Construction Office and/or any other state employees that may have any involvement, influence, responsibilities, oversight, management and/or duties that pertain to and/or relate to the construction administration, financial administration and/or disposition of claims arising from and/or relating to the contract and/or the project.

ARTICLE 52 – AUDITING – ACCESS TO PERSONS AND RECORDS

In accordance with General Statute 147-64.7, the State Auditor shall have access to the contractor's officers, employees, agents and/or other persons in control of and/or responsible for the contractor's records that relate to this contract for purposes of conducting audits under the referenced statute. The owner's internal auditors shall also have the right to access and copy the contractor's records relating to the contract and project during the term of the contract and within two years following the completion of the project/close out of the contract to verify accounts, accuracy, information, calculations and/or data affecting and/or relating to contractor's requests for payment, requests for change orders, change orders, claims for extra work, requests for time extensions and related claims for delay/extended general conditions costs, claims for lost productivity, claims for lost efficiency, claims for idle equipment or labor, claims for price/cost escalation, pass-through claims of subcontractors and/or suppliers, and/or any other type of claim for payment or damages from the owner and/or the owner's project representatives.

ARTICLE 53 – NORTH CAROLINA FALSE CLAIMS ACT

The North Carolina False Claims Act (NCFCA), General Statute 1-605 through 1-618, applies to this contract. The contractor should familiarize itself with the entire NCFCA and its applicability to any requests, demands and/or claims for payment submitted to the State through the contracting university or affiliate.

The purpose of the NCFCA "is to deter persons from knowingly causing or assisting in causing the state to pay claims that are false or fraudulent and to provide remedies in the form of treble damages and civil penalties when money is obtained from the state by reason of a false or fraudulent claim" (Section 1-605[b]). A contractor's liability under NCFCA may arise from, but not be limited to: requests for payment, invoices, billing, claims for extra work, requests for change orders, requests for time extensions, claims for delay damages/extended general conditions costs, claims for lost productivity, claims for lost efficiency, claims for idle equipment or labor, claims for price/cost escalation, pass through claims of subcontractors and/or suppliers, documentation used to support any of the foregoing requests for claims, and/or any other request for payment from the state through the contracting state agency, institution or university. The parts of the NCFCA that are most likely to be enforced with respect to this type of contract are as follows:

- A “claim” is “[a]ny request or demand, whether under a contract or otherwise, for money or property and whether or not the State has title to the money or property that (i) is presented to an officer, employee, or agent of the State or (ii) is made by a contractor...if the money or property is to be spent or used on the State’s behalf or to advance a State program or interest and if the State government: (a) provides or has provided any portion of the money or property that is requested or demanded; or (b) will reimburse such contractor... for any portion of the money or property which is requested or demanded.” (Section 1-606(2).)
- “Knowing” and “knowingly” – whenever a person, with respect to information, does any of the following: (a) Has actual knowledge of the information; (b) Acts in deliberate ignorance of the truth or falsity of the information; and/or (c) Acts in reckless disregard of the truth or falsity of the information. (Section 1-606 (4).) Proof of specific intent to defraud is not required. (Section 1-606 (4).)
- “Material” means having a natural tendency to influence, or be capable of influencing, the payment or receipt of money or property. (Section 1-606(4).)
- Liability – “Any person who commits any of the following acts shall be liable to the State for three times the amount of damages that the State sustains because of the act of that person[:] ... (1) Knowingly presents or causes to be presented a false or fraudulent claim for payment or approval. (2) Knowingly makes, uses, or causes to be made or used, a false record or statement material to a false or fraudulent claim. (3) Conspires to commit a violation of subdivision (1), (2) ...” (Section 1-607(a)(1), (2).)
- The NCFCA shall be interpreted and construed so as to be consistent with the federal False Claims Act, 31 U.S.C. 3729, et seq., and any subsequent amendments to that act. (Section 1-616©.)

Finally, the contracting university or affiliate may refer any suspected violation of the NCFCA by the contractor to the Attorney General’s Office for investigation. Under Section 1-608(a), the Attorney General is responsible for investigating any violation of NCFCA, and may bring a civil action against the contractor under the NCFCA. The Attorney General’s investigation and any civil action relating thereto are independent and not subject to any dispute resolution provision set forth in this contract. (See Section 1-608(a).)

ARTICLE 54 – TERMINATION FOR CONVENIENCE

- a. The owner may, at any time and for any reason terminate the contractor’s services and work at the owner’s convenience. Upon receipt of such notice, the contractor shall, unless the notice directs otherwise, immediately discontinue the work and placing orders for materials, facilities and supplies in connection with the performance of this agreement.
- b. Upon such termination, the contractor shall be entitled to payment only as follows: (1) the actual cost of the work completed in conformity with this agreement; plus, (2) such other costs actually incurred by the contractor as are permitted by the prime contract and approved by the owner; (3) plus ten percent (10%) of the cost of the work referred to in subparagraph (1) above for overhead and profit. There shall be deducted from such sums as provided in this subparagraph the amount of any payments made to the contractor prior to the date of the termination of this agreement. The contractor shall not be entitled to any claim or claim of lien against the owner for any additional compensation or damages in the event of such termination and payment.

SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

The following supplements modify, change, delete from or add to the "General Conditions of the Contract". All unaltered provisions shall remain in effect.

CONDUCT OF THE WORK

1.1.0 Definitions

The Owner is the State of North Carolina, acting through Appalachian State University. The University's Director of Design & Construction represents the Owner in all matters pertaining to contract construction. The Department will designate a Construction Manager, who will be the single spokesperson for the University during the construction of the project. All official contact, decisions, direction, problem resolution, and coordination with the University will be through the assigned Construction Manager. This does not alleviate any of the Designers' responsibilities as stated in the General Conditions.

1.2.0 Intent and Execution of Documents

Site Visitation

The Contractor shall examine the site before bidding the project and shall familiarize himself or herself with all existing conditions. Failure of the Contractor to visit the site before submission of a bid shall not relieve him or her of any special problems which might have been avoided had the Contractor examined the existing site conditions.

Contract Drawings

The Contract drawings contain information to a degree of detail, which is considered to be both consistent with their scales and adequate to accomplish their purpose. Beyond this point they are diagrammatic. The Contractor shall provide all miscellaneous materials required to completely install the work in accordance with the intent of the drawings and the specified functions. Any omissions from either the drawing or the specifications are unintentional, and it shall be the responsibility of the Contractor to call to the attention of the Designer any pertinent omissions prior to submission of a bid.

The Contractor shall not scale any drawing to determine lengths and distances and shall refer only to indicated dimensions.

1.3.0 Materials, Equipment, Employees

Workmanship

All work shall be executed in a neat and workmanlike manner by skilled mechanics and shall have a neat appearance when complete. All contract and sub-contract work shall be done by personnel normally employed for such work.

Condition of Contiguous Work

If any part of the Contractor's work is dependent for its proper execution, or for its subsequent efficiency or appearance, on the character or condition of contiguous work not executed by him or her, then the Contractor shall examine and measure such contiguous work and report to the Designer in writing any imperfection therein, or any condition which renders it unsuitable for the reception of his or her work. In case the Contractor proceeds without making such written report, he or she shall be held to have accepted

such work and the existing conditions. Consequently, the Contractor shall be responsible for any defects in his or her work thereon. The Contractor will not be relieved of the obligation of any guarantee because of any such imperfection or condition.

Equipment Manufacturers

In certain instances, the name of a particular manufacturer may be mentioned in connection with materials to be furnished and installed on this project. In every case this shall be construed to be for descriptive rather than restrictive purposes, unless otherwise noted. The Contractor shall submit to the Designer, within twenty (20) days following the award of the contract, a complete list of materials and manufacturers proposed for the project.

1.4.0 Permits, Inspections, Fees, Regulations

Permits and Fees

The Contractor shall be responsible for obtaining all permits and fees required for the installation of his or her work and shall determine the amounts prior to bidding and shall include this (these) amount(s) in the bid. In no case will any extra charge be allowed unless authorized in writing by the Designer.

Under state law local jurisdiction building permits are not required of the owner and consequently the contractor.

Building Codes

The work executed under this contract shall be done in accordance with the applicable North Carolina State Building Codes, all codes published by the National Fire Protection Association (NFPA), and all other local and state codes, which may apply. The editions of these codes in effect on the date of advertisement of bids shall be incorporated by reference into the construction documents. The contractor shall provide the University's Safety Office with copies of the Contractors Drug and Safety Policies.

1.5.0 Protection of Work and Property

General Guidelines for Fire Loss Prevention and Control

1. Prohibit smoking in hazardous areas. Clearly mark "**No Smoking**" zones and actively promote observance of the smoking regulations.
2. Provide fire extinguishers and other special fire protection equipment during hazardous construction operations. Properly distribute a sufficient number of portable fire extinguishers for quick access and use.
3. Locate bulk storage of gasoline, fuel oil, paint, solvents, welding gases, and other flammable and combustible liquids or gases outside the buildings. No more than one day's working supply should be allowed inside the buildings. Only approved containers and dispensing facilities should be used.
4. Keep combustible materials out of buildings until sprinklers are in service.
5. Keep roofers' tar kettles outside of, and as far away from, buildings as practical. Suitable fire extinguishing equipment should be provided nearby.

6. Take special care in the placement, operation, and service of combustion engine-driven equipment. Refuel small gasoline units from listed or approved safety cans and large units from listed or approved containers in suitable refueling areas.

7. Ensure hot work operations that involve cutting, welding, soldering, etc. are safely performed. Remove nearby combustibles at least 35 feet from hot work operations or protect them by use of metal guards or flame proofed curtains or covers rather than by the use of ordinary tarpaulins.

Protection of Underground Utilities Lines

Each Contractor who does excavation work will be responsible for location of underground utilities prior to excavation. The Contractor may obtain the services of a commercial utility locator and/or call the various utility companies who may have lines in the area. With regard to excavation within any public right-of-way, the General Statutes of North Carolina require Contractors to notify the NC One-Call Center (ULOCO) at 1-800-632-4949; <http://www.ncocc.org> for Excavation Manual online, at least two days but not more than 10 days prior to beginning the excavation. In addition, the Contractor should notify the ASU Physical Plant at least five (5) days prior to any excavation. The Contractor will be responsible for the consequences of any utility interruption caused by his or her excavation and will be responsible for the cost of repairing any damage done to the utilities themselves.

Protection of Storm Drainage System

Appropriate measures, such as block and gravel filters or silt fences, shall be provided during construction as required to protect catch basins, storm drains, and streams from the entry of all silt and construction debris. The Designer should refer to the North Carolina Erosion and Sediment Control Planning and Design Manual.

The residue from the cleaning of ready-mix trucks, wheelbarrows, concrete buddies, etc. shall be contained and the residue removed from the campus with other refuse.

No debris shall be dumped into drains or catch basins. Contractor shall be responsible for cleaning or replacing drain lines if a violation occurs.

The Designer's Erosion and Sediment Control Plan for the project should clearly state which measures are temporary and which measures are permanent. All temporary erosion control measures including silt fencing, inlet protection measures, and sediment traps should be required to be removed by the Contractor after the site is stabilized and prior to final inspection.

Protection of Existing Landscaping

The University Grounds Section shall be notified before construction begins so they may determine if any plant material within the construction site can be salvaged. Two (2) weeks advance notification is required so the Owner may remove trees and shrubs that will be retained by the Owner for use elsewhere.

Special attention should be given to any trees, shrubs or lawn that will remain inside the construction area. To protect such materials, a landscape protection fence shall be installed prior to the initial stage of grading, excavation, or tree removal. This fence or barricade shall be a minimum of 3 feet high and shall be required to remain in place for as long as is practical. The landscape protection area should extend to at least the drip line of any trees or shrubs that are to remain.

No storage, access or activity of any kind shall be permitted in the landscape protection areas. This specifically includes the felling of trees into the landscape protection area. No limbs, tops, stumps, fill, material storage or equipment shall be permitted in the landscape protection areas at any time.

Care shall be taken to protect trees and shrubs from damage by cranes, falling objects, etc. Trees and shrubs shall not be pruned or moved by the Contractor. When pruning or moving is necessary, the Designer shall be notified, and the work will in turn be performed by the Owner at no cost to the Contractor.

Trees outside the construction limits shall be protected from:

- a. Compaction of root area by equipment, materials, or fill dirt.
- b. Trunk damage by moving equipment, material storage, mauling or bolting.
- c. Poisoning by pouring solvents, gas, paint, etc, on or around roots.
- d. Damage of branches by improper equipment activity.
- e. Cutting of roots within the drip line of the tree.

It is specifically prohibited to fell or bulldoze trees into a wooded area that will be adjacent to the site being cleared for construction. Site clearing should be done so as to prevent damage to wooded areas adjacent to the project.

Trees shall not be used as props or anchors for materials, guy wires, cables or utility wires.

Damaged trees, shrubs or lawns shall be repaired or replaced by a tree surgeon or nurseryman in a manner acceptable to the University and cost of the repairs or replacements shall be paid by the Contractor.

Protection of Campus Buildings, Streets and Sidewalks

The Contractor shall be responsible for protection of existing buildings, roof, trees, shrubbery and lawn areas from damage by vehicles, equipment, overhead cranes and falling objects.

The Contractor shall be responsible for protecting the campus streets and walks connecting to the project from deposits of mud, sand, stone, litter, or debris in any form, and shall remove any such debris immediately before it becomes a traffic hazard or is carried into the surrounding buildings.

Where equipment must cross walks, lawns, and other transitional areas used by pedestrian and vehicular traffic, the Contractor shall provide a minimum protection of 3/4" thick plywood sheets for equipment to roll over.

Shutdown of Existing Fire Protection Systems

The shutdown of existing fire protection systems for renovations shall be kept to a minimum. The Boone Fire Department, and the Appalachian State University Physical Plant and Safety Office should be contacted to perform this operation where necessary.

Generating Smoke, Heat, or Dust

When conducting smoke, heat or dust generation operations, care should be exercised not to set off smoke detectors installed in buildings. As a rule, the Construction Manager should be contacted to review the circumstances and to have the smoke detection equipment shut down by the Physical Plant if necessary.

1.6.0 Protection of the Public

Safety Measures

Appropriate steps shall be taken at each construction site to protect the general public from hazards created by demolition and construction operations.

All projects shall fully comply with NFPA 241 Standard for Safeguarding Construction Alterations, and Demolition Operations, NC-OSHA Regulations, and with the NC Regulations for Protection Against Radiation.

The demolition or construction site shall be separated from public access by fences, barricades, or other appropriate security measures. Accident prevention signs and markers shall be in accordance with NC OSHA regulations to warn of dangers (e.g., overhead electrical wires) and restrictions (e.g., restricted access areas, hard hat areas). Where necessary, protected detour routes for vehicles or pedestrian traffic shall be provided.

Barricades and signs must meet OSHA, NCDOT, and University approval, and be substantial enough to deter bypassing, vandalizing, or theft. In addition to meeting all applicable codes and regulations, signs must be neat and legible at all times. Hand-made signs are not acceptable.

Contractors shall be reminded of the presence on campus of handicapped students, staff, and faculty, particularly mobility impaired, visually impaired, and hearing-impaired individuals. All barricades, temporary walkways, excavation, and stockpiles of materials shall be formed in such a manner as to accommodate access, provide adequate warning, and prevent injury to this segment of the University population.

Security Measures

The University will provide only those security measures which are deemed prudent for its own operations. The Contractor shall provide the necessary security means to protect his or her work, materials, tools, and construction equipment from vandalism, theft, and fire. Watchmen services shall be supplied by the Contractor as he or she deems necessary. Any watchmen service set up by the Contractor, as well as any security measure in general, must be acceptable to the Owner. The Contractor shall be responsible for replacement of his or her materials, machinery, equipment, tools, and supplies which are the subject of theft or mysterious disappearance. All tools and equipment shall be clearly marked with the Contractor's identification. All toolboxes shall be clearly marked by the Contractor.

The Contractor shall provide the Owner with a list of day and night phone numbers to be used in case of emergencies during the course of the project.

Hazard Communication Standard

All Contractors shall comply with the OSHA Hazard Communication Standard. The written Hazard Communications Program and Material Safety Data Sheets for each hazardous chemical shall be readily available and centrally located on site. Also, all contractors shall comply with the NC Hazardous Chemical Right to Know Act covering bulk chemicals in quantities above 55 gallons or 500 pounds. This

information needs to be sent to the Boone Fire Department and covers gasoline, diesel fuel, as well as other hazardous chemicals.

1.7.0 Inspection of the Work

Refer to STANDARD SPECIFICATIONS, Section 01400, Quality Control Services.

1.8.0 Request for Payment

The first sentence only of Article 31a, General Conditions, is revised to read as follows: "Not later than the last day of the month, the contractors shall submit to the Designer a request for payment for work done through the 25th day of the month." The Owner will make payment by the end of the following calendar month, in the manner described in Articles 31 through 33 of the General Conditions.

1.8.1 Refund of Sales and Use Taxes

North Carolina General Statute 105-164.14(e) authorizes refunds to the state of county sales and use taxes paid by contractors on materials, which are incorporated into a state building or structure. The Contractor shall report all county sales and use taxes paid, in accordance with Article 4.31.2.

1.8.2 Submittal of Tax Forms

The Contractor shall attach to each request for payment certified statements of county sales and use taxes paid on materials claimed for payment on the request. Certified statements in the same format shall be obtained from all subcontractors and provided with the request for payment. The Designer will not approve payment for any materials until the supporting county tax statement has been provided. The statement must include the cons of any tangible personal property withdrawn from the contractor's warehouse stock and the amount of county sales or use tax paid thereon by the contractor. These certified statements may be subject to audit. Contractors shall not include any tax paid on supplies, tools and equipment, which they use to perform their contracts and shall include only those building materials, supplies, fixtures and equipment which actually become a part of or annexed to the building or structure. The position of a sale is the retailer's place of business located within a taxing county where the vendor becomes contractually obligated to make the sale. Therefore, it is important that the county tax be reported for the county of sale rather than the county of use. When property is purchased from out-of-state vendors and the county tax is charged, you should identify the county where delivery is made when reporting the county tax.

1.9.0 Use of Premises

Use of Owner's Drinking and Toilet Facilities

Unless specifically authorized the Contractor's, personnel will not be allowed to use the Owner's toilet and drinking water facilities.

Contractor's Working Hours

The Contractor may establish a work schedule of his or her own choosing, but the Contractor shall submit his or her regular daily work schedule to the ASU Business Affairs Department and to the Designer and shall notify the Construction Manager in advance of any deviations from this schedule. The University reserves the right to limit the Contractors' activities when they conflict with the University operations.

Additional restrictions may be enforced by the University during certain periods of the year. These periods are:

During examination periods, generally occurring in December and May for two weeks each and June, July and August for four days each.

Graduation, generally on a Saturday or Sunday in mid-May and mid-December.

Approximately 15 home basketball games per year.

Approximately 6 home football games per year.

Concerts, approximately 20 per year.

Convocation Day, Mid-September.

Family Weekend, First weekend in October.

Student move-in/move-out days, generally twice a year for one week each.

In most cases, the University will require the Contractor to comply with the Town of Boone Noise Ordinance; however, there are other situations where stricter noise control is required.

During examination periods the Contractor will restrict noise-making activities to the hours between 8:00am to 5:00pm. If the project involves work in or near a building in which an examination is being conducted, the Contractor will be required to restrict operations which are disturbing to students during the hours of the exam(s).

Work will not be permitted on Graduation Day, nor the day preceding it (Saturday), Convocation Day, nor on the Family Weekend. The Contractor shall be required to provide extra-ordinary cleanup and additional warning signs and barricades on these occasions.

Work is normally permitted on the days of sporting events and concerts, but traffic is extremely heavy on those days, and Contractors may have difficulty, and experience delays, in getting to and from the job site.

Work is normally permitted on student move-in/move-out days, but traffic is heavier than normal, parking is restricted, and some campus roads are temporally closed or designated one-way.

Temporary Interruptions of Utilities and Traffic Movement

Procedures for making temporary disruptions to existing utilities and roads, or pedestrian walks, shall be planned well in advance of the work, and the work shall be executed in a manner to provide reasonably continuous service throughout the construction period. Connections to existing utilities shall be made only at times approved by the University. University will probably schedule interruption of service at times other than the Contractors' normal working hours. Only designated University personnel are authorized to interrupt services. Frequently, outages are scheduled to reduce disruption of classes and special events.

For interruption of service in major utility system, the Contractor must submit to the ASU Director of Design & Construction a step-by-step sequence of operations planned to accomplish the work. This outline must show tentative dates and times of day for shut-off and restoration of services. Upon approval

of the planned operations, the Construction Manager will make arrangements with appropriate University personnel for interruption of services.

Road and sidewalk cuts shall be scheduled in advance and made only after they have been approved by the University. Contractors shall plan and coordinate their work to minimize the duration of such disruptions. Appropriate detours shall be planned, subject to the approval of the University, giving consideration to the handicapped. Warning barricades and signs shall be installed by the Contractor, as well as informational signs indicating detours. No service disruptions or excavations may be made until barricades and signs are in place to protect the public. If the nature of the site does not allow barricades to be in place prior to the excavations, the barricade materials must be physically present on site before excavation begins, in order that they may be erected as soon as it is possible to do so.

Site Limits

The Construction area shall be enclosed with six feet (6') high (minimum) chain link type fence with top rail. At the completion of the project the Contractor shall remove the construction fence completely including below ground level. Fence posts shall not be sawed off flush with the soil line.

Contractor's Parking and Storage

Parking is extremely limited at the University. Contractors must confine their parking and storage to those areas within the limits of the construction site. There will be no parking spaces provided in the vicinity of the project for construction workers. Contractors are encouraged to locate fringe parking areas and shuttle their workers to and from the job site. If a construction fence has been erected, the Contractor may allow his or her employees to park inside the fence. The only type of permit available to a Contractor or a Contractor's employees for parking outside the fence is a temporary permit which is available through the University's Police Department.

Parking for large storage trailers is limited to within the boundaries of the construction site. If additional trailer parking is required, the ASU Physical Plant maintains an off-campus facility on State Farm Road. There may be a monthly fee at this storage area.

All Contractors are responsible for informing their employees that they cannot park at any locations on the campus other than the allocated spaces. All existing University parking regulations will be enforced.

1.10.0 Utilities, Structures, Signs

Utilities

The University operates the electric distribution system serving the campus, a district steam and hot water heating system, and chilled water systems in some of the Academic Buildings. To establish services, determine rates, or to make general inquiries, the Contractor should contact the Physical Plant Mechanical Engineer.

Telephone service is provided by Southern Bell. The contractor should directly contact the Southern Bell BICS Engineer, 1047 Harper Avenue, PO Box 1230, Lenoir NC 28645, Phone 704-754-1730, FAX 704-754-1794, to establish service and arrange for future telephone lines into the new building.

Water is provided by Appalachian State University. The Contractor should contact the Business affairs Department to establish services.

Sewer service is provided by the Town of Boone. The Contractor should directly contact their sewer department to establish sewer services.

Signs at Construction Sites

Identification of a construction project and those principal parties' participation in the project shall be provided by the Contractor. There shall be only one such sign per project. No additional signs identifying participants shall be used.

The design of the project identification sign must be approved by the Department of Business Affairs. The sign shall give the name of the University, the title of the project, and, in smaller lettering, the names of the Designer and Contractors(s).

Warning and safety signs are to be used as required. All other informational signage must be kept to a minimum.

All signs shall be maintained by the Contractor in a first-class condition, throughout the duration of the project, by re-painting, repairing, and re-erecting as necessary and as required.

Identification by Room Number

During construction, once the interior layout has been partitioned off into rooms, all rooms shall be identified on the site by a number that corresponds with the number on the design drawings, unless another numbering system is agreed upon by the Owner.

1.11.0 Cleaning Up

The construction site, and adjacent campus area, shall be kept free from the accumulation of trash, litter, or debris at all times. Trash cans/dumpsters shall be emptied, and the contents removed from campus before they overflow. Removal of litter, rubbish, and debris are to performed daily by the Contractor. Use of University trash receptacles for such debris is not allowed. The outdoor burning of trash and debris on campus is not allowed either.

The Contractor shall be fully responsible for the containment of mud and debris on the site as well as removal of these from roads and walkways.

Grass and other vegetation on the construction site shall be trimmed or mowed to maintain a neat appearance. Grass inside the construction area should generally be mowed once a week during the growing season.

Debris shall not be allowed to accumulate in corridors or stairways, and as the various stages of construction are completed, the work must be protected to prevent soiling or spotting, particularly with regard to flooring systems. Carpet shall be cleaned and without spots or traffic patterns. Resilient floors shall be cleaned, sealed, properly finished and of a uniform appearance with no streaks or smears.

1.12.0 Article 23 – Time of Completion, Delays, Extensions of Time

A Substitute the following as paragraph b:

The Contractor shall commence work to be performed under this Agreement on the issued Notice to Proceed, and shall fully complete all work hereunder within 60 consecutive calendar days from and including said date.

All Contractors are responsible for "on-time" performance and shall be responsible for identifying and appropriately coordinating long lead materials and equipment to maintain the project schedule.

For each day in excess of the contract duration, the Contractor shall pay to the Owner, the sum of Five Hundred Dollars (\$500.00) per calendar day until completion, as liquidated damages reasonably estimated in advance to cover the losses to be incurred by the Owner by reason of failure of said Contractor to complete the work within the time specified, such time being of the essence of this contract and a material consideration thereof.

The Contractor agrees that said work shall be prosecuted regularly, diligently, and uninterruptedly at such rate or progress as will ensure full completion thereof within the time specified.

B ADD to paragraph c:

After the contract completion date, the Designer shall deduct from all contractor pay applications, the liquidated damages in the amount of the daily liquidated damage rate times the number of calendar days after the contract completion date minus any previously assessed liquidated damages.

END OF SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

GUIDELINES FOR RECRUITMENT AND SELECTION OF MINORITY BUSINESSES FOR PARTICIPATION IN STATE 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 State construction projects in the amount of \$300,000 or more. The legislation provides that the State shall have a verifiable ten percent (10%) goal for participation by minority businesses in the total value of work for each project for which a contract or contracts are awarded. These requirements are published to accomplish that end.

SECTION A: INTENT

It is the intent of these guidelines that the State of North Carolina, 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 ten percent (10%) 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.

SECTION B: DEFINITIONS

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 America, 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, 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 governmental units.
5. Owner - The State of North Carolina, through the Agency/Institution named in the contract.
6. Designer – Any person, firm, partnership, or corporation, which has contracted with the State of North Carolina 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 the State of North Carolina 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 his subcontract.

SECTION C: RESPONSIBILITIES

1. Office for Historically Underutilized Businesses, Department of Administration (hereinafter referred to as HUB Office).

The HUB Office has established a program, which allows interested persons or businesses qualifying as a minority business under G.S. 143-128.2, to obtain certification in the State of North Carolina procurement system. The information provided by the minority businesses will be used by the HUB Office to:

- a. Identify those areas of work for which there are minority businesses, as requested.
- b. Make available to interested parties a list of prospective minority business contractors and subcontractors.
- c. Assist in the determination of technical assistance needed by minority business contractors.

In addition to being responsible for the certification/verification of minority businesses that want to participate in the State construction program, the HUB Office will:

- (1) Maintain a current list of minority businesses. The list shall include the areas of work in which each minority business is interested.
- (2) Inform minority businesses on how to identify and obtain contracting and subcontracting opportunities through the State Construction Office and other public entities.
- (3) Inform minority businesses of the contracting and subcontracting process for public construction building projects.
- (4) Work with the North Carolina trade and professional organizations to improve the ability of minority businesses to compete in the State construction projects.
- (5) The HUB Office also oversees the minority business program by:
 - a. Monitoring compliance with the program requirements.
 - b. Assisting in the implementation of training and technical assistance programs.
 - c. Identifying and implementing outreach efforts to increase the utilization of minority businesses.
 - d. Reporting the results of minority business utilization to the Secretary of the Department of Administration, the Governor, and the General Assembly.

2. State Construction Office

The State Construction Office will be responsible for the following:

- a. Furnish to the HUB Office a minimum of twenty-one days prior to the bid opening the following:
 - (1) Project description and location;
 - (2) Locations where bidding documents may be reviewed;
 - (3) Name of a representative of the owner who can be contacted during the advertising period to advise who the prospective bidders are;
 - (4) Date, time and location of the bid opening.
 - (5) Date, time and location of prebid conference, if scheduled.

- b. Attending scheduled prebid conference, if necessary, to clarify requirements of the general

statutes regarding minority-business participation, including the bidders' responsibilities.

- c. Reviewing the apparent low bidders' statutory compliance with the requirements listed in the proposal, that must be complied with, if the bid is to be considered as responsive, prior to award of contracts. The State reserves the right to reject any or all bids and to waive informalities.
- d. Reviewing of minority business requirements at Preconstruction conference.
- e. Monitoring of contractors' compliance with minority business requirements in the contract documents during construction.
- f. Provide statistical data and required reports to the HUB Office.
- g. Resolve any protest and disputes arising after implementation of the plan, in conjunction with the HUB Office.

3. Owner

Before awarding a contract, owner shall do the following:

- a. Develop and implement a minority business participation outreach plan to identify minority businesses that can perform public building projects and to implement outreach efforts to encourage minority business participation in these projects to include education, recruitment, and interaction between minority businesses and non-minority businesses.
- b. Attend the scheduled prebid conference.
- c. At least 10 days prior to the scheduled day of bid opening, notify minority businesses that have requested notices from the public entity for public construction or repair work and minority businesses that otherwise indicated to the Office for Historically Underutilized Businesses an interest in the type of work being bid or the potential contracting opportunities listed in the proposal. The notification shall include the following:
 1. A description of the work for which the bid is being solicited.
 2. The date, time, and location where bids are to be submitted.
 3. The name of the individual within the owner's organization who will be available to answer questions about the project.
 4. Where bid documents may be reviewed.
 5. Any special requirements that may exist.
- d. Utilize other media, as appropriate, likely to inform potential minority businesses of the bid being sought.
- e. Maintain documentation of any contacts, correspondence, or conversation with minority business firms made in an attempt to meet the goals.
- f. Review, jointly with the designer, all requirements of G.S. 143-128.2(c) and G.S. 143-128.2(f) – (i.e. bidders' proposals for identification of the minority businesses that will be utilized with corresponding total 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 award to the State Construction Office.
- g. Evaluate documentation to determine good faith effort has been achieved for minority business utilization prior to recommendation of award to State Construction Office.
- h. Review prime contractors' pay applications for compliance with minority business utilization commitments prior to payment.
- i. Make documentation showing evidence of implementation of Owner's responsibilities available for review by State Construction Office and HUB Office, upon request

4. Designer

Under the single-prime bidding, separate prime bidding, construction manager at risk, or alternative contracting method, the designer will:

- 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 conversation 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’ proposals for identification of the minority businesses that will be utilized with corresponding total 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 award.
- e. During construction phase of the project, review “MBE Documentation for Contract Payment” – (Appendix E) for compliance with minority business utilization commitments. Submit Appendix E form with monthly pay applications to the owner and forward copies to the State Construction Office.
- f. Make documentation showing evidence of implementation of Designer’s responsibilities available for review by State Construction Office and HUB Office, upon request.

5. Prime Contractor(s), CM at Risk, and Its First-Tier Subcontractors

Under the single-prime bidding, the separate-prime bidding, construction manager at risk and alternative contracting methods, contractor(s) will:

- 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 will include 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.

If there are more than three (3) minority businesses in the general locality of the project who offer similar contracting or subcontracting services in the specific trade, the contractor(s) shall notify three (3), but may contact more, if the contractor(s) so desires.

- 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).
- f. Make documentation showing evidence of implementation of PM, CM-at-Risk and First-Tier Subcontractor responsibilities available for review by State Construction Office and HUB Office, upon request.
- g. Upon being named the apparent low bidder, the Bidder shall provide one of the following: (1) an affidavit (Affidavit C) 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; (2) if the percentage is not equal to the applicable goal, then documentation of all good faith efforts taken to meet the goal. Failure to comply with these requirements is grounds for rejection of the bid and award to the next lowest responsible and responsive bidder.
- h. The contractor(s) shall identify the name(s) of minority business subcontractor(s) and corresponding dollar amount of work on the schedule of values. The schedule of values shall be provided as required in Article 31 of the General Conditions of the Contract to facilitate payments to the subcontractors.
- i. The contractor(s) shall submit with each monthly pay request(s) and final payment(s), “MBE Documentation for Contract Payment” – (Appendix E), for designer’s review.
- j. During the construction of a project, at any time, if it becomes necessary to replace a minority business subcontractor, immediately advise the owner, State Construction Office, and the Director of the HUB Office 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. If during the construction of a project additional subcontracting opportunities become available, make a good faith effort to solicit subbids from minority businesses.
- l. It is the intent of these requirements apply to all contractors performing as prime contractor and first tier subcontractor under construction manager at risk on state projects.

6. **Minority Business Responsibilities**

While minority businesses are not required to become certified in order to participate in the State construction projects, it is recommended that they become certified and should take advantage of the appropriate technical assistance that is made available. In addition, minority businesses who are contacted by owners or bidders must respond promptly whether or not they wish to submit a bid.

SECTION 4: DISPUTE PROCEDURES

It is the policy of this state that disputes that involves a person's rights, duties or privileges, should be settled through informal procedures. To that end, minority business disputes arising under these guidelines should be resolved as governed under G.S. 143-128(g).

SECTION 5: These guidelines shall apply upon promulgation on state construction projects. Copies of these guidelines may be obtained from the Department of Administration, State Construction Office, (physical address) 301 North Wilmington Street, Suite 450, NC Education Building, Raleigh, North Carolina, 27601-2827, (mail address) 1307 Mail Service Center, Raleigh, North Carolina, 27699-1307, phone (919) 807-4100, Website: www.nc-sco.com

SECTION 6: In addition to these guidelines, there will be issued with each construction bid package provisions for contractual compliance providing minority business participation in the state construction program.

MINORITY BUSINESS CONTRACT PROVISIONS(CONSTRUCTION)

APPLICATION:

The **Guidelines for Recruitment and Selection of Minority Businesses for Participation in State Construction Contracts** are hereby made a part of these contract documents. These guidelines shall apply to all contractors regardless of ownership. Copies of these guidelines may be obtained from the Department of Administration, State Construction Office, (physical address) 301 North Wilmington Street, Suite 450, NC Education Building, Raleigh, North Carolina, 27601-2827, (mail address) 1307 Mail Service Center, Raleigh, North Carolina, 27699-1307, phone (919) 807-4100, Website: <http://www.nc-sco.com>

MINORITY BUSINESS SUBCONTRACT GOALS:

The goals for participation by minority firms as subcontractors on this project have been set at 10%.

The bidder must identify on its bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit (Affidavit A) listing good faith efforts **or** affidavit (Affidavit B) of self-performance of work, if the bidder will perform work under contract by its own workforce, as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).

The lowest responsible, responsive bidder must provide Affidavit C, 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.

OR

Provide Affidavit D, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, **with documentation of Good Faith Effort, if the percentage is not equal to the applicable goal.**

OR

Provide Affidavit B, which includes sufficient information for the State to determine that the bidder does not customarily subcontract work on this type project.

The above information must be provided as required. Failure to submit these documents is grounds for rejection of the bid.

MINIMUM COMPLIANCE REQUIREMENTS:

All written statements, affidavits or intentions made by the Bidder shall become a part of the agreement between the Contractor and the State for performance of this contract. Failure to comply with any of these statements, affidavits or intentions, or with the minority business Guidelines shall constitute a breach of the contract. A finding by the State that any information submitted either prior to award of the contract or during the performance of the contract is inaccurate, false or incomplete, shall also 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 the State whether to terminate the contract for breach.

In determining whether a contractor has made Good Faith Efforts, the State will evaluate all efforts made by the Contractor and will determine compliance in regard to quantity, intensity, and results of these efforts. Good Faith Efforts include:

- (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.
- (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.
- (3) Breaking down or combining elements of work into economically feasible units to facilitate minority participation.
- (4) Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- (5) Attending any prebid meetings scheduled by the public owner.
- (6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors.
- (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.
- (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.
- (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.
- (10) Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

APPENDIX E

MBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor/Architect: _____

Address & Phone: _____

Project Name: _____

Pay Application #: _____ Period: _____

The following is a list of payments made to Minority Business Enterprises on this project for the above- mentioned period.

MBE FIRM NAME	* INDICATE TYPE OF MBE	AMOUNT PAID THIS MONTH	TOTAL PAYMENTS TO DATE	TOTAL AMOUNT COMMITTED

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A), American Indian (I), Female (F), Social and Economically Disadvantage (D)

Date: _____ Approved/Certified By: _____
Name

Title

Signature

SUBMIT WITH EACH PAY REQUEST & FINAL PAYMENT

(Revised 3/14/2003)

EXISTING ASBESTOS INFORMATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Testing for the presence of asbestos containing materials has been conducted. Results of the testing are for information and bidding purposes only. Contractor is responsible for verification of field conditions affecting performance of this work and for determining the extent or presence of asbestos containing materials.

1.2 RELATED DOCUMENTS

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

1.3 ENCLOSURES

A. The attached Asbestos Sampling Test Results are provided.



EMSL Analytical, Inc.

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Tel/Fax: (704) 525-2205 / (704) 525-2382

<http://www.EMSL.com> / charlottelab@emsl.com

EMSL Order: 412403217

Customer ID: REIE25

Customer PO:

Project ID:

Attention: Paul Whitley
REI Engineers
1927 JN Pease Place
Suite 201
Charlotte, NC 28262

Project: ASU Founders Hall

Phone: (704) 596-0331

Fax: (704) 596-0533

Received Date: 03/20/2024 8:00 AM

Analysis Date: 03/21/2024

Collected Date: 02/07/2024

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
Sample #1 TC1-Membrane 412403217-0001	Vapor Barrier Black Membrane	Black Non-Fibrous Homogeneous	5% Cellulose	15% Perlite 80% Non-fibrous (Other)	None Detected
Sample #1 TC1-Insulation 412403217-0001A	Vapor Barrier Black Membrane	Brown Fibrous Homogeneous	85% Cellulose	12% Perlite 3% Non-fibrous (Other)	None Detected
Sample #2 TC2-Adhesive 412403217-0002	Adhesive on Concrete Deck	Tan Non-Fibrous Homogeneous	<1% Cellulose	<1% Quartz 100% Non-fibrous (Other)	None Detected
Sample #2 TC2-Concrete 412403217-0002A	Adhesive on Concrete Deck	Gray Non-Fibrous Homogeneous		70% Ca Carbonate 30% Non-fibrous (Other)	None Detected
Sample #3 TC3-Adhesive 412403217-0003	Adhesive on Concrete Deck	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
Sample #3 TC3-Concrete 412403217-0003A	Adhesive on Concrete Deck	Gray Non-Fibrous Homogeneous		70% Ca Carbonate 30% Non-fibrous (Other)	None Detected
Sample #4 TC4 412403217-0004	Pitch Pocket Black Material	Black Non-Fibrous Homogeneous		<1% Quartz 100% Non-fibrous (Other)	None Detected
Sample #5 TC5 412403217-0005	Pitch Pocket Black Material	Black Non-Fibrous Homogeneous		5% Ca Carbonate 95% Non-fibrous (Other)	None Detected
Sample #6 TC6-Membrane 412403217-0006	Vapor Barrier Black Membrane	Black Fibrous Heterogeneous	12% Glass	10% Quartz 5% Mica 73% Non-fibrous (Other)	<1% Chrysotile
Sample #6 TC6-Insulation 412403217-0006A	Vapor Barrier Black Membrane	Brown Fibrous Homogeneous	85% Cellulose	12% Perlite 3% Non-fibrous (Other)	None Detected
Sample #7 TC7 412403217-0007	Vapor Barrier Black Membrane	Black Fibrous Heterogeneous	15% Glass	10% Quartz 5% Mica 70% Non-fibrous (Other)	<1% Chrysotile
Sample #8 TC8 412403217-0008	Vapor Barrier Black Membrane	Black Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected

Initial report from: 03/22/2024 07:42:11



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EMSL Order: 412403217

Customer ID: REIE25

Customer PO:

Project ID:

Analyst(s)

Jalen Moore (4)

Matthew Schaefer (8)

Lee Plumley, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Pineville, NC NVLAP Lab Code 200841-0, VA 3333 00312

Initial report from: 03/22/2024 07:42:11



EMSL Analytical, Inc.

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<http://www.EMSL.com> / charlottelab@emsl.com

EMSL Order: 411903572

Customer ID: REIE25

Customer PO:

Project ID:

Attention: Max Morrill
REI Engineers
1927 JN Pease Place
Suite 201
Charlotte, NC 28262

Phone: (704) 596-0331

Fax: (704) 596-0533

Received Date: 04/19/2019 10:00 AM

Analysis Date: 04/22/2019

Collected Date: 04/17/2019

Project: ASU Founders Hall, Project Number 019CLT-135

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
Sample #1 Mastic <small>411903572-0001</small>	Roof Mastic Repair Material, Grey, Black Color	Gray/Black Fibrous Heterogeneous		92% Non-fibrous (Other)	8% Chrysotile
Sample #2 Mastic <small>411903572-0002</small>	Roof Mastic Repair Material, Grey, Black Color	Black Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
Sample #3 V.B.-Cellulose Layer <small>411903572-0003</small>	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Non-Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
Sample #3 V.B.-Tar <small>411903572-0003A</small>	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (Other)	None Detected
Sample #4 V.B.-Cellulose Layer <small>411903572-0004</small>	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Fibrous Homogeneous	40% Cellulose	60% Non-fibrous (Other)	None Detected
Sample #4 V.B.-Tar <small>411903572-0004A</small>	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
Sample #5 Adhesive-Adhesive <small>411903572-0005</small>	Yellow Adhesive Material on Concrete Deck	Tan Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
Sample #5 Adhesive-Brown Layer <small>411903572-0005A</small>	Yellow Adhesive Material on Concrete Deck	Brown/Black Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
Sample #6 Adhesive-Adhesive <small>411903572-0006</small>	Yellow Adhesive Material on Concrete Deck	Tan Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
Sample #6 Adhesive-Brown Layer <small>411903572-0006A</small>	Yellow Adhesive Material on Concrete Deck	Brown/Black Fibrous Homogeneous	98% Cellulose	2% Non-fibrous (Other)	None Detected
Sample #7 V.B.-Cellulose Layer <small>411903572-0007</small>	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Non-Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
Sample #7 V.B.-Glass Layer <small>411903572-0007A</small>	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Non-Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
Sample #7 V.B.-Tar <small>411903572-0007B</small>	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Non-Fibrous Homogeneous	1% Cellulose	99% Non-fibrous (Other)	None Detected

Initial report from: 04/23/2019 10:10:19



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EMSL Order: 411903572
Customer ID: REIE25
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
Sample #8 V.B.-Cellulose Layer 411903572-0008	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
Sample #8 V.B.-Glass Layer 411903572-0008A	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Fibrous Homogeneous	15% Glass	85% Non-fibrous (Other)	None Detected
Sample #8 V.B.-Tar 411903572-0008B	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Non-Fibrous Homogeneous	1% Cellulose	99% Non-fibrous (Other)	None Detected
Sample #9 V.B.-Cellulose Layer 411903572-0009	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Non-Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
Sample #9 V.B.-Glass Layer 411903572-0009A	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Non-Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
Sample #9 V.B.-Tar 411903572-0009B	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Non-Fibrous Homogeneous	1% Cellulose	99% Non-fibrous (Other)	None Detected
Sample #10 V.B.-Cellulose Layer 411903572-0010	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
Sample #10 V.B.-Glass Layer 411903572-0010A	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
Sample #10 V.B.-Tar 411903572-0010B	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Non-Fibrous Homogeneous	1% Cellulose	99% Non-fibrous (Other)	None Detected
Sample #11 P.P. 411903572-0011	Pitch Pocket Filler, Hard Black/Grey Color Materials at Pitch Pockets	Black Non-Fibrous Homogeneous	1% Cellulose	99% Non-fibrous (Other)	None Detected
Sample #12 P.P. 411903572-0012	Pitch Pocket Filler, Hard Black/Grey Color Materials at Pitch Pockets	Black Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (Other)	None Detected
Sample #13 V.B.-Glass Layer 411903572-0013	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Non-Fibrous Homogeneous	12% Glass	88% Non-fibrous (Other)	None Detected
Sample #13 V.B.-Tar 411903572-0013A	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Non-Fibrous Homogeneous	1% Cellulose 1% Glass	98% Non-fibrous (Other)	None Detected
Sample #13 V.B.-Insulation 411903572-0013B	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Brown Fibrous Homogeneous	90% Cellulose 10% Glass		None Detected

Initial report from: 04/23/2019 10:10:19



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EMSL Order: 411903572
Customer ID: REIE25
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
Sample #14 V.B.-Fibrous Layer <i>411903572-0014</i>	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Fibrous Homogeneous	30% Cellulose	67% Non-fibrous (Other)	3% Chrysotile
Sample #14 V.B.-Tar <i>411903572-0014A</i>	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Black Non-Fibrous Homogeneous	1% Cellulose	99% Non-fibrous (Other)	None Detected
Sample #14 V.B.-Insulation <i>411903572-0014B</i>	Vapor Barrier on Concrete Deck, Black Reinforced Asphalt Plies	Brown Fibrous Homogeneous	90% Cellulose 2% Glass	8% Non-fibrous (Other)	None Detected

Analyst(s) _____

- Eric Loomis (15)
- Matthew McDonald (3)
- Sarah Breneman (12)

Lee Plumley, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Pineville, NC NVLAP Lab Code 200841-0, VA 3333 00312

Initial report from: 04/23/2019 10:10:19

TECHNICAL SPECIFICATIONS

SECTION 01 11 00
SUMMARY OF WORK

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Name: Watson-Brumit Hall Roof Replacement SCO ID # 24-27762-01A
- B. Project Address: 150 University Drive, Boone, North Carolina 28607
- C. Owner: Appalachian State University
- D. Engineer: The Contract Documents, dated 03-25-2024, were prepared by REI Engineers, Inc.
- E. This work includes the provision of labor, material, equipment, supervision and administration to integrate the work outlined in these specifications into the total building system such that no leakage into the system occurs. In general, the scope of work in the Base Bid includes:
 - 1. Low Slope Roof Replacement - Roof Area A1:
 - a. Remove and dispose of the roof system including flashings and sheet metal down to the vapor retarder.
 - b. Provide vapor retarder.
 - c. Provide 1.5" Roof Insulation adhered in foam adhesive.
 - d. Provide 2.5" Roof Insulation adhered in foam adhesive.
 - e. Provide Cover Board adhered in foam adhesive.
 - f. Fully adhere felt-back thermoplastic single ply membrane along with flashings and accessories.
 - g. Replace sheet metal flashings and trim.
 - h. Provide a complete, watertight, 20-year warrantable roof assembly.
 - 2. Low Slope Roof Replacement - Roof Areas A2, A4, A5, & A6:
 - a. Remove and dispose of the roof system including flashings and sheet metal down to the vapor retarder.
 - b. Provide vapor retarder.
 - c. Provide 1.5" Roof Insulation adhered in foam adhesive.
 - d. Provide Tapered Insulation System adhered in foam adhesive.
 - e. Provide Cover Board adhered in foam adhesive.

- f. Fully adhere felt-back thermoplastic single ply membrane along with flashings and accessories.
 - g. Replace sheet metal flashings and trim.
 - h. Provide a complete, watertight, 20-year warrantable roof assembly.
3. Low Slope Roof Replacement - Roof Area A8:
- a. Remove and dispose of the roof system including flashings and sheet metal down to the plywood deck.
 - b. Secure the plywood deck to structural framing members.
 - c. Provide vapor retarder.
 - d. Provide Tapered Insulation System adhered in foam adhesive.
 - e. Provide Cover Board adhered in foam adhesive.
 - f. Fully adhere felt-back thermoplastic single ply membrane along with flashings and accessories.
 - g. Replace sheet metal flashings and trim.
 - h. Provide a complete, watertight, 20-year warrantable roof assembly.
4. Low Slope Roof Replacement - Roof Areas A3 &A7:
- a. Remove and dispose of the roof system including flashings and sheet metal down to the vapor retarder.
 - b. Provide vapor retarder.
 - c. Provide Tapered Insulation System adhered in foam adhesive.
 - d. Provide Cover Board adhered in foam adhesive.
 - e. Fully adhere felt-back thermoplastic single ply membrane along with flashings and accessories.
 - f. Replace sheet metal flashings and trim.
 - g. Provide a complete, watertight, 20-year warrantable roof assembly.
5. Furnish and install roof access ladder from Roof Area A3 to Roof Area A1 as indicated in the Contract Drawings.
6. Replace two, wood framed, access doors as specified is Section 08 11 14 "Hollow Metal Doors and Frames".
- F. Provide electrical, plumbing, mechanical, and other related trade work necessary to facilitate project operations. Relocate or raise conduit, HVAC equipment, curbs, and/or plumbing necessary to comply with the requirements of these documents and conform to the requirements of the State Building Code.

1. Conduct construction operations so that heat, air conditioning, ventilation, electrical, telephone, gas, water, sanitary, storm sewer, and any other service required for the building operations are maintained at all times during normal working hours. Any shutdowns or interruptions shall be coordinated with and approved by the owner.
- G. General requirements and specific recommendations of the material manufacturers are included as part of these specifications. The manufacturers' specifications are the minimum standards required for the completed systems. Where specific items listed herein improve the standards required by the manufacturers, they take precedence where their compliance does not affect the manufacturers' guarantee or warranty provisions.
- H. Act as the Project Expeditor and coordinate work and schedules of others hired.

1.2 ASBESTOS CONTAINING ROOFING MATERIALS (ACRM):

- A. Sample Testing Results:
 1. The presence of Asbestos Containing Roofing Materials (ACRM) has been detected in test samples of the existing vapor retarder and roof mastic repair.
- B. It is the intention of these specifications that no asbestos bearing materials be incorporated into the work. In the event the contractor determines unanticipated asbestos bearing materials present in the building components, stop work in the affected area, notify the Engineer and Owner, and provide temporary protection as required. Costs incurred due to the presence of hidden or unanticipated asbestos bearing materials will be authorized by Change Order to this contract.
- C. During the process of the work, should the Contractor encounter any material identified as asbestos, or be suspect of containing asbestos, he shall immediately initiate the required procedures of the Environmental Protection Agency (EPA), and/or state or local agencies having jurisdiction, which include, but are not necessarily limited to, the following:
 1. Initiate procedures for the protection of any and all persons exposed to the affected areas or adjacent areas affected thereby.
 2. On behalf of the Owner the Contractor shall secure quotations for the Owner's approval to engage the services of a licensed industrial hygienist to perform an asbestos identification survey, the purpose of which is to:
 - a. Determine the type of asbestos.
 - b. Make asbestos exposure assessments.
 - c. Make any other tests required to comply with EPA requirements not specifically noted herein.
 - d. Determine the scope of the Project required to be corrected.
 - e. Make recommendations with respect to possible corrective actions which the Owner may take, i.e., encapsulation and/or removal and disposal, as may be required.

3. Upon consultation with the Owner and the Architect, and upon determination of corrective actions to be taken, instruct the hygienist to prepare a specification in sufficient detail to outline the procedures required by EPA, for encapsulation, and/or removal and disposal, as the case may be, so as to furnish the Contractor with sufficient information to bid competitively the remedial work by specialty Contractors engaged in the encapsulation or elimination of asbestos material, based on an identified scope of work.
4. During the corrective process, require the hygienist to review the Contractor's procedures for compliance with EPA, state and local requirements, make such test as may be required and, at the conclusion of the work, certify that the area is free and clear of asbestos materials and particles in the air.
5. Secure quotations, for approval by the Owner, from specialty Contractors to perform the corrective work determined by the hygienist. The quotations shall include both time required and cost. In addition to the above, the Contractor shall submit itemized quotations for the replacement of any insulation or other asbestos containing materials removed, with insulation or other materials selected by the Architect, together with any other associated cost for replacement of materials and finishes necessarily removed to accommodate removal of asbestos materials, and time extensions allowed by the specifications.
6. Owner approved quotations for the hygienist and for corrective work to be performed will be incorporated into the Contract by Change Order.
7. The Environmental Protection Agency's (EPA's) National Emission Standards for Hazardous Air Pollutants (NESHAP) require an asbestos inspection and a ten (10) working day notification prior to demolition and renovation of all commercial, institutional, or industrial facilities. This excludes residential buildings with four (4) or fewer dwelling units. NESHAP also applies to the demolition of all residences which are being demolished for commercial, institutional, or industrial purposes. Notification of all demolitions is required whether or not the structures are found to contain asbestos.
8. If an inspection, conducted by a North Carolina accredited asbestos inspector, confirms that a facility contains at least 160 square feet, 260 linear feet, or 35 cubic feet, of Regulated Asbestos Containing Materials (RACM), then these materials are to be removed prior to starting the renovation or demolition activity. When removal of RACM is required, a notification and a removal fee shall be submitted as part of the notification process. The notification and the removal fee, when applicable, shall be submitted to the Asbestos Hazard Management Branch. The removal of RACM shall be conducted by North Carolina asbestos accredited individuals.
9. Please note that Forsyth, Buncombe/Haywood, and Mecklenburg Counties have local NESHAP programs and should be contacted directly for local requirements.

1.3 REFERENCE STANDARDS

- A. CSI/CSC MF - Masterformat; 2016.

1.4 CONTRACT

- A. Project constructed under a single prime general construction contract between Owner and Contractor.

1.5 WORK UNDER OTHER CONTRACTS

- A. Separate Contract: Owner may award a separate contract for performance of certain construction operations at Project site.
 - 1. None
- B. Cooperate with separate contractors so work on those contracts are carried out smoothly without interfering with or delaying Work under this Contract.

1.6 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-division format and CSI/CSC MF numbering system.
 - 1. Section Identification: The Specifications use section numbers and titles to cross-reference Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete.
- 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. Interpret words and meanings as appropriate. Infer words implied, but not stated, as the sense requires. Interpret singular words as plural and plural words as singular where applicable as the context of the Contract Documents indicates.
 - 2. Imperative mood and streamlined language are generally used in the Specifications. Perform requirements expressed in the imperative mood. 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.

END OF SECTION

SECTION 01 14 00
WORK RESTRICTIONS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Administrative and procedural requirements for work sequence, work restrictions, occupancy requirements and use of premises.

1.2 RELATED DOCUMENTS

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

1.3 SUBMITTALS

- A. Background Checks: Provide background checks for employees anticipated to work on-site during the project.

1.4 WORK SEQUENCE

- A. 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 and Engineer.
- B. Construct the Work in phases to provide for public convenience. Do not close off public use of facility until completion of one phase of construction provides alternative usage.
- C. Schedule construction in such a manner that once work has commenced on one facility, the work force to remain at that facility continuously each workday through final completion at that facility.

1.5 WORK RESTRICTIONS

- A. Work hours generally performed during normal business hours.
 - 1. Provide notification to the Owner and Engineer 48 hours in advance of work outside of normal business hours. No work allowed without prior notification and authorization.
- B. University Work Restrictions:
 - 1. Coordinate work schedule with University's testing and events schedule and may not be allowed on-site during certain days/events.
 - 2. Complete deliveries to the construction site before 8:00 AM or start after 6:00 PM Monday through Friday when classes are in session. Coordinate with Owner for special deliveries or weekend deliveries.

1.6 OCCUPANCY REQUIREMENTS

- A. Owner Occupancy:
 - 1. Owner occupies the premises during construction to conduct his normal operations. Cooperate with Owner in construction operations to minimize conflict and to facilitate Owner usage.
 - 2. Conduct operations as to ensure the least inconvenience and the greatest amount of safety and security for the Owner, building occupants, and the general public.
 - 3. Control noise from operations so that building occupants are not affected.

1.7 SECURITY

- A. Restrict the access of persons entering upon the Owner's property in connection with the work to the Contractor's Entrance and to the site of the work.
- B. Maintain an accurate record of the names and identification of visitors entering upon the Owner's property in connection with the work of this contract, including times of entering and times of leaving, and submit a copy of the record to the Owner weekly.
- C. Background Checks: No persons/personnel allowed on site without the following background checks: Nationwide, Sex Offender check, Social Security Number check. Provide this information to the Engineer/Owner 5 business days prior to the scheduled access for each person. Owner's decision on acceptability of personnel. Each person is required to wear a badge with name, photograph, and company name. Ensure background checks for persons are submitted to Owner and those persons denied access are not allowed on-site.

1.8 USE OF SITE

- A. Limit use of premises and confine construction operations to work in areas indicated and approved by Engineer and Owner. Do not disturb portions of site beyond areas in which the Work is indicated.
 - 1. Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
 - 2. Perform Work in a way that does not restrict parking lots or other locations outside the work area from the facility. Maintain safe access for vehicles
 - 3. Move stored materials and equipment that interfere with operations of the Owner.
- B. Transportation Facilities
 - 1. Truck and equipment access:

- a. Avoid traffic conflict with vehicles of the Owner's employees and customers and avoid over-loading of street and driveways elsewhere on the Owner's property, limit the access of trucks and equipment to the designated areas.
 - b. Provide adequate protection for curbs and sidewalks over which trucks and equipment pass to reach the job site.
2. Contractor's vehicles:
- a. Require contractor's vehicles, vehicles belonging to employees of the contractor, and other vehicles entering the Owner's property in performance of the work the contract, to use only the designated access route.
 - b. Do not permit such vehicles to park on street or other area of the Owner's property except in the designated area.

1.9 USE OF BUILDING

- A. Maintain building in a weathertight condition throughout construction period.
- B. Take precaution against injuries to persons or damage to property.
- C. Protect building, its contents, and its occupants during construction period.
- D. Repair to the Owner and Engineer's satisfaction, or to restore to condition at the time of award of Contract, or to make restitution acceptable to the Owner, damages to the building and its contents resulting from, or attributable to, the work operation.
- E. Indoor Air Quality:
 1. Coordinate with the facility personnel to identify the area where roof work is performed daily and what HVAC equipment and personnel in the building may be affected by the work.
 2. Work with facility personnel to prevent odors or fumes from entering the building or where found to not be practical due to the work area, HVAC equipment limitations or other reasons; coordinate with facility personnel to have occupants relocated to an area of the building not affected by the work.
 3. When possible to safely shut down and seal HVAC equipment; as determined by the facility personnel, coordinate with facility personnel to have mechanical units affected by the planned work area and air intakes properly closed and sealed. After closing of mechanical units and air intakes, cover units and intakes with 6-mil polyethylene sheeting taped secure. Remove polyethylene sheeting before coordinating restart of units and intakes.
 4. Provide box carriage fans on rooftop during roof application to move and circulate air away from intakes and units.
 5. Where HVAC equipment is required to remain operational during roof work, coordinate with facility personnel to cover air intakes with charcoal filters prior to beginning work.

6. When starting roof work using materials which have odors or emit fumes, communicate with facility personnel within the building in the area of the work to determine if fumes or odors are being experienced. If fumes or odors are experienced, stop work until the cause is determined and remediated or occupants can be moved to an area not affected by the work.

END OF SECTION

SECTION 01 21 00

ALLOWANCES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Administrative and procedural requirements governing allowances.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections apply to this Section, including but not limited to:
1. Section 03 01 30.71 - Rehabilitation of Cast-in-Place Concrete
 2. Section 04 05 24 - Masonry Repointing
 3. Section 06 10 00 - Rough Carpentry
 4. Section 06 15 00 - Wood Decking

1.3 ABBREVIATIONS

- A. Abbreviations for typical units of measurement:
1. Square Foot (SF)
 2. Square Yard (SY)
 3. Cubic Foot (CF)
 4. Board Foot (BF)
 5. Linear Foot (LF)
 6. Each (EA)
 7. Tonnage (TON)

1.4 QUANTITY ALLOWANCES

- A. Include the specified quantity allowances in the base bid. Use the unit price submitted on the Bid Form to compute the quantity allowances. The quantities indicated on the Bid Form are estimated quantities only for the purpose of comparing bids. Compensation for the unit price bid made for the exact quantity of work performed under the unit price item. Deductive amounts of unit price work included in the Contract Sum are calculated at 100% of the quoted add unit price.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 SCHEDULE OF ALLOWANCES

A. Quantity Allowances:

1. Replace 32 SF of Deteriorated Plywood Deck. Refer to Section 06 15 00 - Wood Decking.
2. Repair 25 CF of Unsuitable Concrete Roof Deck. Refer to Section 03 01 30.71 - Rehabilitation of Cast-in-Place Concrete.
3. Replace 200 BF of Deteriorated Wood Blocking. Refer to Section 06 10 00 - Rough Carpentry.
4. Replace 320 SF of Deteriorated Plywood. Refer to Section 06 10 00 - Rough Carpentry.
5. Provide 50 LF of Additional Manufacturer's Walk Pad Material.

END OF SECTION

SECTION 01 22 00

UNIT PRICES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements for unit prices.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections apply to this Section, including but not limited to:

1. Section 03 01 30.71 - Rehabilitation of Cast-in-Place Concrete
2. Section 04 05 24 - Masonry Repointing
3. Section 06 10 00 - Rough Carpentry
4. Section 06 15 00 - Wood Decking

1.3 DEFINITION

A. Unit price is an amount proposed by Bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 ABBREVIATIONS

A. Abbreviations for typical units of measurement:

1. Square Foot (SF)
2. Square Yard (SY)
3. Cubic Foot (CF)
4. Board Foot (BF)
5. Linear Foot (LF)
6. Each (EA)
7. Tonnage (TON)

1.5 UNIT PRICE MEASUREMENT

- A. Prior to performing work under a unit price as specified herein, notify the Engineer to allow for measurement of the actual quantities of work. Work performed under these items without prior approval and measurement is at the Contractor's expense.
- B. Maintain a daily log including visual documentation (i.e. digital photographs) showing dates, location and exact quantities of unit price work.
- C. Owner and Engineer reserve 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 party.

1.6 UNIT PRICE PAYMENT

- A. Include in unit prices costs associated with performing the unit price work including but not limited to labor, material, equipment, insurance, applicable taxes, overhead and profit, bonds, etc.

1.7 UNIT PRICE PERFORMANCE

- A. Install unit price work in accordance with the applicable specification sections and Contract Drawings.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 SCHEDULE OF UNIT PRICES

- A. Provide a unit price for:
 - 1. Replace Deteriorated Plywood Deck. Unit of Measurement: Square Foot (SF). Refer to Section 06 15 00 - Wood Decking.
 - 2. Repair Unsuitable Concrete Roof Deck. Unit of Measurement: Cubic Foot (CF). Refer to Section 03 01 30.71 - Rehabilitation of Cast-in-Place Concrete.
 - 3. Replace Deteriorated Wood Blocking. Unit of Measurement: Board Foot (BF). Refer to Section 06 10 00 - Rough Carpentry.
 - 4. Replace Deteriorated Plywood. Unit of Measurement: Square Foot (SF). Refer to Section 06 10 00 - Rough Carpentry.
 - 5. Provide Additional Manufacturer's Walk Pad Material. Unit of Measurement: Linear Foot (LF).

END OF SECTION

SECTION 01 23 00

ALTERNATES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Administrative and procedural requirements for alternates.

1.2 RELATED DOCUMENTS

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

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction or in the products, materials, equipment, systems or installation methods described in the Contract Documents.

1.4 ALTERNATES

- A. Indicate on the Bid Form whether the alternate bid amount is to added to or deducted from the base bid in the event the alternate bid is accepted.
- B. The Owner reserves the right to accept or reject any or all of the alternate bids.
- C. Responsible for determining to his own satisfaction and for his own purposes the limits and extent of the work affected by the alternate bids and to make proper allowance therefore in the submission of alternate bid.
- D. Include the cost of each alternate bid as specified in the technical specification sections and as described on the drawings. Perform work required by the alternate bids in accordance with applicable specifications and drawings of the trade section affected.
- E. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate selected alternates into the Work. No other adjustments are made to the Contract Sum.
- F. The Owner reserves the right to delay the acceptance of the alternate bids during the bid holding period prior to accepting the contract without a change in the dollar amount of the alternate bids.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Alternate No. 1: Provide Quantity Allowance for 3,000 LF of Masonry Repointing.

- B. Alternate No. 2: Provide Parking Bollards and Canopy Supports where indicated in the Contract Drawings. Paint Parking Bollards and Canopy Supports as specified with colors selected by Owner.
- C. Alternate No. 3: Replace aluminum-framed storefront at Roof Area A7.
- D. Alternate No. 4: Remove existing vapor retarder.
- E. Alternate No. 5: Provide Quantity Allowance to remove 1,000 SF of existing vapor retarder.
- F. Alternate No. 6: Clean concrete cornice with low pressure wash. Rack out sealant joints and provide new elastomeric sealant joints. Properly clean exterior walls and provide fluid-applied water repellent masonry veneer walls.

END OF SECTION

SECTION 01 31 19
PROJECT MEETINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - a. Project schedule
 - b. Project meetings

1.2 RELATED DOCUMENTS

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

1.3 SUBMITTALS

- A. Emergency contact list: Key personnel including home, office and mobile numbers, for the following:
1. Owner
 2. Contractor
 3. Subcontractor(s)
 4. Engineer
- B. Work schedule:
1. Indicate start date, crew size, production rate, completion date, etc.
 2. Provide illustrated schedule on an aerial map.

1.4 PROJECT MEETINGS

- A. Pre-Construction Meeting
1. A Pre-Construction Meeting will be scheduled as soon as possible after the award of the contract.
 2. The Engineer's Representative will compile minutes of the meeting and will furnish a copy of the minutes to each person present.
 3. Attendance:
 - a. Project Manager

- b. Job Superintendent
 - c. Job Foreman
 - d. Subcontractors' Representative
 - e. Owner
 - f. Engineer's Representative
 - g. Manufacturer's representatives
4. Meeting will follow SCO Preconstruction Conference Agenda
- B. Progress Meetings:
- 1. Prior to the meeting, Contractor shall provide the Engineer a completed and updated Monthly Progress Report and Project Schedule Summary on SCO Forms.
 - 2. Attend monthly progress meetings for the purpose of informing the Owner and the Engineer regarding the status of the project.
 - 3. The Engineer will compile minutes of the meeting and will furnish a copy of the minutes to each person present.
 - 4. Attendance:
 - a. Project Manager
 - b. Job Superintendent
 - c. Job Foreman
 - d. Subcontractors' Representative
 - e. Owner
 - f. Engineer's Representative
 - 5. Meeting will follow SCO Monthly Construction Conference Agenda.
- C. Preliminary Final Inspection Meeting
- 1. Upon notification from the Contractor that the project is complete, the Designer will make a preliminary final inspection of the project. The Designer shall prepare a list of discrepancies as a punch list for the contractors.
- D. Final Inspection Meeting

1. Upon notification by the Contractor that the discrepancies (punch list items) have been completed, the Designer shall verify the completeness of the project and schedule a formal final inspection with the Contractor, Owner and SCO Project Monitor.

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

1.2 RELATED DOCUMENTS

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

1.3 SUBMITTAL PROCEDURE

A. General: The Contractor is responsible for providing the submittals to the Engineer. Each submittal is required to be accepted in writing prior to commencement of work.

B. Submission Requirements:

1. Submit required submittals electronically in pdf format to the Engineer for review. The submittals will then be returned electronically to the Contractor with comments. Final submittals require written responses to submittal comments.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as specified below, commencing on Engineers receipt of submittal.

1. Initial Review: Allow 7 work days for initial review of submittals.
2. Allow 7 work days for processing each resubmittal.
3. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

D. Identification:

1. Submit as one pdf file with bookmarks for each scheduled item.

E. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals and provide letter describing in detail proposed changes, substitutions, or deviations from the project or manufacturers specifications. Include a written explanation of why substitutions should be considered under the appropriate tab.

F. Transmittal: Package submittals appropriately for transmittal. Engineer will discard submittals received from sources other than Contractor. Include Contractors certification stating that information submitted complies with requirements of the Contract Documents.

G. Use for Construction: Use only final submittals with mark indicating action taken by Engineer in connection with construction.

1.4 SCHEDULE OF SUBMITTALS

- A. Refer to the applicable specification section for list of submittal requirements for each section.
- B. Submit the following submittal items electronically with a title page and/or pdf bookmark for each submittal item to meet the requirements specified herein:
 - 1. Section 00 52 13 - Copy of Executed Owner/Contractor Agreement along with Certificate of Insurance
 - 2. Section 00 61 13.13: Copy of Executed Performance Bond Form
 - 3. Section 00 61 13.16: Copy of Executed Payment Bond Form
 - 4. Section 00 62 33 - Roof Manufacturers Acknowledgment Form
 - 5. Section 01 14 00 - Work Restrictions
 - 6. Section 01 25 00 - Substitution Procedures
 - 7. Section 01 31 00 - Project Management and Coordination
 - 8. Section 01 31 19 - Project Meetings
 - 9. Section 01 40 00 - Quality Requirements
 - 10. Section 01 73 00 - Execution Requirements
 - 11. Section 01 77 00 - Closeout Procedures
 - 12. Section 03 01 30.71 - Rehabilitation of Cast-in-Place Concrete
 - 13. Section 04 05 00 - Mortar and Grout
 - 14. Section 04 05 24 - Masonry Repointing
 - 15. Section 05 12 00 - Structural Steel
 - 16. Section 05 31 33 - Metal Ladders
 - 17. Section 06 10 00 - Rough Carpentry
 - 18. Section 06 15 00 - Wood Decking
 - 19. Section 07 19 00 - Fluid Applied Water Repellent
 - 20. Section 07 22 16 - Roof Insulation
 - 21. Section 07 26 13 - Self-Adhered Vapor Retarder
 - 22. Section 07 54 00 - Thermoplastic Single Ply Roofing
 - 23. Section 07 62 00 - Sheet Metal Flashing and Trim

24. Section 07 92 00 - Elastomeric Joint Sealants
25. Section 08 11 14 - Hollow Metal Doors and Frames
26. Section 08 41 13 - Aluminum-Framed Storefront
27. Section 08 71 00 - Door Hardware
28. Section 08 81 00 - Glass Glazing
29. Section 09 91 13 - Exterior Paint
30. Section 11 81 29 - Rooftop Fall Protection System
31. Section 22 14 26 - Roof Drains
32. Shop Drawings: Shop drawings or letter stating installation of materials as detailed in the Contract Drawings unless properly authorized by the Engineer.
33. Existing Damage Documentation: Existing damaged/dysfunctional components documentation (videotape, photos, etc.) including but not limited to asphalt spills, windows, walls, sidewalks, paving, ceilings, etc. Lack of submission prior to commencement of work indicates no existing damaged components and Contractor takes responsibility for damages caused by operations.
34. Physical color samples as specified in the applicable specification section.

PART 2 PRODUCTS

2.1 SUBMITTALS

- A. General: Prepare and submit Submittals required herein and by individual Specification Sections.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 1. If information is 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. Manufacturers written recommendations.
 - b. Manufacturers product specifications.
 - c. Manufacturers installation instructions.
 - d. Manufacturers 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: dimensions, identification of products, fabrication and installation drawings, schedules, coordination requirements and notation of dimensions established by field measurements.
 - 2. 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 42 inches.
- D. Samples: Prepare physical units of materials or products, including the following:
- 1. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show 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.
 - 2. Submit three sets of Samples. Engineer will retain two Sample sets; remainder will be returned.
 - 3. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Engineers sample where so indicated. Attach label on unexposed side.
 - 4. 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 component as delivered and installed.
 - 5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity and used to determine final acceptance of construction associated with each set.
- E. 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 engineers and owners, and other information specified.
- F. Product Certificates: Prepare written statements on manufacturers letterhead certifying that product complies with requirements.

- G. Installer Certificates: Prepare written statements on manufacturers letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.
- H. Manufacturer Certificates: Prepare written statements on manufacturers letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.
- I. Material Certificates: Prepare written statements on manufacturers letterhead certifying that material complies with requirements.
- J. 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.
- K. 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.
- L. 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 used for calculations. Include page numbers.
- M. Manufacturer's Instructions: Prepare written or published information that documents manufacturers recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.
- N. 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, and term of the coverage.

PART 3 EXECUTION

3.1 CONTRACTORS REVIEW

- A. Review each submittal, check for compliance with the Contract Documents and note corrections and field dimensions prior to submitting to Engineer.

3.2 ENGINEERS ACTION

- A. Submittals: Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Engineer will stamp each submittal item with an action stamp and will mark stamp appropriately to indicate action taken.
- B. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. This Section includes administrative and procedural requirements for quality assurance and quality control.
 - 2. Secure and pay costs of licenses and permits required by City, County and/or State authorities.

1.2 RELATED DOCUMENTS

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

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 comply with requirements. Services do not include contract enforcement activities performed by Engineer.

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. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer.

1.5 QUALITY ASSURANCE

- A. Perform quality assurance in accordance with governing Codes, referenced standards, established standards, or industry standards.
- B. Solely responsible for supervising and directing the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise necessary to perform the Work in accordance with the Contract. Solely responsible for the means, methods, techniques, sequences and procedures of construction and for coordinating portions of the Work under the Contract, except where otherwise specified in the Contract Documents. Solely responsible to the Owner that the finished Work complies with the Contract Documents.

- C. It is the intent under this contract that workmanship be of the best quality consistent with the materials and construction methods specified. The presence or absence of the Owner's or Engineer's representative in no way relieves the Contractor of his responsibility to furnish materials and construction in compliance with the drawings and specifications. The Owner and Engineer have the authority to judge the quality and require replacement of unacceptable work or personnel.
- D. Materials or methods described by words which, when applied, have a well-known technical or trade meaning are held to refer to such recognized standard. Standard specifications or manufacturer's literature, when referenced, are of the latest revision or printing unless otherwise stated, and are intended to establish the minimum requirements acceptable.
- E. When special makes or grades of material which are normally packaged by the supplier or manufacturer are specified or accepted, deliver materials to the site in original packages or containers with seals unbroken and labels intact and do not open until reviewed and accepted by the Engineer. Notify the Engineer prior to such material's delivery.
- F. Correct deficiencies identified by Engineer and non-conforming work within 24 hours of receipt of notification, either verbally or written, and submit a plan of action for addressing the deficiencies and non-conforming work. Do not proceed with further tear-off or commencement of other work until deficiencies and non-conforming work are properly addressed.
- G. Control of Installation
 - 1. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
 - 2. Comply with manufacturers' instructions, including each step in the sequence
 - 3. Request clarification from Engineer before proceeding in the event manufacturers' instructions conflict with Contract Documents.
 - 4. Comply with specified standards as the minimum quality for the Work, except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
 - 5. Only allow Work performed by person qualified to produce workmanship of specified quality.
 - 6. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- H. Tolerances:
 - 1. Monitor tolerance control of installed products to produce acceptable work. Do not permit tolerances to accumulate.
 - 2. Comply with manufacturers' tolerances. Request clarification from Engineer in the event manufacturers' tolerances conflict with Contract Documents.
 - 3. Adjust products to appropriate dimensions; position before securing products in place.

- I. 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.
 1. Maintain applicable federal, state and municipal licenses.
 2. Be certified in writing for a minimum of 2 years by the roofing materials manufacturer to install the primary roofing products.
 3. Have a minimum of 5 years' experience in installing the same or similar materials specified under the same firm name as that submitting the bid. If requested, submit a copy of firm's Articles of Incorporation to verify years in business. Crew workers on site are experienced and have a working knowledge of the system being installed.
 4. Principals of the firm to have a minimum of 10 years' experience in the estimating, supervision, management and administration of a contracting firm engaged in work similar to work as specified.
 5. Licensed by state work is occurring in for the type and dollar amount of work contemplated by these Contract Documents.
 6. Never filed bankruptcy or filed for protection from creditors.
 7. During the construction and completion of work covered by these Specifications, if the conduct of workers of the various crafts is determined unsuitable or a nuisance to the Owner or Engineer, or if the workman is considered incompetent or detrimental to the work, order such party removed from the grounds with the person not returning during the course of work on the project.
 8. Superintendent: During the performance of work by the Contractor or subcontractors, provide an on site, full time, and non-working superintendent/representative meeting the following requirements:
 - a. For the purpose of these Specifications the designation "superintendent" is hereby defined as the individual present on the job site while work is being performed, and whose primary responsibility is to supervise and direct the performance of the Work.
 - b. Be in attendance at the project site during the progress of the work and duties as superintendent limited to this project only. Supervise and instruct workmen without engaging in the work process. If superintendent is absent temporarily from the project, designate a competent foreman to assume duties. During the superintendent's absence, foreman cannot engage in the work process; supervise and instruct only. Likewise, communications given to the foreman are binding as if given to the Contractor.
 - c. Communicate matters pertaining to the Work with the Owner and Engineer. Do not make decisions regarding changes in the Work without the Owner and Engineer's knowledge.
 - d. Decision making authority and ability.
 - e. Able to demonstrate knowledge of work being installed.

- f. Fluent in the English language (reading, writing and speaking).
 - g. In possession of mobile telephone.
 - h. Employed by the Contractor at least six months prior to project commencement.
 - i. Owner approval and Engineer acceptance.
 - j. Once approved, do not change the superintendent except with the consent of the Owner unless he proves unsatisfactory to the Owner or Contractor or is no longer employed.
 - k. Minimum of five 5 years continuous experience as a job superintendent.
9. No later than ten days prior to the pre-construction conference, provide the Owner, in writing, the names of the proposed project manager, superintendent, and foreman for approval. If he so determines, the Owner, without giving cause, may request an additional name, or names, be submitted for approval. The Owner will notify the Contractor of his acceptance at least 48 hours prior to the pre-construction conference.
- J. Specialists: Certain sections of the Specifications require that specific construction activities be performed by entities who are recognized experts in those operations. Specialists satisfy qualification requirements indicated and be engaged for the activities indicated.
- K. 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.
- L. 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.

1.6 QUALITY CONTROL

- A. The authorized representatives and agents of Owner permitted to inspect work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records.
- B. Owner Responsibilities:
 - 1. Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - a. 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.
 - b. 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.
- C. Contractor Responsibilities:

1. Repair and protection of work and materials.
 2. Replace work or materials not conforming with requirements of the Specifications or damaged during the progress of the work before completion and acceptance of the project.
 3. Coordinate documents with manufacturer and perform such testing, reporting, and communication incidental to provisions of the warranty procedures.
 4. Inclement Weather
 - a. In the event of temporary suspension of work during inclement weather, or whenever the Engineer recommends, protect carefully its work and materials against damage or injury from weather. If work or materials have been damaged by reason of failure to protect the work, replace such materials.
 - b. During inclement weather and temporary suspension of work, inspect the facility no later than 9:00 AM each day for leaks and perform temporary repairs if necessary. Make inspections daily during extended periods of inclement weather. Upon arrival at the facility, inform the Owner of his presence and purpose.
 - c. If inspection of the facility does not occur by 9:00 AM on days of inclement weather and there is one or more leaks attributable to the Work, at 9:15 AM the Owner can exercise his right to contact an outside contractor to perform temporary repairs as necessary to prevent damage to the building, its contents and to minimize disruption. Reimburse the outside contractor an equitable amount as determined solely by the outside contractor. If the Contractor arrives at the project site after the outside contractor has been contacted, but before temporary repairs are made, reimburse the amount contractor the fixed amount of \$500.00, each occasion, for mobilization and/or travel expenses.
 - d. In the event inclement weather occurs after normal business hours, Saturday, Sunday or holidays, make arrangements with the Owner to provide access to the building to inspect for leaks. Compensate Owner for providing personnel for the service on an hourly rate basis as determined solely by the Owner.
- D. Manufacturer's Field Services: During construction, perform quality assurance site visits monthly by manufacturer's technical representative to ensure materials are being properly installed and as required to obtain the specified warranty.
1. The first site visit performed within the first three (3) days of operations.
 2. Coordinate site visits with Engineer. Submit reports of findings within one week of inspection. Payment applications will be rejected until applicable reports are received.
 3. Inspections to be performed by an employee of the selected manufacturer that is assigned full time to their technical services department. Sales personnel are not acceptable for this function and may result in rejection of the work installed that does not fulfill this requirement.

4. Manufacturer's final inspections performed only with REI personnel in attendance. A minimum of seven days' written notice is required. Manufacturer's final inspection conducted without REI personnel in attendance will be repeated at no additional cost to the Owner.
5. Violation of these requirements results in the removal of that manufacturer for a period of not less than one year from the Engineer's accepted materials list.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 REPAIR AND PROTECTION

- A. On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
- B. Protect construction exposed by or for quality control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality control services.

END OF SECTION

SECTION 01 42 00

REFERENCE STANDARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Requirements relating to referenced standards.

1.2 RELATED DOCUMENTS

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

1.3 REFERENCE STANDARDS

- A. Reference standards are specified in Part 1 of the applicable specification section.
- B. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- C. Comply with the reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- D. Should specified reference standards conflict with Contract Documents, request clarification from the Engineer before proceeding.
- E. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Engineer shall be altered by Contract Documents by mention or inference otherwise in any reference document.

1.4 BUILDING CODE

- A. Comply with the building code and energy conservation code/standard in effect in North Carolina and current on date of Contract Documents.
 - 1. 2018 North Carolina Building Code
 - 2. 2018 North Carolina Energy Conservation Code

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.

1.2 RELATED DOCUMENTS

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

1.3 REFERENCE STANDARDS

- A. NFPA 10 - Standard for Portable Fire Extinguishers; 2022.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.4 USE CHARGES

- A. Include in Contract, cost or use charges for temporary facilities which are not chargeable to Owner. 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.

1.5 QUALITY ASSURANCE

- A. Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241 .
- B. Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70 .
- C. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- D. 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. Instruct personnel in methods and procedures. Post warnings and information.

PART 2 PRODUCTS

2.1 MATERIALS

- A. General: Provide new materials or utilize undamaged, previously used materials in serviceable condition if accepted by Engineer. Provide materials suitable for use intended.
- B. Fencing:
 - 1. Safety Fence: Safety orange high density polyethylene fabric with a minimum of 4 feet in height, 15 lbs. per 100 linear feet. Painted steel fence posts with ground anchors and metal tabs stationed often enough to hold the fabric at a minimum height of 3 feet 8 inches tall.
- C. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.
- D. Water: Potable.
- E. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material with a self-contained or standalone exterior handwashing station.
- F. 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. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure and the requirements of the local Governing agency.
- G. Ground Protection Mats: 4 foot by 8 foot, HDPE infused with rubber for traction mats designed to protect landscaping from construction equipment.

PART 3 EXECUTION

3.1 TEMPORARY UTILITIES

- A. Refer to General Conditions and Supplementary General Conditions.

3.2 CONSTRUCTION FACILITIES

- A. Temporary construction facilities include the following:
 - 1. Field Office: prefabricated, mobile units or job-built construction with lockable entrances and serviceable finishes including lights and utilities.
 - 2. 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. Located facilities at sites approved by Owner. Access inside the facility is not available.
 - a. 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.
 - b. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy.

- c. Wash Facilities: Provide adequate hand washing stations.
 - d. Drinking-Water Facilities: Provide bottled-water, drinking-water units.
3. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations at a location approved by the Owner. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Use of Owner's waste disposal facilities is not acceptable.
- a. If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material.

3.3 TEMPORARY BARRIERS, ENCLOSURES AND CONTROLS

- A. Provide temporary barriers and enclosures for protection from exposure, foul weather, construction operations and other activities. Protect buildings and grounds from damages during construction.
- B. 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.
- C. Provide security controls to protect work and materials at the project site.
- D. Provide fencing to enclose the materials storage and staging area.
- E. Provide and maintain suitable temporary sidewalks, closed passageways, fences, or other structures required by law so as not to obstruct or interfere with traffic in public streets, alley ways, or private right-of-way. Leave an unobstructed way along public and private places for pedestrians and vehicles.
- F. Provide walks over and around all obstructions in public places. Maintain sufficient light and guards to protect persons from injury.
- G. Provide emergency egress from existing occupied areas at all times as required by AHJ. Maintain egress path in compliance with requirements of the applicable building code.

3.4 PROTECTION FACILITIES INSTALLATION

- A. Provide environmental protection by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- B. Provide storm water controls sufficient to prevent flooding from heavy rain.
- C. Protection of materials stored on site.
 - 1. Material storage will be where shown in Contract Drawings.
 - 2. Protect materials stored on the job site from theft and weather related damage.
 - 3. Store as much material in locked trailers as practicable.

4. Place no more material on the job site than is necessary to maintain the work schedule.
5. Do not deliver materials prior than 7 days eariler then work commencing.

3.5 TREE AND PLANT PROTECTION:

- A. Contractors are hereby reminded and cautioned that care shall be exercised to protect trees and plants which are to remain during the progress of the Project. Suitable barriers shall be provided around all trees and plants that are to remain and which are in the construction area and product handling area. All damage to such trees and plants shall be repaired; broken limbs properly and neatly pruned and painted with pruning paint; all trunk damage neatly dressed and painted with pruning paint. Any trees and plants which are excessively damaged shall be replaced in like, kind, size, and species by The Contractor at no additional cost. All work shall be by a recognized and approved nursery.
1. All grading around trees and plants to remain shall be such that the root system shall not be disturbed. Earth shall not be temporarily piled around trees and plants, nor shall earth be graded to the trees and plants above the natural root depth for that particular species.
 2. Established trees and plants, which are in the way of construction and which are in the material handling areas, shall be removed and stored for future replanting. The services of a recognized and approved nursery shall be employed to remove the trees and plants and prepare them for storage. Removed trees and plants shall be properly balled and burlapped in accordance with their size. During the time of storage, they shall be properly watered and cared for in accordance with the instructions from the nursery. After the construction work is completed, the stored trees and plants shall be replanted, and those trees and plants not replanted shall be disposed of as directed by the Owner.

3.6 CRANES, HOISTS AND LIFTING

- A. Where cranes and other lifting equipment are required, develop and maintain a plan to execute the work in a safe manner including the following items at a minimum:
1. Erection, climbing and dismantling process
 2. Inspection process for equipment and rigging
 3. Exclusion zones
 4. Maintenance processes
 5. Identification of Qualified/Competent persons
 6. Lifting plan
 7. Process for identifying and working around aerial hazards
 8. Signalmen communication
 9. Working around energized lines
 10. Ground conditions and underground hazards

- B. Ensure that cranes and lifting equipment are certified for use by a Qualified/Competent person prior to first use and annually (at a minimum).
- C. Ensure that cranes and lifting equipment are inspected as required by a third party Qualified/Competent person.
- D. Provide ground protection mats over landscaped areas beneath lifts.
- E. Do not operate or travel lifts over curbs or sidewalks. Where necessary to travel equipment over curbs or sidewalks, provide adequate protection to prevent damage.

3.7 PROJECT SIGNAGE

- A. Provide temporary signs to provide information to building occupants directing them away from construction operations.
- B. Provide signage inside adjacent buildings alerting occupants of the Work Area.

3.8 VEHICULAR ACCESS AND PARKING

- A. Parking for vehicles available only in the approved Set-up and Staging area. No other vehicle parking on site is allowed.
- B. Owner Personnel vehicles will be removed from the construction area prior to the start of construction.

3.9 TRAFFIC CONTROLS

- A. Obtain and erect street/parking lot signage as necessary to divert traffic away from staging areas, work area, etc. Coordinate signage requirements with the Owner and Engineer.
- B. 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.

END OF SECTION

SECTION 01 74 00

CLEANING AND WASTE MANAGEMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Administrative and Procedural requirements for progress cleaning and construction waste management.

1.2 RELATED DOCUMENTS

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

1.3 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.4 DEFINITIONS

- A. Waste: Material that has reached the end of its intended use. Waste includes salvageable, returnable, recyclable and reusable material.
- B. Construction waste: Solid wastes including, but not limited to, building materials, packaging materials, debris and trash resulting from construction operations.
- C. Salvage: To remove a waste material from the Project site to another site for resale or reuse by others.
- D. Hazardous waste: Material or byproduct of construction that is regulated by the Environmental Protection Agency and cannot be disposed in a landfill or other waste end-source without adherence to applicable laws.
- E. Trash: Product or material unable to be returned, reused, recycled or salvaged.
- F. Landfill: Public or private business involved in the practice of trash disposal.

1.5 CLOSEOUT SUBMITTALS

- A. Landfill charge tickets

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 cause damage to finished surfaces.

PART 3 EXECUTION

3.1 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 in a legal manner.
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:
1. Maintain Project site free of waste materials and debris.
 2. Keep site free of nails, screws, fasteners and scrap metal. Utilize magnets as necessary to sweep parking lots, driveways and sidewalks. Responsible for repair or replacement of punctured tires of site occupants.
- 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 impairs proper execution of the Work, broom-clean or vacuum the work area, as appropriate.
 3. If necessary, have a heavy-duty vacuum on site to remove small, loose debris from work area.
- 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 do 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 Final Acceptance.
- G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. remove paint, mortar, oils, putty, and similar materials. 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 is not permitted. Washing waste materials down sewers or into waterways is not 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 Final Acceptance.
- 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 ensure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.2 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that prevents spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Remove waste materials from Owner's property and legally dispose of them.
- D. Separate, store and dispose of hazardous wastes in accordance with local and EPA regulations and additional criteria listed below:
 - 1. Do not incinerate building products manufactured with PVC or containing chlorinated compounds.
 - 2. Disposal of fluorescent tubes to open containers is not permitted.
 - 3. Do not co-mingle unused fertilizers with construction waste.

3.3 FINAL CLEANING

- A. 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 Final Acceptance.
 - 2. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including, waste material, litter, and other foreign substances.
 - 3. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

4. Remove tools, construction equipment, machinery, and surplus material from Project site. Properly dispose of unwanted surplus material.
 5. 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.
 6. Remove debris and surface dust from roofs and walls.
 7. Clean transparent materials and glass in windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
 8. Remove labels that are not permanent.
 9. 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.
 10. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess foreign substances.
 11. Replace parts subject to unusual operating conditions.
 12. Leave Project clean and ready for occupancy.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - a. Inspection Procedures.
 - b. Project Record Documents.
 - c. Warranties.

1.2 RELATED DOCUMENTS

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

1.3 REFERENCE STANDARDS

1.4 SUBMITTALS

- A. Warranties: Submit copy of warranties to meet the requirements of their respective specification section.

1.5 PROJECT 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 Engineer's reference during normal working hours.
 - 1. Submit required record documents and warranties within 30 days of the punch list inspection. If the Contractor fails to properly submit required items within this period, the Owner has the right to impose liquidated damages in the amount of \$500.00 for each consecutive day until the items are properly submitted.
- B. Record Drawings: Maintain and submit one set of blue- or black-line white prints of Contract Drawings and Shop Drawings.
 - 1. Mark Record Prints to show 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 one copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate 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 performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
1. Completed and signed Engineer's Punch List
 2. Copy of Manufacturer's Final Inspection Report
 3. Landfill Charge Tickets
 4. Certificate of Occupancy from AHJ

1.6 WARRANTIES

- A. Warranties to commence on the date of Final Acceptance of the project.
- B. Metal Ladder warranty as outlined in Section 05 51 33 - Metal Ladders.
- C. Thermoplastic Single Ply Roofing System warranty as outlined in Section 07 54 00 - Thermoplastic Single Ply Roofing.
- D. Pre-finished Sheet Metal finish warranty as outlined in Section 07 62 00 - Sheet Metal Flashing and Trim.
- E. Elastomeric Joint Sealant warranty as outlined in Section 07 92 00 - Elastomeric Joint Sealants.
- F. Aluminum-Framed Storefront warranty as outlined in Section 08 41 13 - Aluminum-Framed Storefront.

- G. Rooftop Fall Protection system warranty as outlined in Section 11 81 29 - Rooftop Fall Protection System.
- H. Contractor's Warranty - utilize form contained in Section 00 65 36.
- I. Asbestos Free Warranty - utilize form contained in Section 00 65 37.

END OF SECTION

SECTION 03 01 30.71

REHABILITATION OF CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Provide materials, labor, tools, and equipment for repair of concrete roof deck in accordance with Unit Prices and Quantity Allowances.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections, apply to this Section:
 - 1. Section 07 01 50 - Preparation for Reroofing
 - 2. Section 07 26 13 - Self-Adhered Vapor Retarder

1.3 REFERENCE STANDARDS

- A. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2024.
- B. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2023.
- C. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2023.
- D. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.
- E. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2019.
- F. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2020a.
- G. ASTM C1260 - Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method); 2021.
- H. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

1.4 DEFINITIONS

- A. Epoxy Resin Binder: A two-component epoxy bonding system in low and medium viscosities used by itself as a primer or for producing epoxy concrete or mortars when mixed with aggregate.
- B. Epoxy Grout: A combination of epoxy resin binder and fine and coarse aggregate used in the repair of spalling along joints or cracks, small surface spalls or popouts.

- C. Epoxy Repair Mortar: A combination of epoxy resin binder and fine aggregate used in the surface repair of non-structural cracks and filling of saw kerfs.
- D. Non-Pressure Epoxy Grout: A combination of epoxy resin binder, a mineral filler and a thixotropic agent used in cementing dowels in place and the repair of non-structural cracks.
- E. Horizontal Repair Mortar: A two-component, polymer modified, Portland cement, fast setting, trowel-grade mortar with a penetrating corrosion inhibitor for horizontal surface repairs.
- F. Vertical Repair Mortar: A two-component, polymer modified, Portland cement, fast setting, non-sag mortar with a penetrating corrosion inhibitor for vertical and overhead surface repairs.

1.5 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.

1.6 QUALITY ASSURANCE

- A. Contractor qualifications: Qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Maintain qualified personnel who have received product training by the manufacturer's representative.
- B. Install materials in accordance with safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state, and federal authorities having jurisdiction. Consult Material Safety Data Sheets for handling recommendations.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Inspect materials delivered to site for damage, unload and store with a minimum of handling. Deliver epoxy resin components and aggregate materials in original sealed containers and store in dry covered areas at temperatures below 30 degrees C 90 degrees F. Remove from job site unused mixed materials which have reached end of working or pot life.

1.8 WEATHER LIMITATIONS

- A. Halt work when weather conditions detrimentally affect the quality of patching or bonding concrete.
- B. Apply epoxy resin materials only when the contact surfaces are dry and if the atmospheric and surface temperature ranges are suitable for the specified epoxy material.
- C. Follow manufacturer's instructions for weather conditions and temperature ranges.

1.9 TRAFFIC CONTROL

- A. Do not permit vehicular or heavy equipment traffic on the pavement in the work area during the curing period. At the end of the curing period, permit light local traffic on the pavement if approved by the Owner and accepted by the Engineer.

1.10 EQUIPMENT

- A. Use a container recommended by the epoxy manufacturer as the mixing vessel. Use a power drive (air or spark-proof) propeller type blade for mixing except for hand mixing of small batches. Use equipment specified by epoxy manufacturer for field mixing of aggregates and epoxy resin.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Epoxy Resin Binder: ASTM C881/C881M, Type III, Grade 2, Class C without mineral filler.
- B. Non-Pressure Epoxy Grout: ASTM C881/C881M, Type IV, Grade 2, Class C with or without mineral filler.
- C. Aggregate: Non-reactive (reference ASTM C1260, C 227 and C 289), clean, well-graded, saturated surface dry, have low absorption and high density, and comply with ASTM C33/C33M size number 8 per Table 2. For material passing No. 200 sieve provide a non-plastic material composed of a minimum of 75 percent limestone dust, talc or silica inert filler.
 - 1. For epoxy concrete: ASTM C33/C33M , maximum size 1/2 inch.
 - 2. For epoxy mortar: ASTM C144, No. 40 sieve.
- D. Epoxy Repair Mortar: Three component, 100% solids, moisture tolerant, rapid strength gaining epoxy mortar patching kit.
 - 1. Sikadur 43 Patch-Pack as manufactured by Sika Corporation.
- E. Horizontal Repair Mortar: Two component, polymer modified, portland cement, non-sag mortar suitable for vertical and overheard surfaces with a penetrating corrosion inhibitor.
 - 1. Sikatop 122 Plus as manufactured by Sika Corporation.
- F. Vertical Repair Mortar: Two component, polymer modified, portland cement, non-sag mortar suitable for vertical and overheard surfaces with a penetrating corrosion inhibitor.
 - 1. Sikatop 123 Plus as manufactured by Sika Corporation.
- G. Bonding Agent: Three component, solvent free, moisture-tolerant, epoxy modified cementitious product specially formulated as a bonding agent and anti-corrosion coating.
 - 1. Armatec 110 EpoCem as manufactured by Sika Corporation.
- H. Expanding Foam Backer Seal:

1. Pre-formed, pre-compressed, self-expanding, sealant system. Cellular foam impregnated with a water-based, non-drying, polymer-modified 100% acrylic dispersion.
 - a. Basis of Design: Backerseal by EMSEAL joint systems ltd.
 - b. Capable of movements of +25%, -25% (50% total) of nominal material size.
 - c. Install Expanding Foam Backer Seal recessed from the substrate faces as depicted in the contract drawings and to receive a field-applied minimum 1/4 inch thick coating of Polyurethane sealant not to exceed 1/2 inch thick.
- I. Polyurethane Sealant: Multi-component, highly flexible, non-priming, high performance, Chemical cure, polyurethane sealant, capable of 50% joint movement. Formulated to withstand pedestrian and vehicular traffic.
 1. Basis of design is: MasterSeal NP 2 by BASF Corporation.

PART 3 EXECUTION

3.1 PREPARATION

- A. Epoxy Repair Mortar
 1. In areas where tapping does not produce a solid tone, remove additional concrete until tapping produces a solid tone. Make the cavity at least one inch deep. Sawcut edges of cavity to avoid feather edging. Prepare surface of cavity by sandblasting, grinding, or water blasting. Remove dust, dirt, and loosely bonded material resulting from cleaning. Ensure cavity surfaces are dry. Prepare bonding surfaces to achieve a minimum CSP-5 surface Profile as defined by ICRI 310.2R.
 2. Spalls at Joints and Cracks: Insert preformed joint filler to the working faces of the spall at joints and working cracks. Trim filler to fit shape of the working faces of joint or crack so epoxy material is prevented from bypassing filler. Where practicable, extend filler horizontally and vertically into joint or crack opening. Secure filler strip in place prior to and during placement of epoxy concrete.
 3. Cracks and Saw Kerfs: Apply epoxy mortar to newly exposed loose and unsound materials. Prepare surfaces by sandblasting, scarifying or waterblasting. Remove dust, dirt, and loosely bonded material resulting from cleaning. Ensure surfaces are dry before application of epoxy mortar.
- B. Epoxy Grout for Cracks: Apply grout to newly exposed concrete free of loose and unsound materials. Prepare surfaces by sandblasting, scarifying or waterblasting. Remove dust, dirt, and loosely bonded material resulting from cleaning. Ensure surfaces are dry before application of epoxy grout.
- C. Vertical and Horizontal Repair Mortar:

1. Remove deteriorated concrete, dirt, oil, grease and bond inhibiting materials from surface. Be sure repair area is not less than 1/8 inch in depth. Complete preparation work by high pressure water blast, scabber, or other appropriate mechanical means to obtain an exposed aggregate surface with a minimum surface profile of $\pm 1/16$ inch (CSP-5); $\pm 1/8$ inch (CSP-6). Saturate surface with clean water. Ensure substrate is saturated surface dry (SSD) with no standing water during application.
2. Reinforcing Steel: Prepare steel reinforcement by mechanical cleaning to remove traces of rust. Where corrosion has occurred due to the presence of chlorides, high pressure wash the steel with clean water after mechanical cleaning. For priming of reinforcing steel use specified Bonding Agent
3. Priming Concrete Substrate: Prime the prepared substrate with a brush or sprayed applied coat specified Bonding Agent.

3.2 MIXING MATERIALS

- A. Make batches small enough to ensure placement before binder sets. Mix materials in accordance with manufacturer's recommendations.
- B. For Vertical Repair Mortar:
 1. Pour Component 'A' into mixing container. Add Component 'B' (powder) while mixing continuously.
 2. Mix mechanically with a low-speed drill (400- 600 rpm) and mixing paddle or mortar mixer.
 3. Mix to a uniform consistency, maximum 3 minutes. Thorough mixing and proper proportioning of the two components is necessary.
- C. For Horizontal Repair Mortar:
 1. Pour Component 'A' into mixing container. Add Component 'B' while mixing, then introduce 3/8-inch coarse aggregate at desired quantity.
 2. Mix mechanically with a low-speed drill (400- 600 rpm) and mixing paddle or mortar mixer.
 3. Mix to uniform consistency, maximum 3 minutes.
 4. Addition rate is 42 lbs. per bag (approx. 3.0 to 3.5 gal. by loose volume).

3.3 INSTALLATION

- A. Expanding Foam Backer Seal:
 1. Install components of the system in accordance with the manufacturer's most recent printed instructions.
 2. Preparation of the Work Area

- a. Provide a properly prepared expansion joint opening constructed to the exact dimensions shown on shown on the contract drawings. Deviations from these dimensions are not allowed without the written consent of the engineer of record.
 - b. Remove residue of old sealants.
 - c. Repair spalled, irregular or unsound joint surfaces.
 - d. Remove protruding roughness to ensure joint sides are smooth.
 - e. Ensure that there is sufficient depth to receive the size of the Expanding Foam Backer Seal.
 - f. Wire-brush or angle-grind, if necessary, to clean sides.
 - g. Wipe joint faces with lint-free rags dipped in acetone, denatured alcohol other agent suitable for use on the substrates in question to ensure joint sides are free of dust, previous sealant, oils, grease, etc.
 - h. Clean the joint opening of contaminants prior to installation of expansion joint system.
 - i. Ensure joint sides are dry prior to installation.
3. Selection of Material:
- a. Measure joint width opening at surface and below surface level to ensure joint sides are parallel and that the joint width measured corresponds with specified joint width and Expanding Foam Backer Seal size.
 - b. Select Expanding Foam Backer Seal size corresponding to the size of joint to ensure correct compression and performance.
4. Installation:
- a. Remove and discard the outer shrink wrap packaging.
 - b. Slit the outer colored reel wrapper as instructed by the manufacturer
 - c. Discard the outer reel wrapper, and colored outer tape band.
 - d. Spray a utility knife or serrated bread knife with water and trim the
 - e. over-compressed, tapered, end off the beginning of the reel.
 - f. Peel away the clear plastic release liner to expose the sticky mounting adhesive on one face of the Expanding Foam Backer Seal.
 - g. Unroll the material and insert it into the joint to the depth as indicated in the contract drawings.
 - h. Using a stiff-bladed metal putty knife or a multi-tool, press on the non-adhesive side to make the mounting adhesive stick to the substrate on the opposite side to hold the material in place while it expands to fill the joint.

- i. Insert the lengths into the joint-opening in the wall. Always push the material toward the join to prevent stretching. Do not pull and cause the joints to separate after the stretched material shortens over time and result in a gap where leaks occur.
 - j. Expanding Foam Backer Seal sections are joined at butt joints between two pieces of the same or different sizes. Press the butt ends of the adjoining sections together firmly in the joint. The pressure-sensitive adhesive inside the foam cells bond the two pieces together
 - k. No drilling, or screwing, or fasteners of any type are permitted to anchor the system into the substrate.
5. Apply Polyurethane Sealant:
- a. Install components of the system in accordance with the manufacturer's most recent printed instructions.
 - b. Ensure substrates are structurally sound, cured, dry and clean.
 - c. Ensure substrates free of dirt, loose particles, oil, grease, asphalt, tar, paint, wax, rust, old waterproofing or curing and parting compounds, membrane materials and sealant residue.
 - d. Mix components in strict accordance to the manufacturers written instructions.
 - e. Apply Polyurethane Sealant by professional bulk gun loaded at the jobsite. Fill joints from the bottom up to the exterior face by holding a properly sized nozzle against the joint bottom.
 - f. Gun the Polyurethane Sealant into the joint over the Expanding Foam Backer Seal.
 - g. Using a dry clean tooling or caulk knife, tool the liquid sealant firmly against the Expanding Foam Backer Seal to complete the installation.
6. Protect the sealant from moisture or other contamination while curing during the skin forming process.
- B. Epoxy Repair Mortar: Prime dry cavity surfaces with epoxy resin using a stiff bristle brush. Make coating approximately 20 mils thick. Place epoxy concrete while primer is still tacky and in layers not exceeding one inch thick. Use vibratory floats, plates, or hand tampers to consolidate the concrete. Level each layer and screed the final surface to match the adjoining surfaces. Remove excess epoxy concrete on adjacent surfaces before the concrete hardens. Do not feather epoxy concrete out onto adjacent surfaces.
- C. Horizontal Repair Mortar:
- 1. Scrub Horizontal Repair Mortar into the substrate, filling pores and voids. Force material against edge of repair, working toward center. After filling repair, consolidate, then screed. Allow mortar or concrete to set to desired stiffness, then finish with wood or sponge float for a smooth surface, or broom or burlap-drag for a rough finish.

2. Tooling & Finishing: As per ACI recommendations for portland cement concrete, curing is required. Moist cure with wet burlap and polyethylene, a fine mist of water or a water based compatible curing compound (ASTM C309 compliant). Curing compounds adversely affect the adhesion of following layers of mortar, leveling mortar or protective coatings. Commence moist curing after finishing.
3. Protect newly applied material from direct sunlight, wind, rain and frost.
4. Limitations of Horizontal Repair Mortar:
 - a. Application thickness in one lift:
 - 1) Min. 1/8 inch Neat or 1 inch Extended
 - 2) Max. 1 inch Neat or 4 inches Extended
 - b. Minimum ambient and surface temperatures 45°F and rising at time of application.
 - c. Do not use solvent-based curing compound.
5. Size, shape and depth of repair carefully considered and consistent with practices recommended by ACI or ICRI. For additional information, contact the Manufacturer's Technical Service Department.

D. Vertical Repair Mortar:

1. Scrub Vertical Repair Mortar into the substrate, filling pores and voids. Force material against edge of repair, working toward center. After filling repair, consolidate, then screed.
2. Apply material in multiple lifts and score the top surface of each lift to produce a roughened surface for the next lift. Allow each lift to reach final set (min. 30 minutes) before applying fresh material.
3. Allow mortar or concrete to set to desired stiffness, then finish with wood or sponge float for a smooth surface, or broom or burlap-drag for a rough finish.
4. Tooling & Finishing: As per ACI recommendations for portland cement concrete, curing is required. Moist cure with wet burlap and polyethylene, a fine mist of water or a water based compatible curing compound (ASTM C309 compliant). Curing compounds adversely affect the adhesion of following layers of mortar, leveling mortar or protective coatings. Commence moist curing with burlap and polyethylene film after finishing.
5. Protect newly applied material from direct sunlight, wind, rain and frost.
6. Limitations of Vertical Repair Mortar:
 - a. Application thickness in one lift:
 - 1) Min. 1/8 inch
 - 2) Max. 1.5 inch

- b. Minimum ambient and surface temperatures 45°F and rising at time of application.
 - c. Do not use solvent-based curing compound.
 - 7. Size, shape and depth of repair considered and consistent with practices recommended by ACI or ICRI. For additional information, contact the Manufacturer's Technical Service Department.
- E. Non-Pressure Epoxy Grout
- 1. Cementing Dowels: Prior to placing the dowel, clean hole of dust and other deleterious material with a high pressure air hose. Fill hole halfway with grout. Insert dowel in hole by rotating it at least one turn while tapping it down. If necessary, add more grout to fill hole.
 - 2. Do not feather edge epoxy grout onto adjacent surfaces.

3.4 CURING

- A. Cure epoxy materials in accordance with manufacturer's recommendations.
- B. Moist cure Horizontal and Vertical repair materials with burlap and polyethylene film as per the Manufacturer's written instructions.

3.5 FIELD QUALITY CONTROL

- A. Sampling: As soon as epoxy resin and aggregate materials are available for sampling, obtain by random selection a sample of each batch. Clearly identify samples by designated name, specification number, batch number, project contract number, intended use and quantity involved.
- B. Testing: At the discretion of the Engineer, samples provided may be tested by the Owner for verification in accordance with ASTM C31/C31M and ASTM C39/C39M.
- C. Inspection: Check each repaired area for cracks, spalls, popouts and loss of bond between repaired area and surrounding concrete. Check each repaired area for voids by tapping with a hammer or steel rod and listening for dull or hollow sounds. Repair defects.

END OF SECTION

SECTION 04 05 00
MORTAR AND GROUT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Provide mortar for repointing (Alternate No. 1).

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections apply to this Section:
 - 1. Section 04 05 24 - Masonry Repointing

1.3 REFERENCE STANDARDS

- A. ASTM C91/C91M - Standard Specification for Masonry Cement; 2023.
- B. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.
- C. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.
- D. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2018.
- E. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019a, with Editorial Revision.
- F. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2018.
- G. ASTM C595/C595M - Standard Specification for Blended Hydraulic Cements; 2021.
- H. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Samples: Furnish mortar color samples to match existing mortar for acceptance by Engineer and Owner.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver masonry materials in original sealed containers marked with name of manufacturer and identification of contents.

- B. Store masonry materials under waterproof covers on planking clear of ground, and protect damage from handling, dirt, stain, water and wind.

1.6 MORTAR SAMPLING AND TESTING

- A. Sample and submit mortar for testing and analysis by a qualified testing firm to determine mortar mix requirements prior to work.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I
- B. Hydrated Lime: ASTM C207 S
- C. Masonry Cements: ASTM C91/C91M, Type N
- D. Sand: ASTM C144
 - 1. Light colored sand for mortar for laying face brick.
 - 2. White plastering sand meeting sieve analysis for mortar joints for pointing and laying of structural facing tile units except that 100 percent passes No. 8 sieve and not more than 5 percent retained on No. 16 sieve.
 - 3. Test sand for color value in accordance with ASTM C40. Sand producing color darker than specified standard is unacceptable.
- E. Grout Aggregate: ASTM C404, Size 8
- F. Admixtures:
 - 1. No air-entraining admixtures or material containing air-entraining admixtures.
 - 2. No antifreeze compounds added.
 - 3. No admixtures containing added.
- G. Water: Clean and potable.
- H. Mortar Pigment:
 - 1. ASTM C979/C979M: Not to exceed ten percent of the weight of Portland cement.
 - 2. Carbon black not to exceed two percent of the weight of Portland cement.
 - 3. Color of mortar to match existing mortar.
- I. Liquid Acrylic Resin: A formulation of acrylic polymers and modifiers in liquid form designed for use as an additive for mortar to improve physical properties.
- J. Blended Hydraulic Cement: ASTM C595/C595M, Type IS, IP, I (PM).
- K. Mortar Cement: ASTM C1329, Type N.

2.2 MORTAR AND GROUT MIXES

- A. Masonry Mortar: ASTM C270.

PART 3 EXECUTION

3.1 MIXING

- A. Mix in a mechanically operated mortar mixer for at least three minutes but not more than five minutes.
- B. Measure ingredients by volume using a container with a known capacity.
- C. Mix water with dry mortar ingredients in sufficient amount to provide a workable mixture which adheres to vertical surfaces of masonry units.
- D. Mix water with grout dry ingredients in sufficient amount to bring grout mixture to a pouring consistency.
- E. Mortar that has stiffened because of loss of water through evaporations:
 - 1. Re-tempered by adding water to restore to proper consistency and workability.
 - 2. Discard mortar that has reached its initial set or has not been used within two hours.

3.2 MORTAR USE LOCATION

- A. Use Type N mortar for brick veneer walls above grade, repointing or other masonry work.

END OF SECTION

SECTION 04 05 24

MASONRY REPOINTING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Repointing of damaged or deteriorated mortar joints (Alternate No. 1).

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections apply to this Section:

1. Section 04 05 00 - Mortar and Grout

1.3 PROJECT CONDITIONS

A. Protect newly pointed joints from rain, until pointed joints are sufficiently hard enough to prevent damage.

B. Cold Weather Protection:

1. Utilize methods of protection when repointing in freezing temperatures.
2. Comply with applicable sections of "Recommended Practices for Cold Weather Construction" as published by International Masonry Industry All Weather Council.
3. Maintain surfaces at temperatures to prevent mortar from freezing or causing other damage to mortar.

PART 2 PRODUCTS

2.1 MATERIALS

A. Repointing Mortar: Refer to Section 04 05 00 - Mortar and Grout for mortar requirements.

PART 3 EXECUTION

3.1 REMOVAL OF EXISTING MORTAR JOINTS

A. Cut out existing mortar joints, both bed and head joints, and remove by means of a tothing chisel or a special pointer's grinder, to a uniform depth of 3/4-inch, or until sound mortar is reached. Take care to not damage edges of existing masonry units to remain.

B. Remove dust and debris from the joints by brushing, blowing with air or rinsing with water. Do not rinse when temperature is below freezing.

3.2 INSTALLATION

- A. Prior to application of mortar, dampen joints and allow masonry units to absorb surface water.
- B. Tightly pack mortar into joints in thin layers, approximately 1/4-inch thick maximum.
- C. Allow layer to become "thumbprint hard" before applying next layer.
- D. Pack final layer flush with surfaces of masonry units. When mortar becomes "thumbprint hard", tool joints.
- E. Tooling of Joints
 - 1. Tool joints with a jointing tool to produce a smooth, compacted, concaved joint.
 - 2. Tool joints in patch work with a jointing tool to match the existing surrounding joints.

3.3 CLEANING

- A. Clean exposed masonry surfaces on completion.
- B. Remove mortar droppings and other foreign substances from wall surfaces.
- C. First wet surfaces with clean water then wash down with a solution of soapless detergent specially prepared for cleaning brick.
- D. Brush with stiff fiber brushes while washing and thereafter hose down with clean water.
- E. Free clean surfaces from traces of detergent, foreign streaks or stains. Protect materials during cleaning operations including adjoining construction.
- F. Use of muriatic acid for cleaning is prohibited.

END OF SECTION

SECTION 05 12 00
STRUCTURAL STEEL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Provide structural steel where indicated in Contract Drawings (Alternate No. 2).

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section

1.3 REFERENCE STANDARDS

- A. AISC 201 - AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures; 2006.
- B. AISC 207 - Certification Standard for Steel Fabrication and Erection, and Manufacturing of Metal Components; 2016.
- C. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges; 2022.
- D. AISC 325 - Steel Construction Manual; 2017.
- E. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- F. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2022.
- G. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures; 2023.
- H. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2020.
- I. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.
- J. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021.
- K. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).
- L. NACE No. 3 - Joint Surface Preparation Standard Commercial Blast Cleaning; 1994 (Reaffirmed 2006).
- M. SSPC-PA 1 - Shop, Field, and Maintenance Coating of Metals; 2016.
- N. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.
- O. SSPC-SP 3 - Power Tool Cleaning; 2018.

P. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Fabrication Drawings Including Details of Connections.
- D. Certifications:
 - 1. AISC 201
 - 2. AISC 207
 - 3. AWS B2.1/B2.1M
 - 4. Certified Welding Inspector

1.5 QUALITY ASSURANCE

- A. Preconstruction Submittals
 - 1. Erection and Erection Bracing Drawings
 - a. Submit for record purposes. Indicate the sequence of erection, temporary shoring and bracing. The erection drawings must conform to AISC 303. Erection drawings must be reviewed, stamped and sealed by a registered professional engineer.
- B. Fabrication Drawings Requirements:
 - 1. Submit fabrication drawings for approval prior to fabrication. Prepare in accordance with AISC 303 and AISC 325 . Fabrication drawings must not be reproductions of contract drawings. Include complete information for the fabrication and erection of the structure's components, including the location, type, and size of bolts, welds, member sizes and lengths, connection details, blocks, copes, and cuts. Use AWS A2.4 standard welding symbols. Clearly highlight any deviations from the details shown on the contract drawings highlighted on the fabrication drawings. Explain the reasons for any deviations from the contract drawings.
- C. Welding Procedures and Qualifications
 - 1. Prior to welding, submit certification for each welder stating the type of welding and positions qualified for, the code and procedure qualified under, date qualified, and the firm and individual certifying the qualification tests.
 - 2. Conform to all requirements specified in AWS D1.1/D1.1M and AWS D1.8/D1.8M.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Provide the structural steel system, including shop primer, complete and ready for use.
- B. Structural Steel: Wide flange and WT shapes, ASTM A992/A992M. Angles, Channels and Plates, ASTM A36/A36M.
- C. Welding Electrodes and Rods: AWS D1.1/D1.1M. Submit product data for welding electrodes and rods.
- D. Non-Shrink Grout: ASTM ASTM C1107/C1107M with no ASTM C827/C827M shrinkage. Grout must be nonmetallic. Submit product data for non-shrink grout.

2.2 FABRICATION

- A. Fabrication must be in accordance with the applicable provisions of AISC 325. Fabrication and assembly must be done in the shop to the greatest extent possible. Punch, subpunch and ream, or drill bolt holes perpendicular to the surface of the member.
- B. Markings
 - 1. Prior to erection, identify members by painted erection mark. Connecting parts assembled in the shop for reaming holes in the field connections must be match marked with scratch and notch marks. Do not locate erection markings on areas to be welded. Do not locate match markings in areas that will decrease member strength or cause stress concentrations.
- C. Shop Primer
 - 1. SSPC-Paint 20 or SSPC Paint 29, (zinc rich primer). Shop prime structural steel, except as modified herein, in accordance with SSPC-PA 1. Do not prime steel surfaces embedded in concrete, galvanized surfaces, or surfaces within 0.5 inch of the toe of the welds prior to welding (except surfaces on which metal decking and shear studs are to be welded). If flash rusting occurs, re-clean the surface prior to application of primer. Apply primer to a minimum dry film thickness of 2.0 mil. Submit shop primer product data.
 - 2. Prior to assembly, prime surfaces which will be concealed or inaccessible after assembly. Do not apply primer in foggy or rainy weather; when the ambient temperature is below 45 degrees F or over 95 degrees F; or when the primer may be exposed to temperatures below 40 degrees F within 48 hours after application, unless approved otherwise by the Contracting Officer. Repair damaged primed surfaces with an additional coat of primer.
- D. Cleaning
 - 1. SSPC-SP 6/NACE No. 3 , except steel exposed in spaces above ceilings, attic spaces, furred spaces, and chases that will be hidden to view in finished construction may be cleaned to SSPC-SP 3 when recommended by the shop primer manufacturer. Maintain steel surfaces free from rust, dirt, oil, grease, and other contaminants through final assembly.

PART 3 EXECUTION

3.1 WELDING

- A. Welding must be in accordance with AWS D1.1/D1.1M and AWS D1.8/D1.8M. Provide AWS D1.1/D1.1M qualified welders, welding operators, and tackers. Develop and submit the Welding Procedure Specifications (WPS) for all welding, including welding done using prequalified procedures. Submit for approval all WPS, whether prequalified or qualified by testing.

3.2 SHOP PRIMER REPAIR

- A. Repair shop primer in accordance with the paint manufacturer's recommendation for surfaces damaged by handling, transporting, cutting, welding, or bolting.
- B. Field prime steel exposed to the weather, or located in building areas without HVAC for control of relative humidity. After erection, the field bolt heads and nuts, field welds, and any abrasions in the shop coat must be cleaned and primed with paint of the same quality as that used for the shop coat.

3.3 FIELD QUALITY CONTROL

- A. Perform field tests, and provide labor, equipment, and incidentals required for testing. Notify the Engineer in writing of defective welds, bolts, nuts, and washers within 7 working days of the date of the inspection.
- B. AWS D1.1/D1.1M. Furnish the services of AWS-certified welding inspectors for fabrication and erection inspection and testing and verification inspections. A Certified Welding Inspector must perform visual inspection on 100 percent of all welds. Document this inspection in the Visual Weld Inspection Log. Submit certificates indicating that certified welding inspectors meet the requirements of AWS QC1.

END OF SECTION

SECTION 05 51 33

METAL LADDERS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Provide aluminum fixed access ladder where indicated in Contract Drawings.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.3 REFERENCE STANDARDS

- A. 29 CFR 1910.27 - Scaffolds and Rope Descent Systems; Current Edition.
- B. 29 CFR 1910.28 - Duty to have Fall Protection and Falling Object Protection; Current Edition.
- C. 29 CFR 1926.1053 - Ladders; Current Edition.
- D. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
- E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Shop Drawings:
 - 1. Detail fabrication and erection of each ladder indicated. Include plans, elevations, sections, and details of metal fabrications and their connections.
 - 2. Provide templates for anchors and bolts specified for installation under other Sections.
 - 3. Provide reaction loads for each hanger and bracket.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in producing aluminum metal ladders similar to those indicated for this Project.

1. Record of successful in-service performance.
 2. Sufficient production capacity to produce required units.
 3. Professional engineering competent in design and structural analysis to fabricate ladders in compliance with industry standards and local codes.
- B. Installer Qualifications: Competent and experienced firm capable of selecting fasteners and installing ladders to attain designed operational and structural performance.
- C. Product Qualification: Comply with 29 CFR 1910.27, 29 CFR 1910.28, and 29 CFR 1926.1053.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify dimensions by field measurement before fabrication.
1. Established Dimensions: Where field measurements cannot be made without delaying the Work, indicate established dimensions on shop drawing submittal and proceed with fabrication.

1.8 WARRANTY

- A. Manufacturer has responsibility for an extended Corrective Period for work of this Section for a period of 5 years commencing on date of Final Acceptance of the project against the conditions indicated below, and when notified in writing from Owner, to promptly and without inconvenience and cost to Owner correct said deficiencies.
1. Defects in materials and workmanship.
 2. Deterioration of material and surface performance below minimum OSHA standards as certified by independent third-party testing laboratory. Ordinary wear and tear, unusual abuse or neglect excepted.
 3. Within the warranty period, at manufacturer's opinion; repair, replace, or refund the purchase price of defective ladder.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers:
1. O'Keeffe's, Inc. (Basis of Design for Model listed herein)
 2. Cotterman
 3. Gillis
 4. Engineer's accepted equivalent

2.2 FIXED ACCESS LADDER

- A. Fixed Access Ladder:
 - 1. Landing platforms are required at 30 feet above the bottom of the ladder.
 - 2. Fixed Ladder Bottom Bracket: Bottom wall supported bracket.
 - 3. Heavy Duty Tubular Rail: O'Keefe's Model 501

2.3 FINISHES

- A. Mill finish.

2.4 MATERIALS

- A. Aluminum Sheet: Alloy 5005-H34 to comply with ASTM B209/B209M.
- B. Aluminum Extrusions: Alloy 6063-T6 to comply with ASTM B221.

2.5 FABRICATION

- A. Rungs: Not less than 1-1/4 inches in section and 18-3/8 inches long, formed from tubular aluminum extrusions. Squared and deeply serrated on all sides. Rungs to withstand a 1,500-pound load without deformation or failure.
- B. Side Rails: Heavy Duty Tubular Side Rails: Assembled from two interlocking aluminum extrusions no less than 1/8-inch wall thickness by 3 inches wide. Self-locking stainless-steel fasteners, TIG welds and clean, smooth and burr-free surfaces.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Coordinate anchorages. Furnish setting drawings, templates, and anchorage structural loads for fastener resistance.
- B. Do not begin installation until supporting structure is complete and ladder installation does not interfere with supporting structure work.
- C. If supporting structure is the responsibility of another installer, notify Engineer of unsatisfactory supporting work before proceeding.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions and in proper relationship with adjacent construction.

3.3 PROTECTION

- A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Final Acceptance.

END OF SECTION

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Rough Carpentry work required to facilitate installation of roof assembly including:
 - a. Provide pressure treated rough carpentry.
 - b. Resecure rough carpentry to remain in place.
 - c. Replace damaged, rotted or deteriorated rough carpentry with pressure treated rough carpentry.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections apply to this Section:
1. Section 07 01 50 - Preparation for Reroofing
 2. Section 07 22 16 - Roof Insulation
 3. Section 07 54 00 - Thermoplastic Single Ply Roofing
 4. Section 07 62 00 - Sheet Metal Flashing and Trim

1.3 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
- B. AWPA U1 - Use Category System: User Specification for Treated Wood; 2023.
- C. FM DS 1-49 - Perimeter Flashing; October 2021.
- D. PS 1 - Structural Plywood; 2023.
- E. PS 20 - American Softwood Lumber Standard; 2021.

1.4 DEFINITIONS

- A. Rough Carpentry includes carpentry work not specified as part of other Sections and generally not exposed.
- B. KDAT: Kiln Dried After Treatment.

1.5 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.

1.6 QUALITY ASSURANCE

- A. Inspect wood for damage, warping, splits, and moisture content as defined by the applicable wood products industry standards. Reject materials that do not comply.
- B. Rough carpentry to present a smooth, consistent substrate for roof system and flashing installation.
- C. Qualifications of workers: Provide sufficient, competent and skilled carpenters in accordance with accepted practices and supervisors present during execution of the work. Be thoroughly familiar with type of construction involved and related work and techniques specified.
- D. Moisture Content:
 - 1. Kiln Dry After Treatment (KDAT).
 - 2. Do not store or install treated lumber used in the roofing assembly in a manner exposing it to rain.
 - 3. Lumber: 19% or less before being covered/enclosed into roofing assembly.
 - 4. Plywood: 18% or less before being covered/enclosed into roofing assembly.
- E. Label: Bear the stamp of the AWPA Quality Mark, indicating compliance with the requirements of the AWPA Quality Control Program.
- F. Installation of rough carpentry for roofing and flashing terminations to ensure plumb, uniform and level metal flashings.
- G. Install rough carpentry to ensure roof membrane flashing transitions are smooth for positive roof drainage and appearance.
- H. Installation of fasteners and associated materials to secure rough carpentry as detailed and specified.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Store a minimum of four inches above ground on framework or blocking. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks. Cover with protective waterproof covering providing for adequate air circulation and ventilation
- B. Avoid exposure to precipitation during shipping, storage or installation. If material does become wet, replace or permit to dry prior to covering or enclosure by other roofing, sheet metal or other construction materials (except for protection during construction).
- C. Upon delivery to job site, place materials in area protected from weather.
- D. Do not store seasoned materials in wet or damp portions of building.

- E. Protect sheet materials from corners breaking and damaging surfaces, while unloading.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Wood Nailers/Blocking:
 - 1. No. 2 or better spruce or southern yellow pine lumber meeting PS 20 standards.
 - 2. Sound, thoroughly seasoned, dressed to nominal finish dimension, and free of warpage, cupping, and bowing.
 - 3. Dimensions determined by job conditions or as indicated in detail drawings.
- B. Plywood:
 - 1. APA PS 1 Rated Sheathing, 32/16, Exposure 1, Grade C, thickness to match existing or as indicated in Contract Drawings.
- C. Preservative Treatment:
 - 1. ACQ as manufactured for Viance in accordance with AWWA U1 and P5, P26, P27, P28, P29 as appropriate. Use 0.15 lb/cu ft of ACQ in accordance with AWWA U1, Use Catagory UC3B.
 - 2. Ecolife or EL2 as manufactured by Viance. Use 0.019 lb/cu ft of Ecolife or EL2 (+ 0.2 lb/cu ft MCS) in accordance with AWWA U1, Use Catagory UC3B.
 - 3. Micro-Guard as manufactured by Hoover Treated Wood Products, Inc. in accordance with AWWA U1, Use Catagory UC3B.
 - 4. Engineers accepted equivalent.

2.2 FASTENERS

- A. General:
 - 1. Stainless steel or as accepted by Engineer.
 - 2. Fasteners securing pressure treated lumber manufactured for corrosion resistance and exposures associated with pressure treated wood applications.
 - 3. Do not use nails at roof edges to fasten rough carpentry, lumber, plywood, etc. Use screws, anchors, and/or machine bolts to secure rough carpentry at roof perimeter edges.
 - 4. Do not use masonry screws, spikes, and drive-pins to fasten edge/perimeter nailers to concrete. Utilize minimum 1/2-inch diameter anchors or bolts to secure roof edge nailers to concrete.
 - 5. Do not secure or fasten edge/perimeter wood nailers to hollow core concrete masonry; grout concrete masonry units and provide minimum embedment of fasteners to meet anchor manufacturer's installation instructions.

6. Do not secure edge/perimeter wood nailers to brick masonry as the primary securement method.
- B. Nails: 8, 10 or 16 penny, stainless steel, ring shank nails. Length to embed into base substrate a minimum 1-1/2 inches.
1. Maze Nails
 2. Anchor Staple and Nail
 3. Simpson Strong Tie
 4. Manasquan Premium Fasteners
 5. Engineers accepted equivalent.
- C. Screws: No. 10 or greater, stainless steel wood screws with flat head, or insulation screws. Length to embed into base substrate a minimum of 1-1/2 inches.
- D. Self-Drilling Screws (for steel deck and light gauge steel framing, 16-ga. or less): #14-13 DP1, pancake or panhead, corrosion resistant, ASTM A153/A153M, FM Approved, self-drilling and self-tapping screw, length to provide minimum 3 pitches of thread through metal thicknesses or 3/4 inch through top flange of steel deck.
1. ITW Buildex TekS
 2. Triangle Fasteners
 3. SFS Intec
 4. Engineers accepted equivalent.
- E. Self-Drilling Screws (for structural steel, greater than 12-gauge): #12-24 DP5 (for steel thickness up to 1/2 inch) or DP4 (for steel thickness from 1/8 inch to 3/8 inch), flat or hex head, corrosion resistant, self-drilling/self-tapping fastener of length to provide minimum 3 pitches of thread through metal thicknesses.
1. ITW Buildex TekS
 2. SFS Intec
 3. Blazer
 4. Engineers accepted equivalent
- F. Epoxy Adhesive Anchor System: Minimum 1/2-inch diameter, corrosion resistant threaded rods supplied by the anchoring system manufacturer, length to provide minimum embedment as required by fastener manufacturer based upon substrate being secured. Screen for substrate provided by fastener manufacturer. Corrosion resistant nut and 1-1/2 inch diameter flat washer.
1. Hilti Hit Hy-10 Plus
 2. Powers Fasteners, Inc. AC100 Anchoring System
 3. Red Head Epcon C6 Fast Curing Epoxy

- 4. Engineers accepted equivalent
- G. Washers: Fasteners heads for screws, anchors and bolts terminating at the surface of nailers provided with a minimum 5/8-inch diameter, stainless steel or similar corrosion resistance flat washer provided by fastener manufacturer, unless washer is provided from factory as part of the fastener assembly.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Inspect substrates to receive rough carpentry, and ensure substrates are in satisfactory condition prior to installation of rough carpentry.
- B. Inspect rough carpentry including fasteners for material condition before proceeding with installation. Replace deteriorated, rotted, damaged, split, warped, twisted or wet materials.
- C. Remove cants, tapered edge strips, debris, fasteners, etc. that interfere with the installation of rough carpentry.
- D. Notify Engineer in writing of unsatisfactory conditions.
- E. Commencement of work signifies acceptance of substrates. Correct defects in work resulting from accepted substrates at no additional expense to the Owner.

3.2 PREPARATION

- A. Steel/Metal Substrates:
 - 1. Coat steel and metal with a uniform, heavy application of asphalt primer, or separate by membrane or other acceptable means to prevent contact between steel/metal and treated wood products.
- B. Roof Deck and Structure:
 - 1. Adjust substrates to receive rough carpentry to ensure completed rough carpentry installation is acceptable for roofing and sheet metal flashings.
- C. Epoxy Adhesive Anchor System:
 - 1. Follow adhesive anchor manufacturer's published instructions for preparation and installation.
 - 2. Pre-drill hole for adhesive anchors.
 - 3. Use compressed air to blow-out and remove dust and moisture before installing adhesive anchors.

3.3 INSTALLATION

- A. Replace damaged or deteriorated wood blocking, nailers, and curbs.
- B. Re-secure wood nailers at roof edges that are to remain with fastener type and spacing to comply with this section.

- C. Install wood blocking, nailers, and curbs to achieve a minimum 8-inch flashing height above the roof membrane.
- D. Install wood nailers at perimeter roof edges and low-profile expansion joints to match insulation height while maintaining a constant nailer height along perimeter edges.
- E. Install wood blocking and nailers concurrently with roof system installation. Removal of insulation and/or folding back of roof membrane to install wood blocking and nailers at a later date is not acceptable.
- F. Set rough carpentry to required levels and lines, with members plumb, true to line, material cut to fit, and braced to hold work in proper position. Use a belt sander to remove obtrusive surface irregularities. Drive nails and spikes home; and pull bolt nuts tight with heads and washers in close contact with the wood.
- G. Fit rough carpentry to other construction, scribe and cope for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction. Install joints between wood for a smooth transition.
- H. Attachment:
 - 1. Consult the fastener manufacturer's published literature and follow the recommended requirements for pre-drilling, cleaning, placement and compatibility of substrates. Follow manufacturer's requirements for fasteners spacing, substrate preparation and substrate embedment where not specified.
 - 2. Securely attach rough carpentry work to substrate with fasteners anchored to resist the required upward and outward design wind loads.
 - 3. Meet the requirements herein and that of FM DS 1-49 for rough carpentry attachment.
 - 4. Install bolts flush with the top surface of nailers where possible to avoid countersinking. Bolt bottom nailers then fasten above nailers where possible. Countersink bolts, nuts and screws flush with wood surfaces only as detailed; countersink a maximum of one half the board thickness.
 - 5. Install fasteners without splitting wood. Pre-drill where necessary. Replace split or damaged wood to provide acceptable conditions.
 - 6. For anchors, pre-drill concrete and masonry units to prevent damage or cracking of the masonry. Consult fastener manufacturer's published guides. Repair or replace damaged masonry with fasteners re-installed in an acceptable location.
 - 7. Fastener spacing: Staggered in two rows 1/3 the board width when board is wider than 6 inches and installed within 3 to 4 inches of each end.
 - a. Nails: Securing wood to wood spaced 12 inches on center in Perimeter (Zone 2) and 6 inches on center in Corner (Zone 3), staggered, with two nails installed within 3 to 4 inches of each end of nailer lengths to prevent wood from twisting at board joints.
 - b. Screws: Securing wood to wood spaced as indicated below, staggered, with two screws installed within 3 to 4 inches of each end of nailer lengths to prevent wood from twisting at board joints.

- 1) Perimeter (Zone 2) spacing of 12 inches maximum and Corner (Zone 3) spacing of 6 inches maximum.
- c. Self-Drilling Screws: Securing wood to steel spaced as indicated below, staggered, with one screw within 3 to 4 inches of each end of nailer lengths to prevent wood from twisting at board joints.
- 1) Maximum spacing of 12 inches.
 - 2) Maximum spacing of 6 inches.
- d. Epoxy Adhesive Anchors System: Spaced as indicated below, staggered and an additional fastener within 3 to 4 inches of each end of nailer to prevent boards from twisting at board joints.
- 1) Perimeter (Zone 2) spacing 48 inches max and Corner (Zone 3) spacing 24 inches max.
8. Plywood Sheathing Securement: Secure at 12 inches on center in Perimeter (Zone 2) and 6 inches on center in Corner (Zone 3) staggered each direction.
- I. Select fasteners of size and length that are not exposed from the building interior and/or from the ground, or remove protruding fasteners, paint or finish to eliminate exposure.
- J. Thickness of wood nailers flush with adjacent insulation and other materials. Install additional fasteners to ensure nailers are flush.
- K. Unless otherwise detailed, install plywood used as blocking or shim below dimensional lumber such that the fastener head terminates at the dimensional lumber surface.
- L. Do not utilize wood nailers at roof perimeters, expansion joints, roof area dividers, etc. less than 3 feet long.
- M. When multiple nailers are installed stacked two high or more, offset nailers no less than 12" such that joints at nailer end do not line-up vertically.
- N. Fasten each end of nailers with additional fasteners to ensure a smooth transition at butted joints, and to prevent warping and/or twisting.
- O. Shims:
1. Provide plywood and lumber shims as required for the specified height and thickness.
 2. Shims to make full contact with stacked rough carpentry. Partial shim contact, and small shim pieces spaced apart are not acceptable.
- P. Curbs:
1. Adjust wood curbs to support rooftop piping, ducts, equipment, etc.
 2. Raise equipment to provide required flashing height for roofing.

3.4 CLEANING

- A. Ensure the site and building are cleaned to meet pre-construction conditions, as accepted by the Owner.
- B. Clean the site and building of saw dust from lumber, fasteners and other debris.
- C. Repair or replace damages to the building, grounds, equipment and site to meet pre-construction conditions, as accepted by the Owner.

END OF SECTION

SECTION 06 15 00

WOOD DECKING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Plywood Deck:
 - a. Replacement of damaged, rotted or deteriorated plywood deck.
 - b. Securement of plywood deck to structural framing members.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections apply to this Section:
 - 1. Section 07 01 50 - Preparation for Reroofing
 - 2. Section 07 22 16 - Roof Insulation
 - 3. Section 07 54 00 - Thermoplastic Single Ply Roofing

1.3 REFERENCE STANDARDS

- A. PS 1 - Structural Plywood; 2023.
- B. American Wood-Protection Association (AWPA)
- C. American Plywood Association (APA)

1.4 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.

1.5 QUALITY ASSURANCE

- A. Inspect wood for damage, warping, splits, and moisture content as defined by the applicable wood products industry standards. Reject materials that do not comply.
- B. Qualifications of workers: Provide sufficient, competent and skilled carpenters in accordance with accepted practices and supervisors present during execution of the work, and thoroughly familiar with type of construction involved in the work and techniques specified.
- C. Moisture Content:
 - 1. 19 percent or less before being covered/enclosed into roofing assembly.

2. Ensure lumber and plywood is delivered, stored and installed at 19% or less moisture content.
- D. Plywood Product Standards: Comply with PS 1 . For products not manufactured under PS 1 provisions, comply with applicable APA Performance Standard for type of panel indicated.
- E. Installation of fasteners and associated materials to secure lumber and plywood as detailed and specified.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Store a minimum of four inches above ground on framework or blocking. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks. Cover with protective waterproof covering providing for adequate air circulation and ventilation
- B. Avoid exposure to precipitation during shipping, storage or installation. If material becomes wet, replace or permit to dry prior to covering or enclosure by roofing, sheet metal or other construction materials (except for protection during construction).
- C. Upon delivery to job site, place materials in area protected from weather.
- D. Do not store seasoned materials in wet or damp portions of building.
- E. Protect sheet materials from corners breaking and damaging surfaces, while unloading.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Plywood Deck: APA Rated Sheathing, 32/16, Exposure 1, Grade C, thickness to match existing or as indicated in Contract Drawings.

2.2 FASTENERS

- A. Nails: 8 or 10 penny, stainless steel, ring shank nails. Length to embed into base substrate a minimum 1-1/2 inches. Manufacturers:
 1. Maze Nails
 2. Anchor Staple and Nail
 3. Simpson Strong-Tie
 4. Manasquan Premium Fasteners
 5. Engineers accepted equivalent.
- B. Screws: No. 10 or greater, stainless steel wood screws with flat head. Length to embed into base substrate a minimum of 1-1/2 inches.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Inspect substrates to receive decking and ensure substrates are in satisfactory condition prior to installation.
- B. Inspect decking including fasteners for material condition before proceeding with installation. Replace deteriorated, rotted, damaged, split, warped, twisted or wet materials.
- C. Notify Engineer in writing of unsatisfactory conditions.
- D. Commencement of work signifies acceptance of substrates. Correct defects in work resulting from accepted substrates at no additional expense to the Owner.

3.2 PREPARATION

- A. Dry, broom and vacuum debris and foreign matter from roof deck prior to installation of rough carpentry.
- B. Adjust substrates to receive decking to ensure completed deck installation is acceptable for roof installation.

3.3 INSTALLATION

- A. Replace damaged or deteriorated decking.
- B. Set decking to required levels and lines, with members plumb, true to line, material cut to fit, and braced to hold work in proper position. Use a belt sander to remove obtrusive surface irregularities. Drive nails and spikes home; and pull bolt nuts tight with heads and washers in close contact with the wood.
 - 1. Provide 1/8 inch spacing all edge and end joints of plywood. Provide 2 panel clips per span.
- C. Fit decking to other construction, scribe and cope for accurate fit with joints between wood installed for a smooth transition.
- D. Attachment:
 - 1. Consult the fastener manufacturer's published literature and follow the recommended requirements for pre-drilling, cleaning, placement and compatibility of substrates. Follow manufacturer's requirements for fasteners spacing, substrate preparation and substrate embedment where not specified.
 - 2. Install fasteners flush with the top surface of wood where possible to avoid countersinking.
 - 3. Plywood Deck Securement:
 - a. Screw or nail plywood at 6 inches on center along supported edges of plywood and 12 inches on center along the intermediate roof framing.
- E. Select fasteners of size and length that are not exposed from the building interior and/or from the ground, or remove protruding fasteners, paint or finish to eliminate exposure.

3.4 CLEANING

- A. Ensure the site and building are cleaned to meet pre-construction conditions, as accepted by the Owner.
- B. Clean the site and building of saw dust from lumber, fasteners and other debris.
- C. Repair or replace damages to the building, grounds, equipment and site to meet pre-construction conditions, as accepted by the Owner.

END OF SECTION

SECTION 07 01 50

PREPARATION FOR REROOFING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Complete preparatory work prior to roof installation including but not limited to:
 - a. Removal of roof assemblies down to the existing vapor retarder (Areas A1-A7) and plywood deck (Area A8).
 - b. Raising of mechanical units and/or HVAC units to meet the required minimum flashing height.
 - c. Installation and/or modification of through wall overflow scuppers.
 - d. Under roof deck survey

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections apply to this Section:
1. Section 03 01 30.71 - Rehabilitation of Cast-in-Place Concrete
 2. Section 06 10 00 - Rough Carpentry
 3. Section 06 15 00 - Wood Decking
 4. Section 07 22 16 - Roof Insulation
 5. Section 07 54 00 - Thermoplastic Single Ply Roofing
 6. Section 22 14 26 - Roof Drains

1.3 DEFINITIONS

- A. Removal: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain property of the Owner.
- B. Existing to remain: Protect construction indicated to remain against damage and soiling during demolition. When accepted by Engineer, items may be removed to a suitable, protected storage location during demolition, cleaned and reinstalled in their original locations.
- C. Material ownership: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished items become the Contractor's property. Remove demolished items from the site.

1.4 REFERENCE STANDARDS

1.5 SUBMITTALS

1.6 EXISTING ROOF ASSEMBLIES

- A. Refer to Contract Drawings for existing roof system composition.

1.7 QUALITY ASSURANCE

- A. Qualifications: Previous experience removing roof systems.
- B. Requirements: Comply with governing EPA regulations and hauling/disposal regulations of authorities having jurisdiction.

1.8 SCHEDULING

- A. Do not disrupt Owner's operations during demolition. Provide 72 hours notification to Owner of activities that affect Owner's operations.

1.9 WARRANTIES

- A. Repair or replace damage to existing items under warranty with materials acceptable to the Warrantor.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 EXAMINATION

- A. Survey conditions to determine extent of demolition.
- B. Record the conditions of items to be removed/reinstalled and items to be removed/salvaged.
- C. Do not remove elements that result in structural deficiency or collapse the structure or adjacent structures during demolition.
- D. Inspect substrate for soundness and notify Engineer in writing of deficiencies. Commencement of work signifies acceptance of site conditions.

3.2 PREPARATION

- A. Do not begin demolition until utilities have been disconnected/sealed and have been verified as such in writing.
- B. Do not close off or obstruct streets, walks or other adjacent occupied facilities without permission from Owner and authorities having jurisdiction.
- C. Provide safe conditions for pedestrians. Erect temporary protection, walkways, fences, railings and canopies as required by OSHA and other governing authorities.
- D. Provide protection for adjacent building, appurtenances and landscaping to remain. Erect temporary fencing around trees to remain.

- E. Provide temporary weather protection as required to prevent water leakage and damaged to exterior or interior of adjacent structures.

3.3 UTILITIES/SERVICES

- A. Maintain utilities that are to remain in service and protect them against damage during selective site demolition unless authorized in writing by the Owner and authorities having jurisdiction.
 - 1. Locate conduits and equipment attached to the underside of the decking prior to reroofing. Do not disturb conduits or interior components/equipment with insulation fasteners.
 - 2. If utilities serving occupied portions of the site are shut down, provide temporary services.
 - 3. Provide 72 hours' notice to Owner if shut down is required.
 - 4. Where services are removed, relocated or abandoned, provide necessary bypass connections to remaining occupied buildings and areas.

3.4 POLLUTION CONTROLS

- A. Use water, mist, temporary enclosures and other suitable methods to limit the spread of dust and dirt. Comply with local EPA regulations.
 - 1. Do not use water where there is potential for damage to occur or where hazardous conditions, ice or flooding are created.

3.5 UNDER ROOF DECK SURVEY

- A. Prior to work being performed, complete a survey of the under deck components.
- B. Locate and mark conduit, utilities, etc. that interfere with the replacement roof system.
- C. Determine the presence of spray applied fireproofing on the underside of the roof deck. If fireproofing is present, utilize caution when removing and replacing roof system to prevent fireproofing from dislodging. Survey interior of building during tear-off operations and at end of each day. Clean up debris daily. Report displaced fireproofing to the Owner/Engineer.
 - 1. Contractor is responsible to repair displaced fireproofing and repair any interior finishes damaged from the displaced fireproofing.
- D. Notify Owner and Engineer prior to survey being performed.

3.6 REMOVALS

- A. Coordinate and sequence roof removal such that tear-off debris and materials are not stored on or trafficked over the replacement roof system and such that varying heights between roof assemblies does not adversely affect roof drainage.
- B. Demolish and remove construction only to the extent required.
- C. Remove roof membrane, flashings, roof insulation, vapor retarder, and sheet metal and discard.

- D. Remove or correct obstructions which interfere with the proper application of materials.
- E. Lift or remove equipment so that flashings can be replaced.
- F. Remove debris to provide clean, dry substrate.
- G. Remove and transport debris in a manner that prevents damage/spills to adjacent buildings and areas.
- H. Dispose of demolished items and materials on a daily basis. On-site storage of removed items is not permitted.
- I. Transport demolished materials off-site and dispose of materials in a legal manner.
- J. Perform progress inspections to detect hazards resulting from demolition activities.

3.7 FLASHING HEIGHTS

- A. Permanently raise roof top equipment as required to achieve 8" minimum flashing height.
- B. Provide additional wood blocking to top of parapet walls and expansion joints to achieve minimum 8" flashing height.
- C. Extend sanitary vents to height required by the applicable Plumbing Code, but no less than 8 inches and no more than 12 inches above the finished roof system.

3.8 SCUPPER INSTALLATION

- A. Locate bottom of overflow scupper 2 inches above surface of the roof system adjacent to the nearest roof drain (excluding sump).
- B. Extend opening through parapet wall. Take precautions to avoid damaging adjacent wall surfaces.
- C. Demolish asphalt, concrete and masonry in small sections. Cut concrete and masonry at juncture with construction to remain using powered masonry saw, core drill or hand tools. Do not use powered impact tools.
- D. Provide finished openings as indicated.
- E. Repair exterior wall surface, veneer or cladding to match adjacent surfaces.

3.9 CLEANING

- A. Inspect the site daily and clean up debris and hazards at the end of each day. Keep adjacent roads, drives and walkways in operation and free from construction materials debris.
- B. Clean adjacent structures of dust dirt and debris. Return adjacent areas to original conditions to the satisfaction of the Owner.

END OF SECTION

SECTION 07 19 00

FLUID APPLIED WATER REPELLENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Provide water repellent treatment to masonry walls including preparation of walls, protection of adjacent surfaces, and cleaning of residue (Alternate No. 6).

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections, apply to this Section:
1. Section 04 05 00 - Mortar and Grout
 2. Section 04 05 24 - Masonry Repointing

1.3 REFERENCED STANDARDS

- A. Municipal and State regulations governing cleaning, scaffolding and protection of adjacent properties.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.

1.5 QUALITY ASSURANCE

- A. Spray Test:
1. After water repellent has dried, spray coated surfaces with water.
 2. After surfaces have adequately dried, recoat surfaces that show water absorption.
- B. Manufacturer's Field Services:
1. Provide written certification that surface preparation methods and final condition have manufacturer's approval and comply with the warranty.
 2. Furnish test area: Furnish results of test area absorption on each type of substrate. Utilize test results to determine application rate.
- C. Substrate Preparation Mock-up:

1. Before substrate preparation and product test mock-up, the following field evaluation will be done.
 - a. Prepare a 5 foot by 5 foot area for each preparation method to be evaluated by the Owner, Engineer, Manufacturer's Representative, and Contractor.

D. Product Test Area:

1. Before a sealer application, the following field evaluation will be done.
 - a. Prepare a 3 foot by 3 foot area for each test area to be sprayed with the water repellent. The area will be determined by the Engineer and Owner. Apply the water repellent at a rate to achieve a flood coat application. If recommended by the manufacturer, apply a second coat of water repellent.
 - b. After allowing five days for the sample to cure, run a RILEM uptake test on the treated area (s).

1.6 DELIVERY, STORAGE AND HANDLING

- A. Furnish materials in manufacturer's packaging with instructions for use.
- B. Store materials out of direct exposure to the elements using tarps and elevated off ground on pallets.

1.7 PROJECT CONDITIONS

A. Environmental Conditions:

1. Do not patch, repoint, wash down or wet surfaces when temperature is forecasted to drop below 40 degrees F within 24 hours.
2. Do not use process that creates dust or dirt when wind speed is over 15 miles per hour.

B. Protection:

1. Protect windows, doorways, trim, roof and other surfaces from damage and remove stains, efflorescence, or other unsightly excess resulting from the work of this section.
2. Protect surfaces and surrounding yards or landscape from damage due to work in this section.
3. Schedule work with Engineer and Owner.
4. Protect entrances to building with appropriate warning signs and barricades.
5. Protect persons and property including pedestrian traffic.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Water: Clean and potable.
- B. Water Repellent: Isobutyltrialkoxysilane 40% minimum active penetrating ingredient.
 - 1. Brick Masonry Products:
 - a. Evonik Protectosil Chem-Trete 40 VOC
 - b. Pecora Corporation Klere-Seal 940-S VOC
 - c. Prosoco Sure Klean Weather Seal Siloxane PD or Siloxane WB Concentrate
 - d. Sika Sikagard 701W
 - 2. Concrete Masonry Unit Products:
 - a. Evonik Protectosil Chem-Trete PB VOC
 - b. Pecora Corporation Klere-Seal 940-S VOC
 - c. Prosoco Sure Klean Weather Seal Siloxane WB Concentrate
 - d. Sika Sikagard 701W

PART 3 EXECUTION

3.1 PREPARATION

- A. Clean surfaces to receive sealer of dirt, oil, grease, laitance, and other contaminants. Remove oil, grease and other automotive contaminants with degreasers. Remove dirt, dust and materials that interfere with the proper and effective application of the penetrating sealer. Prepare the surfaces of the substrate to a condition acceptable to the Engineer and Owner.
- B. Check the compatibility of materials used with the penetrating sealer.

3.2 APPLICATION

- A. Products applied as supplied by the manufacturer without dilution or alteration, unless noted in the manufacturer's data sheet.
- B. Apply with low pressure (15 psi) airless spray equipment with a fan spray coarse nozzle, flooding the surface to obtain uniform coverage unless otherwise recommended by the manufacturer.
- C. Apply at a rate specified by manufacturer after field tests.
- D. Apply at temperature and weather conditions recommended by the manufacturer or as written in this specification.

- E. Follow manufacturer's recommendations concerning protection of glass, metal and other non-porous substrates. Clean surfaces which are contaminated by the water repellent.
- F. Follow manufacturer's recommendation concerning protection of plants, grass and other vegetation. Replace plants, grass or vegetation damaged by the water repellent.
- G. Apply water repellent by brush only at locations where potential for overspray to affect adjacent materials and where not applicable for spray application.
- H. Start application at bottom of wall and work up surface with flood coat that has a 6 to 8 inch rundown from the spray pattern.

END OF SECTION

SECTION 07 22 16

ROOF INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Provide roof insulation system as specified in Section 01 11 00 - Summary of Work and as indicated in Contract Drawings.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections, apply to this Section:

1. Section 06 10 00 - Rough Carpentry
2. Section 07 01 50 - Preparation for Reroofing
3. Section 07 54 00 - Thermoplastic Single Ply Roofing
4. Section 22 14 26 - Roof Drains

1.3 REFERENCE STANDARDS

A. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2023a.

1.4 PERFORMANCE REQUIREMENTS

A. R Value

1. In accordance with the referenced Energy Conservation Code and ASHRAE 90.1.
2. Minimum continuous R-value: 8
3. R value based on Long-Term Thermal Resistance (LTTR) for polyisocyanurate insulation and manufacturer's published data for other insulation components, as tested in accordance with specified the specified.

B. Wind Design: Install insulation system to meet the required wind uplift pressures as specified in Contract Drawings.

1.5 SUBMITTALS

A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.

B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.

- C. Shop Drawings: Tapered insulation plan from material supplier with minimum R-value for each roof area.

1.6 QUALITY ASSURANCE

- A. Install insulation in accordance with their respective manufacturer's requirements.
- B. Reject insulation not bearing UL label at point of delivery.
- C. Remove insulation damaged or wetted before, during, or after installation from the job site no later than the next working day from the day such damage or moisture contamination is noted.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials in the manufacturer's original sealed and labeled packaging.
- B. Storage: Store materials out of direct exposure to the elements on pallets or dunnage at least 4 inches above ground level at location acceptable to Owner.
 - 1. Utilize tarps that cover materials to prevent moisture contamination. Remove or slit factory shrouds and/or visqueen; do not use these materials as tarps.
 - 2. Install vapor retarders under material storage areas located on the ground.
 - 3. Remove damaged or deteriorated materials from the job site.
- C. Handling: Handle material in such a manner to prevent damage and contamination with moisture or foreign matter.

1.8 PROJECT CONDITIONS

- A. Do not apply insulation during precipitation. Take responsibility for starting installation in the event there is a probability of precipitation occurring during application.
- B. Take necessary action to restrict dust, asphalt, and debris from entering the structure.
- C. Do not remove more roofing than can be replaced with insulation, membrane and flashings in the same day to create a watertight installation.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Insulation Boards:
 - 1. Roof Insulation:
 - a. Rigid polyisocyanurate roof insulation board complying with ASTM C1289 Type II, Class 2, Grade 2 and meeting the following requirements:
 - 1) Factory applied coated polymer bonded glass fiber mat facers on the top and bottom.

- 2) 24 hours minimum curing time, plus an additional 24 hours minimum per inch thickness, at a minimum of 60 degrees F before shipment from the manufacturer.
- 3) 2 percent maximum linear change dimensional stability when conditioned at 158 degrees F and 97 percent relative humidity for seven days.
- 4) Maximum permissible insulation board size for mechanical attachment is 4 feet by 8 feet and for foam adhesive and hot asphalt attachment is 4 feet by 4 feet. Field cutting of larger boards is not acceptable.
- 5) Thickness: as indicated in Contract Drawings

2. Tapered Insulation System:

- a. Rigid polyisocyanurate roof insulation board complying with ASTM C1289 Type II, Class 2, Grade 2 and meeting the following requirements:
 - 1) Factory applied coated polymer bonded glass fiber mat facers on the top and bottom.
 - 2) Curing time: 24 hours minimum, plus an additional 24 hours minimum per inch thickness, at a minimum of 60 degrees F before shipment from the manufacturer.
 - 3) Dimensional stability: 2 percent maximum linear change when conditioned at 158 degrees F and 97 percent relative humidity for seven days.
 - 4) Board size: 4 feet by 4 feet.
 - 5) Slope: 1/4 inch per foot
 - 6) Minimum thickness: 1.5 inch
 - 7) Fill Insulation: Rigid polyisocyanurate meeting the above requirements with board size of 4 feet by 4 feet and thickness of 2 inches.
 - 8) Crickets and Saddles: Rigid polyisocyanurate meeting the above requirements with a board size of 4 feet by 4 feet and 1 inch per foot slope at Area A1. All other crickets to be 1/2 inch per foot slope.

3. Cover Board:

- a. Cover board approved by roof system manufacturer. Board Size: 4 feet by 8 feet. Minimum thickness as listed below or as required by roof system manufacturer.
 - 1) Georgia Pacific 1/4 inch DensDeck Prime Roof Board
 - 2) USG 1/4 inch Securock Glass-Mat Roof Board

3) DEXcell 1/4 inch Glass Mat Roof Board

B. Insulation Mechanical Attachment Materials:

C. Adhesives:

1. Foam Adhesive: One or two part, VOC compliant, moisture-cured polyurethane foamable adhesive designed as roof insulation adhesive and approved by insulation manufacturer.
 - a. Primer: Provide as required by adhesive manufacturer and substrate conditions.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Inspect substrate for soundness and notify Engineer in writing of deficiencies.
- B. Commencement of work signifies acceptance of substrates. Correct defects in work resulting from accepted substrates at no additional expense to the Owner.

3.2 PREPARATION

- A. Dry and broom roof deck clean of debris and foreign matter prior to installation of insulation system.

3.3 APPLICATION

A. General

1. Apply in accordance with the insulation and roof system manufacturer's instructions and these specifications.
2. Install insulation in full boards, carefully fitted and pushed against adjoining sheets to form tight joints. Gaps exceeding 1/4 inch are not acceptable.
3. Saw cut or knife cut insulation and cover boards in a straight line, not broken. Utilize chalk lines to cut insulation. Uneven or broken edges are not acceptable.
4. Remove insulation dust and debris that develops during insulation cutting operations.
5. Offset joints between successive and adjacent layers of insulation a minimum of six inches.
6. Stagger joints of cover boards one foot (vertically and laterally) to ensure that joints do not coincide with joints from the previous or adjacent layer.
7. Install crickets, saddles and tapered edge strips before the cover board.
8. Provide necessary modifications to insulation system or nailers at roof edges as required to ensure a flush and smooth transition is provided for the roof membrane and flashing.

9. Make field modifications of insulation, tapered insulation, tapered edge strips and cants where required to accommodate roof and flashing conditions and to prevent water dams and ponding water. Ponding water at scuppers and cricket valleys is not acceptable.
10. Ponding Water:
 - a. The ponding of water on the roof surface after installation of the roofing system is not acceptable and is grounds for rejection of the roof.
 - b. Ponding is herein defined as precipitation remaining in a four-square foot area or larger, 1/4 inch or deeper for a period of 24 hours from the termination of precipitation.
 - c. Provide modifications to insulation system to ensure proper drainage and prevent standing water including but not limited to reinstallation of roof system or installation of additional tapered insulation.

B. Tapered Insulation System:

1. Install tapered insulation system to provide positive slope for roof drainage without ponding water.
2. Size crickets as shown in the Contract Drawings. Provide modifications to ensure positive slope and prevent standing water along the cricket valley.
 - a. Minimum length to width ratio of 2:1. Fabricate partial crickets with dimensions which result in a minimum length to width ratio of 2:1 if they were extended to full size.
 - b. Unless otherwise noted, fabricate crickets from tapered stock as required to provide the specified minimum slope. For example, when roof slope is indicated as 1/4 inch per foot minimum, fabricate crickets with slope of 1/2 inch per foot minimum.
 - c. Construct crickets on up slope side of curbs to ensure positive drainage.
 - d. Install tapered edge strips at cricket edges to provide a smooth transition between the cricket and insulation system below.
3. Insulation boards may require mechanical fasteners and stress plates at slope transition of crickets to minimize bridging.

C. Roof Drainage:

1. Install drainage sumps as detailed.
2. Carefully lay out the tapered insulation, sumps, drain bowls and scuppers to ensure the finished roof provides drainage with no ponding water.
3. Fabricate miter-cut sumps at drains/scuppers to provide smooth transitions between the insulation system and the drains/scuppers.
4. Ensure sumps provide roof drainage and prevent water dams.

5. Adjust insulation, drains and scuppers to ensure roof drainage and satisfactory substrates for membrane and flashings.
6. Secure drain sump components using specified insulation fasteners or adhesives.
7. Circular sumps and sumps that do not provide smooth transition or that create standing water at the drains are not allowed.

D. Insulation Mechanical Attachment:

1. Fastener quantity and spacing as required to comply with the requirements of roof system manufacturer's approved, tested assembly.
2. Install fasteners using manufacturer's recommended equipment and in accordance with the manufacturer's requirements.
3. Set fasteners and stress plates secure and tight against the insulation surface and do not over drive.

E. Foam Adhesive:

1. Position and space adhesive beads as required to comply with the requirements of the roof system manufacturer's approved, tested assembly.
2. Size adhesive beads in accordance with the adhesive manufacturer's guidelines.
3. Place insulation boards onto the beads and "walk" and/or "weight" into place. Place insulation boards into the adhesive in accordance with the adhesive manufacturer's guidelines.
4. Ensure adhesion of insulation and take whatever steps necessary to achieve adhesion, including but not limited to temporary ballasting of insulation until adhesive sets.

END OF SECTION

SECTION 07 26 13

SELF-ADHERED VAPOR RETARDER

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Provide self-adhered vapor retarder.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections, apply to this Section:
 - 1. Section 06 10 00 - Rough Carpentry
 - 2. Section 07 01 50 - Preparation for Reroofing
 - 3. Section 07 22 16 - Roof Insulation
 - 4. Section 07 54 00 - Thermoplastic Single Ply Roofing
 - 5. Section 22 14 26 - Roof Drains

1.3 REFERENCE STANDARDS

- A. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.

1.5 QUALITY ASSURANCE

- A. Inspected by the Contractor and Manufacturer's technical representative; repair and prepare to meet the Manufacturer's requirements prior to installing the roof insulation system.
- B. Included in roof system manufacturer's test reports specified in Section 07 54 00 - Thermoplastic Single Ply Roofing.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Delivery. Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.

- B. Storage: Store materials out of direct exposure to the elements on pallets at least 4 inches above ground level at site location acceptable to the Owner.
 - 1. Storage trailers are acceptable provided they are equipped with a lock and located at a site location acceptable to the Owner.
 - 2. Utilize tarps that cover materials to prevent moisture contamination. Remove or slit factory shrouds and/or visqueen; do not use these materials as tarps.
 - 3. Install vapor retarders under material storage areas located on the ground.
 - 4. Store roll goods on end on a clean flat surface.
 - 5. Remove damaged or deteriorated materials from the job site.
- C. Handling. Handle materials in such manner as to preclude damage and contamination with moisture or foreign matter.

1.7 JOB CONDITIONS

- A. Environmental Requirements
 - 1. Do not apply during precipitation and do not start in the event there is a probability of precipitation during applications.
 - 2. Do not apply at or below the dew point temperature.
 - 3. When conditions are damp and where adjacent roof areas have moisture or dew, dry roof to prevent tracking water over the membrane substrates.
 - 4. At ambient temperatures of 40°F and below, including wind chill, take precautions to ensure adhesives and other materials maintain the minimum acceptable temperature at the point of roofing application as recommended by the membrane manufacturer.
- B. Protection
 - 1. Protect against staining and mechanical damage of adjacent surfaces and work areas during application. Staining, mechanical damage, or discoloration of the membrane is cause for rejection.
 - 2. Protect materials being installed and storage of materials against wind related damage.

1.8 WARRANTY

- A. Manufacturer's Guarantee: Included in the roof system warranty specified in Section 07 54 00 - Thermoplastic Single Ply Roofing.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Vapor Retarder: 32-mil, self-adhesive SBS modified bitumen with a tri-laminated woven polyethylene facer; adhesive backing covered with a silicone release liner.

1. Sika Sarnafil Vapor Retarder SA 31
 2. Fibertite VaporTite
 3. Siplast SA Vapor Retarder
- B. Primer: Manufacturer's approved polymer emulsion-based primer as recommended by substrate conditions.

PART 3 EXECUTION

3.1 INSPECTION

- A. Conduct a pre-job conference including the Engineer, Contractor, and the membrane manufacturer's representative prior to the application of the roofing.
- B. Verify work penetrating the roof deck or affecting the roofing has been properly completed.

3.2 PREPARATION

- A. Prepare surfaces clean, sound, dry, and free of loose materials, contaminants, water, frost, ice, oil and grease that interfere with proper adhesion.
- B. Prepare concrete surfaces to achieve a Concrete Surface Profile CSP 3 to CSP 5 in accordance with ICRI 310.2R.

3.3 APPLICATION

- A. Apply in accordance with manufacturer's instructions.
- B. Primer:
 1. Primer is required on substrates except for steel.
 2. Shake or stir primer before applying.
 3. Primers can be rolled, brushed or sprayed.
 4. Let the primer dry.
- C. Begin the installation at the low point of the roof. Unroll vapor retarder onto the substrate for alignment. Overlap each sheet by 3 in on the side lap and 6 in on the end laps.
- D. Once the roll is aligned, peel back a portion of the silicone release film and press vapor retarder onto the substrate. When securely adhered, remove the remaining release film from the roll.
- E. Use a minimum 100 lb. steel roller to press the vapor retarder onto the substrate including the laps. Use the roller to push out air bubbles in the membrane. Do not cut the membrane to remove a bubble.
- F. Apply trowel grade adhesive to seal around penetrations, T-joints, and fish mouths. Do not apply trowel grade adhesive where it comes into direct contact with the roof membrane.

- G. Inspect application each day. Repair deficiencies daily prior to beginning or resuming other work.

3.4 CLEAN UP

- A. Remove debris and excess material from the roof area. Pick-up loose fasteners and sheet metal scraps.
- B. Clean off/remove excess adhesive, sealant, stains and residue on the membrane and flashing surfaces.

END OF SECTION

SECTION 07 54 00

THERMOPLASTIC SINGLE PLY ROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Provide adhered, fleeceback, thermoplastic membrane and flashings to provide a permanently watertight system.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections, apply to this Section:

1. Section 06 10 00 - Rough Carpentry
2. Section 07 01 50 - Preparation for Reroofing
3. Section 07 22 16 - Roof Insulation
4. Section 07 62 00 - Sheet Metal Flashing and Trim
5. Section 22 14 26 - Roof Drains

1.3 REFERENCE STANDARDS

- A. ASTM D4434/D4434M - Standard Specification for Poly(Vinyl Chloride) Sheet Roofing; 2021.
- B. ASTM D6754/D6754M - Standard Specification for Ketone Ethylene Ester Based Sheet Roofing; 2015.
- C. FM 4470 - Examination Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for Use in Class 1 and Noncombustible Roof Deck Construction; 2022.
- D. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies; Current Edition, Including All Revisions.
- E. UL 790 - Standard for Standard Test Methods for Fire Tests of Roof Coverings; Current Edition, Including All Revisions.
- F. UL 1897 - Uplift Tests for Roof-Covering Systems; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

1.4 PERFORMANCE REQUIREMENTS

- A. Install roofing system to meet UL 790 Class A Fire Rating.

- B. Wind Design: Provide an approved roof assembly tested in accordance with FM 4470, UL 580 or UL 1897 to resist the design wind uplift pressures required by the Contract Drawings.

1.5 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Roof System Assembly Letter: Letter from roof system manufacturer listing roof assembly components along with their method of attachment and acceptance of the specified roof system warranty terms. Assembly letter should match the submitted test report documentation and specified assembly.
- D. Test Reports: Submit documentation of approved, tested roof system to meet the specified requirements for the following:
 - 1. Wind uplift pressures
 - 2. UL Fire Resistance Rating
- E. Shop Drawings:
 - 1. Submit manufacturer approved drawings and details for conditions not depicted in Contract Drawings including but not limited to inside corners, outside corners, lap seams, etc.

1.6 QUALITY ASSURANCE

- A. Manufacturer Requirements:
 - 1. Written contractor/installer approval program.
 - 2. Products manufactured by other manufacturers and private labeled are not acceptable.
- B. Contractor Requirements:
 - 1. Install roof system by a Contractor authorized by the membrane manufacturer for a minimum of two years with manufacturer's highest certification level.
 - 2. Application of the roofing system accomplished by primary roofing contractor, his roofing foreman, and sufficient applicator technicians who have been trained and approved by the manufacturer of the single ply roofing system. Submit evidence of qualification from the manufacturer.
- C. No deviations made from the Contract Documents or the accepted shop drawings without prior written acceptance by the Engineer.
- D. Complete work by personnel trained and authorized by the membrane manufacturer.
- E. Upon completion of the installation, provide inspection by a representative of the membrane manufacturer to review the installed roof system and document deficiencies.

- F. Provide manufacturer written verification indicating seams have been probed and are watertight.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials in the manufacturer's original sealed and labeled packaging and in quantities required to allow continuity of application.
- B. Storage: Store materials out of direct exposure to the elements on pallets or dunnage at least 4 inches above ground level at location acceptable to Owner.
 - 1. Utilize tarps that cover materials to prevent moisture contamination. Remove or slit factory shrouds and/or visqueen; do not use these materials as tarps.
 - 2. Install vapor retarders under material storage areas located on the ground.
 - 3. Remove damaged or deteriorated materials from the job site.
 - 4. Store membrane rolls lying down on pallets and protected from the weather with clean canvas tarpaulins. Unvented polyethylene tarpaulins are not accepted due to the accumulation of moisture beneath the tarpaulin in certain weather conditions affecting the ease of membrane weldability.
 - 5. Store adhesives at temperatures approved for the product.
 - 6. Store flammable materials in a cool, dry area away from sparks and open flames. Follow precautions outlined on containers or supplied by material manufacturer/supplier.
 - 7. Remove damaged materials and replace at no cost to the Owner.
- C. Handling: Handle materials in such a manner as to prevent damage and contamination with moisture or foreign matter.

1.8 PROJECT CONDITIONS

- A. Do not apply roofing during precipitation. Contractor assumes responsibility for starting installation in the event there is a probability of precipitation occurring during application.
- B. Only install as much of the roofing as can be made weathertight each day, including flashing and detail work. Clean and hot air weld seams before leaving the job site that day.
- C. Schedule and execute work without exposing the interior building areas to the effects of inclement weather. Protect the building and its contents against risks.
- D. Ensure surfaces to receive insulation, membrane or flashings are dry. Provide the necessary equipment to dry the surface prior to application.
- E. Secure construction, including equipment and accessories, in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.
- F. Install uninterrupted waterstops at the end of each day's work and remove before proceeding with the next day's work. Do not allow waterstops to emit dangerous or unsafe fumes and remain in contact with the finished roof as the installation progresses. Replace contaminated membrane at no cost to the Owner.

- G. Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, provide necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas. Provide a protection layer of plywood over insulation board for roof areas that receive rooftop traffic during construction.
- H. Prior to and during application, remove dirt, debris and dust from surfaces, either by vacuuming, sweeping, blowing with compressed air and/or similar methods.
- I. Do not allow contaminants, grease, fats, oils, and solvents to come into contact with the roofing membrane. Report rooftop contamination that is anticipated or that is occurring to the Engineer and membrane manufacturer to determine the corrective steps necessary.
- J. If unusual or concealed condition is discovered; stop work and notify Engineer of such condition in writing within 24 hours.
- K. Do not install the roofing membrane under the following conditions without consulting the membrane manufacturer's technical department for precautionary steps:
 - 1. The roof assembly permits interior air to pressurize the membrane underside.
 - 2. The wall/deck intersection permits air entry into the wall flashing area.

1.9 WARRANTIES

- A. **Manufacturer's Guarantee:** Manufacturer's standard form, non-pro-rated, without monetary limitation or deductibles, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks or breaches in the primary roof membrane causing moisture to enter the substrate below (even if visible leaks are not observed inside the facility).
 - 1. Warranty Period: 20 years from date of Final Acceptance.
 - 2. Warranty to remain in effect for wind speeds up to 72 mph.
 - 3. Warranties requiring the Owner's signature are not acceptable.
 - 4. Warranty to include materials specified in this section and those specified in other sections as follows:
 - a. 07 22 16 - Roof Insulation
 - b. 07 26 13 - Self-Adhered Vapor Retarder
 - c. Polymer Clad Metal as specified in Section 07 62 00 - Sheet Metal Flashing and Trim
- B. **Contractor's Warranty: Two Year Warranty:** Manufacturer's Representative and Contractor's Representative will attend post construction field inspection no earlier than one month prior to the expiration date of the Contractor's Warranty. Submit a written report within seven (7) days of the site visit to the Engineer listing observations, conditions and recommended repairs or remedial action.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Subject to compliance with requirements herein, provide roof system from a single source. Manufacturers:
 - 1. Sika Sarnafil
 - 2. Fibertite
 - 3. Siplast

2.2 MEMBRANE MATERIALS

- A. Membrane: Thermoplastic membrane with fiberglass and/or polyester reinforcement meeting ASTM D4434/D4434M or ASTM D6754/D6754M and factory applied fleece backing. Acceptable products:
 - 1. Sika Sarnafil 60-mil G410 Feltback
 - 2. Fibertite 45-mil SM-FB
 - 3. Siplast Parasolo PVC Kee Fleeceback 60-mil
- B. Flashing/Stripping Membrane: Non fleeceback, thermoplastic membrane reinforced with fiberglass.
 - 1. Sika Sarnafil 60-mil G410
 - 2. Fibertite 45-mil SM
 - 3. Siplast Parasolo PVC Kee Smooth 60-mil
- C. Asphalt Resistant Flashing/Stripping Membrane: Thickness to match Flashing/Stripping Membrane, non fleeceback, asphalt resistant, thermoplastic membrane reinforced with fiberglass or polyester. Utilize where flashing membrane is in contact with residual asphaltic materials or as required by the manufacturer.
- D. Membrane and Flashing Membrane Color: White

2.3 ADHESIVES

- A. Membrane Adhesive: Membrane manufacturer's solvent-based adhesive.
 - 1. Sika Sarnafil Sarnacol 2170
 - 2. Fibertite FTR 290
 - 3. Siplast Parafast Adhesive T
- B. Flashing Adhesive: Membrane manufacturer's solvent-based adhesive.
 - 1. Sika Sarnafil Sarnacol 2170

2. Fibertite FTR 190e
3. Siplast Parasolo PVC Bonding Adhesive

2.4 RELATED MATERIALS

- A. Fluid Applied Flashing: Roof system manufacturer's approved, reinforced, PMMA liquid applied flashing.
 1. Sika Sarnafil Liquid Flashing
 2. Fibertite - Soprema Alsan RS
 3. Siplast Parapro 123 Flashing System
- B. T-joint Patch: Membrane manufacturer's circular patch welded over T-joints formed by overlapping thick membranes.
- C. Corner Flashing: Membrane manufacturer's pre-formed inside and outside flashing corners that are hot-air welded to membrane or polymer clad metal base flashings.
- D. Coverstrip: 8 inch wide pre-cut polyester reinforced flashing strip.
- E. Pipe Flashing: Membrane manufacturer's pre-formed pipe boot flashing that is hot-air welded to membrane and secured with a stainless-steel draw band and sealant.
- F. Termination Bar: Manufacturer's 1/8 inch by 1 inch mill finish extruded aluminum bar with pre-punched slotted holes.
- G. Lipped Termination Bar: 3/4 inch wide, extruded mill finished aluminum (6063 T6 Alloy) with 3/16 inch lip and pre-punched oval holes at 6 inches on center.
- H. Sealant: Manufacturer's multi-purpose sealant.
- I. Sealant Tape: Minimum 1/2 inch wide, non-skinning, butyl sealant tape.
- J. Primary Membrane Cleaner: High-quality solvent cleaner provided by membrane manufacturer for use as a general membrane cleaner.
- K. Pre-weld Cleaner: High-quality solvent based seam cleaner with moderate evaporation rate as recommended and provided by membrane manufacturer.
- L. Walkway Pad: Walkway pad by manufacturer of membrane.
- M. Polymer Clad Metal: Refer to Section 07 62 00 - Sheet Metal Flashing and Trim.

2.5 FASTENERS

- A. Flashing Membrane Termination Screws: #12 corrosion resistant hex or pan head screws with length to penetrate substrate a minimum of 1-1/2 inch.
- B. Concrete and Masonry Flashing Membrane Termination Anchors:
 1. 1/4-inch diameter metal-based expansion anchor with stainless steel pin of length to penetrate substrate a minimum of 1-1/2 inch.

2. Masonry screws approved by membrane manufacturer, 1/4-inch minimum diameter, corrosion resistant, with Phillips flat head. Length to provide minimum 1-1/2 inch embedment into substrate.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Inspect the surface of the insulation or substrate prior to installation of the roof membrane.
- B. Verify that the substrate is dry, clean, smooth, and free of debris, loose material, oil, grease, or other foreign matter. Remove sharp ridges and other projections and accumulations of bitumen to ensure a smooth surface before roofing.
- C. Replace broken, delaminated, wet or damaged insulation boards.
- D. Repair deteriorated substrates.
- E. Beginning installation means acceptance of prepared substrate.

3.2 PREPARATION

- A. Remove, cover or flash using compatible, approved materials substrates containing asphalt. Do not allow PVC to contact substrates containing asphalt materials.
- B. Provide necessary protection from adhesive vapors to prevent interaction with foamed plastic insulation.

3.3 MEMBRANE TERMINATION

- A. Terminate membrane at walls and curbs as shown in the contract drawings.
 1. Roof Deck: Mechanically terminated using specified fasteners and plates 6 inches on center.
 2. Wood Wall Substrate: Turn membrane up wall 1 inch and mechanically terminate using specified screws 8 inches on center with a termination bar.
 3. Concrete/Masonry Wall Substrate: Turn membrane up wall 1 inch and mechanically terminated using specified anchors 8 inches on center with a termination bar.
- B. Terminate membrane at penetrations as shown in the contract drawings.
 1. Fasten membrane 6 inches on center or a minimum of 4 fasteners per penetration into the structural deck using fasteners and plates as approved by the membrane manufacturer for the deck substrate.
- C. Extend membrane over roof edge a minimum of 2 inches below the perimeter wood blocking. If fleeceback membrane is utilized, trim membrane flush with outside edge of roof and hot-air weld a non fleeceback flashing membrane to extend over the roof edge.
- D. Provide sealant tape at base of flashing membrane on outside of wall to prevent moisture infiltration.

3.4 FLASHING INSTALLATION

A. General

1. Install flashings concurrently with the roof membrane as the job progresses.
2. Temporary flashings are not allowed.
3. Do not tape seams as temporary measure; hot-air weld seams before the end of each day.
4. Adhere flashings to compatible, dry, smooth, and solvent-resistant surfaces.
5. Where substrates are incompatible with adhesives and PVC materials, remove the incompatible materials and replace with a compatible substrate or install compatible PVC flashing materials.
6. Use caution to ensure adhesive fumes are not drawn into the building.

B. Adhesive for Flashing Membrane

1. Over the properly installed and prepared flashing substrate, apply flashing adhesive according to manufacturer's installation instructions. Apply adhesive in smooth, even coats with no gaps, globs or similar inconsistencies.
2. Press the sheet firmly in place with a hand roller to ensure bond and adhesion.
3. Do not apply adhesive in seam areas that are to be welded.

C. Mechanically terminate flashings a minimum of 8 inches above the finished roofing surface using specified method indicated in the Contract Drawings.

D. Cut and provide hot-air welded corner flashing at interior and exterior corners.

E. Hot-air weld flashings at their joints and at their connections with the roof membrane.

F. Provide additional securement for flashings that exceed 30 inches in height. Consult Manufacturer's Technical Department for securement methods.

G. At expansion joints, extend flashing membrane over joint and dip into cavity to allow for expansion.

H. Roof Drain:

1. Mechanically attach membrane 6 inches on center into structural deck around drain sump. Adhere flashing membrane and hot-air weld to membrane a minimum of 4 inches.
2. Set flashing membrane in bed of sealant under the clamping ring.
3. Refer to Section 22 14 26 - Roof Drains.

I. Soil Pipe/Pipe Penetration:

1. Provide field wrapped pipe penetration flashing or manufacturer's prefabricated pipe boot as shown in detail drawing.

2. Apply aluminum tape to penetration if asphalt contamination is present.
3. Hot-air weld horizontal flashing membrane a minimum of four inches onto the membrane.
4. Adhere vertical flashing membrane adhered to pipe penetration and extend a minimum of 1.5 inches horizontal at the base of penetration. Hot-air weld vertical flashing membrane to horizontal flashing membrane.
5. Install stainless steel draw band and sealant or hot-air weld flashing cap to terminate top edge of pipe flashing.

3.5 HOT-AIR WELDING OF SEAM OVERLAPS

A. General

1. Hot-air weld seams.
 - a. Minimum 3-inch-wide membrane overlap when automatic machine-welding.
 - b. Minimum 4-inch-wide membrane overlap when hand-welding, except for certain details.
 - c. Minimum width of hot-air weld is 1-1/2 inches.
 - d. Provide wider membrane overlaps or width of welds as required by the roof membrane manufacturer.
2. Provide welding equipment by or approved by the membrane manufacturer. Mechanics intending to use the equipment to have successfully completed a training course provided by a membrane manufacturer's technical representative prior to welding.
3. Clean and dry membrane to be hot-air welded.

B. Hand-Welding

1. Complete hand-welded seams in two stages. Allow hot-air welding equipment to warm up prior to welding.
2. Weld the back edge of the seam with a narrow but continuous weld to prevent loss of hot air during the final welding.
3. Insert nozzle into the seam at a 45-degree angle to the edge of the membrane. Once the proper welding temperature has been reached and the membrane begins to "flow," the hand roller is positioned perpendicular to the nozzle and pressed lightly. For straight seams, the 1-1/2 inch wide nozzle is recommended for use. For corners and compound connections, the 3/4 inch wide nozzle is recommended for use.

C. Machine Welding

1. Machine welded seams are achieved by the use of automatic welding equipment. When using this equipment, follow instructions from the manufacturer and local codes for electric supply, grounding and over current protection. Dedicated circuit house power or a dedicated portable generator is recommended. Do not operate other equipment off the generator.
 2. Metal tracks may be used over the deck membrane and under the machine welder to minimize or eliminate wrinkles.
- D. Quality Control of Hot-Air Welded Seams
1. Check hot-air welded seams for continuity using a rounded screwdriver. Visible evidence that welding is proceeding correctly is smoke during the welding operation, shiny membrane surfaces, and an uninterrupted flow of dark grey material from the underside of the top membrane. Provide on-site evaluation of welded seams daily and to locations as directed by the Engineer or membrane manufacturer's representative.
 2. Take 1-inch-wide cross-section samples of hot-air welded at least three times a day. Correct welds display failure from shearing of the membrane prior to separation of the weld. Patch test cut areas.

3.6 WALKWAY PAD INSTALLATION

- A. Check membrane seams that are to be covered by walkway pad with rounded screwdriver and repair deficiencies prior to walkway pad installation.
- B. Clean and dry roof membrane to receive walkway pad.
- C. Place chalk lines on sheet to indicate location of Walkway.
- D. Apply a continuous coat of membrane adhesive to the sheet and the back of walkway pad in accordance with membrane manufacturer's technical requirements and press walkway pad into place with a water-filled, foam-covered lawn roller.
- E. Clean the membrane in areas to be welded. Hot-air weld perimeter of the walkway to the roof membrane.
- F. Check welds with a rounded screwdriver. Repair deficiencies.
- G. Provide walk pads where indicated in Contract Drawings and at the following locations:
 1. Around roof hatches.
 2. At base and top of fixed wall access ladders.
 3. Around HVAC units.
 4. At door access to roof areas.

3.7 TEMPORARY CUT-OFF

- A. Install flashings concurrently with the membrane in order to maintain a watertight condition as the work progresses.

- B. When a break in the day's work occurs in the central area of the project, install a temporary watertight seal. Provide an 8-inch strip of flashing membrane welded 4 inches to the field membrane. Seal the remaining 4 inches of flashing membrane to the deck or the substrate so that water can not travel under the membrane. Seal the edge of the membrane with a continuous, heavy, 6 inch width application of pourable sealer. When work resumes, remove the contaminated membrane. Do not reuse these materials.
- C. If inclement weather occurs while a temporary water stop is in place, monitor the situation to maintain a watertight condition.
- D. If water is allowed to enter under the completed system, replace the affected area.

3.8 CLEANING

- A. Ensure trash and debris is removed from the roof daily.
- B. Keep metal scraps, nails, screws and other sharp damaging debris off of the roof membrane surface during construction.
- C. Clean off/remove excess adhesive, sealant, stains and residue on the membrane and flashing surfaces.
- D. Remove temporary coverings and masking protection from adjacent work areas upon completion.

3.9 PROTECTION

- A. Protect the roof from construction related damages during the Work.
- B. Replace damaged membrane, flashings and other membrane components. Repair in accordance with the membrane manufacturers repair instructions to comply with the specified warranty.

END OF SECTION

SECTION 07 62 00

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Sheet metal flashings and trim to provide a permanently watertight condition.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections, apply to this Section:
 - 1. Section 06 10 00 - Rough Carpentry
 - 2. Section 07 54 00 - Thermoplastic Single Ply Roofing

1.3 REFERENCE STANDARDS

- A. ANSI/SPRI/FM 4435/ES-1 - Test Standard for Edge Systems Used with Low Slope Roofing Systems; 2022.
- B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- C. NRCA (RM) - The NRCA Roofing Manual; 2024.
- D. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Shop Drawings: For any transitions and/or terminations not depicted in Contract Drawings.
- D. Test Reports: Submit test reports for edge metal indicating resistance of specified wind uplift pressures.
- E. Color Charts:
 - 1. Pre-finished Sheet Metal
 - 2. Polymer Clad Sheet Metal
 - 3. Sealants

1.5 MOCK-UPS

- A. Provide mock-ups of the following sheet metal components prior to fabrication of the components:
 - 1. Coping: Provide minimum 10-foot length of coping mock-up including applicable fascia covers. Include at least one seam of the configuration specified.
 - 2. Gutter: Provide mock-up of gutter, gutter bracket and gutter hanger. Include one lap in gutter section.
 - 3. Metal Edge and Fascia Cover: Provide minimum 10-foot length of gravel stop/metal edge and fascia cover. Include at least one lap of each component.

1.6 QUALITY ASSURANCE

- A. Install in accordance with the Contract Drawings.
- B. Ensure work is free of leaks.
- C. Provide metal edge and coping fabricated and tested in accordance with ANSI/SPRI/FM 4435/ES-1 to resist the specified wind uplift pressures.
 - 1. Fabricate metal edge and coping as shown in Contract Drawings and following NRCA (RM) tested details.
- D. Provide sheet metal flashing and trim in accordance with SMACNA (ASMM).
- E. Provide first-class workmanship. Assemble and secure sheet metal work in accordance with these specifications, roof system manufacturer's requirements and referenced standards.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.
- B. Storage: Store materials within areas designated by the Owner. Ensure materials remain dry, covered and not in contact with the ground.
- C. Handling: Handle material in such manner as to preclude damage and contamination with moisture or foreign matter.

1.8 PROJECT CONDITIONS

- A. Environmental: Protect building and its components from the elements.
- B. Coordination and Scheduling: Coordinate phases of work to allow continuity of work without delays.

1.9 WARRANTY

- A. Provide pre-finished sheet metal manufacturer's thirty (30) year finish warranty from the date of Final Acceptance.
- B. Provide certification of air-dried kynar paint or powder coating for specified materials.

PART 2 PRODUCTS

2.1 PRIMARY SHEET METAL

A. Material: Pre-finished Galvalume

1. 24-gauge, galvalume coated steel meeting or exceeding AZ50 per ASTM A792. Manufacturer's smooth finish, pre-finished color coatings consisting of 70% Kynar 500 fluorocarbon (Polyvinylidene Fluoride PVF2) coating over a urethane primer on the finish side, with primer and a wash coat on the reverse. Measurements per NCCA Technical Bulletin II-4 or ASTM D1005. Protect the finish during fabrication and installation with a strippable plastic film. Manufacturer's standard color selected by Owner.

B. Components:

1. Slip Flashing
2. Receiver Flashing
3. Counterflashing
4. Coping
5. Fascia Cover
6. Metal Edge
7. Crimped On Metal Edge
8. Gutter
9. Conductor Head
10. Scupper Face Plate
11. Downspouts
12. Continuous Cleat (use one gauge thicker than primary sheet metal): 22-gauge, galvalume coated steel

2.2 ALUMINUM

A. ASTM B209 Aluminum Alloy Sheet and Plate, alloy and temper 3003-H14:

1. Gutter Bracket: 1/4 inch x 2 inches
2. Gutter Spacer: 1/16 inch x 1 inch
3. Downspout Hanger: 1/16 inch x 1 inch

2.3 STAINLESS STEEL FLASHINGS

A. 26-gauge, Type 304 as tested in accordance with ASTM A 167.

1. Watertight Umbrella
- B. Compression Bar: 1/4-inch x 1.5 inches, stainless steel, flat bar.

2.4 POLYMER CLAD METAL

- A. Heat-weldable, 24 gauge, AISI G90 galvanized steel sheet with an unsupported 20-mil thermoplastic membrane coating to match the flashing membrane composition laminated on one side, manufactured by, and included in the roof membrane manufacturer's warranty. Color selected by Owner.
1. Flange/Sleeve
 2. Drip Edge
 3. Scupper Liner
 4. Base Flashing Closure

2.5 FASTENERS

- A. Roofing Nails: Minimum 12-gauge stainless steel ring shank roofing nails with diamond point, minimum 3/8 inch diameter head and length as required to penetrate substrate a minimum of 1-1/4 inches.
- B. Screws:
1. Sheet metal to wood attachment (exposed): #12 stainless steel, 5/16 HWH with length to penetrate substrate a minimum of 1-1/2 inches. Provide with bonded EPDM washer or washer specified below. Factory painted heads to match the sheet metal color.
 2. Sheet metal to wood attachment (concealed): #10 stainless steel, low profile pancake head with length to penetrate substrate a minimum of 1-1/2 inches.
 3. Sheet metal to sheet metal attachment (exposed): 1/4 inch x 7/8 inch carbon steel, self-drilling point, self-tapping, zinc alloy hex head screws with bonded EPDM tubular washer under head of fastener; screw heads to match color of wall panel by means of factory applied coating. Factory painted heads to match the sheet metal color.
 4. Sheet metal to light gauge steel attachment (concealed): #14-13 DP1 stainless-steel low-profile pancake head of length as required for three threads to penetrate metal substrate or min. 1 inch penetration through wood substrates.
- C. Concrete and Masonry Anchors: 1/4 inch diameter metal-based expansion anchor with stainless steel pin of length to penetrate substrate a minimum of 1-1/2 inches. Factory painted heads to match the sheet metal color.
- D. Washers: Stainless steel with neoprene gasket backing.
1. 9/16 inch diameter for use with #12 screws
 2. 5/8 inch diameter for use with 1/4 inch diameter concrete and masonry anchors.

- E. Rivets: #44 stainless steel rivets with stainless steel mandrel and factory painted head to match adjacent sheet metal. Length to properly fasten particular sheet metal components.

2.6 RELATED MATERIALS

- A. Sheet Metal Underlayment: 40-mil minimum thickness sheet; slip-resistant surfacing, polyethylene-film-reinforced top surface laminated to SBS-modified asphalt adhesive, with release paper backing; suitable for high temperature applications up to 250 degrees. Acceptable products include:
 - 1. Mid-States Asphalt Quik-Stick HT
 - 2. Grace Ice and Water Shield HT
 - 3. Carlisle WIP 300 HT
 - 4. Petersen PAC-CLAD HT
- B. Sealants:
 - 1. Silicone Sealant: One-component, non-sag, neutral cure, low-modulus, UV resistant, high performance silicone sealant meeting ASTM C920, Type S, Grade NS, Class 100/50, Use NT, M, G, A or O. Color to match sheet metal color selected by Owner. Acceptable Manufacturers include:
 - a. Dow 790 Building Sealant
 - b. Pecora 890 NST Silicone
 - c. Sikasil-WS 290
 - d. Triangle Fastener Corporation Ultra 1000
 - 2. Sealant Tape: Minimum 1/2 inch wide, non-skinning, butyl sealant tape.
 - 3. Butyl Sealant: Gun grade, non-skinning, non-hardening, flexible blend of butyl rubber and polyisobutylene sealant.
 - 4. Backer Rod: Closed-cell polyethylene or polyurethane rods sized approximately 25% larger than joint opening.
- C. Aluminum Tape: Pressure-sensitive, 2 inch wide aluminum tape used as a separation layer between small areas of asphalt contamination and the membrane and as bond breaker under the metal edge cover plates.
- D. Solder: 80-20 lead-TIN alloy conforming to ASTM B32.
- E. Flux: Muriatic acid killed with zinc or an accepted brand of commercial soldering flux designed for use with 80-20 solder.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Coordinate with other work for correct sequencing of items.

- B. Ensure substrates are installed, secured and modified to accommodate sheet metal flashings.
- C. Report deficiencies associated with the sheet metal substrates to Engineer before beginning sheet metal work. Correct deficiencies before installing sheet metal flashings.

3.2 INSTALLATION

A. General:

1. Lock and seal joints of pre-finished sheet metal.
2. Solder joints of stainless steel flashings.
3. Provide for thermal movement (expansion and contraction) of sheet metal.
4. Where dissimilar metals contact, prevent galvanic action by means of heavy coat of asphalt primer or separate with sheet metal underlayment.
5. Prime sheet metal surfaces (top and bottom) to receive bituminous materials. Allow primer to dry before application of bituminous materials.
6. Install metal flanges on top of membrane, adhere and fasten as indicated in detail drawings, specified herein, and in accordance with membrane manufacturer's requirements.
7. Provide uniform sheet metal sections with corners, joints and angles mitered, sealed and secured.
8. Hem (return) exposed edges for strength and appearance.
9. Fit sheet metal close and neat.
10. Provide cleats or stiffeners and other reinforcements to make sections rigid and substantial.
11. Fabricate, support, cleat, fasten and join sheet metal to prevent warping, "oil canning", and buckling.

B. Sheet Metal Laps (unless otherwise indicated):

1. Notch and lap ends of adjoining sheet metal sections not less than 4 inches; apply sealant tape or two bead of butyl sealant between sections.
2. Lap miters at corners a minimum of 1 inch and apply sealant between laps. Rivet at 2 inches on center.

C. Polymer Clad Sheet Metal:

1. Secure flanges of polymer clad sheet metal into roof deck at 12 inches on center.
2. Sheet Metal Laps:
 - a. Leave a 1/4 inch opening between sheet metal sections.
 - b. Center aluminum tape over joint opening.

- c. Hot-air weld 4-inch wide strip of stripping membrane over joint.
 - d. At inside and outside corners, lap miters a minimum of 1 inch and rivet at 2 inches on center; strip in with 4-inch wide strip of stripping membrane over joint.
- D. Sheet Metal Underlayment:
 - 1. Adhere to substrates where indicated in Contract Drawings.
 - 2. Lap adjoining sections a minimum of 3 inches and seal to ensure a redundant layer of moisture protection behind sheet metal
 - 3. Extend beyond wood blocking a minimum of 1 inch at roof edges, parapet walls and curbs.
 - 4. Install concurrently with roof membrane and flashing installation. Temporary weather protection utilizing other materials is not acceptable when sheet metal underlayment is specified.
 - 5. At expansion joints, dip into cavity to allow for expansion.
- E. Fasteners:
 - 1. Size and type required.
 - 2. Fasteners compatible with materials being joined.
 - 3. Exposed Fasteners:
 - a. Install screws with 5/16-inch predrilled, oversized holes.
 - b. Install Concrete and Masonry Anchors with 11/32-inch predrilled, oversized holes.
 - c. Exposed horizontal surface fasteners are not acceptable.
- F. Flange/Sleeve
 - 1. Fabricate flange/sleeve as shown in detail drawings and to fit tightly to pipe penetration.
 - 2. Provide hot-air welded stripping membrane over seams.
 - 3. Strip in flange as specified.
- G. Watertight Umbrella:
 - 1. Fabricate watertight umbrellas as shown in detail drawings. Refer to SMACNA (ASMM) Figure 8-9C.
 - 2. Install watertight umbrella with stainless steel draw band and sealant properly tooled to ensure adhesion and slope to shed water.
 - 3. Vertical leg of umbrella flashing to extend a minimum of 2 inches below the sleeve top and be positioned as low as possible on the sleeve.

4. Clean and solder seams.
- H. Slip Flashing:
1. Fabricate at curbs as shown in detail drawings in 10 foot lengths.
 2. Extend a minimum of 2 inches below base flashing termination and fit tightly against curb.
 3. Secure at 12 inches on center of a minimum of two fasteners per side of the curb. If slip flashing is located within Corner (Zone 3) secure at 6 inches on center maximum.
- I. Receiver Flashing:
1. Fabricate receiver flashing as shown in detail drawings in 10 foot lengths.
 2. Attachment:
 - a. Install receiver flashing surface mounted at 12 inches on center. If receiver flashing is located within Corner (Zone 3) secure at 6 inches on center maximum.
 3. Install sealant properly tooled to ensure adhesion and slope to shed water.
- J. Counterflashing:
1. Fabricate counterflashing as shown in detail drawings in 10 foot lengths.
 2. Install counterflashing as indicated in detail drawings and secure to receiver flashing 12 inches on center. If counter flashing is located within Corner (Zone 3) secure at 6 inches on center maximum.
 3. Stagger receiver anchors with counter flashing fasteners.
 4. Extend counter flashing a minimum of 1.5 inches below base flashing termination.
- K. Fascia Cover:
1. Provide fascia cover secured to wood blocking 12 inches on center where indicated in detail drawings.
 2. Lock fascia cover onto continuous cleat if present and hand tong metal edge onto continuous cleat.
- L. Coping:
1. Fabricate coping in 10 foot lengths. Fabricate coping a maximum of 1/2 inch wider than the width of the wall; field verify parapet wall width prior to sheet metal fabrication.
 2. Install continuous cleat fastened to substrate 6 inches on center in vertical leg. Locate fasteners no greater than 2 inches from the bottom hem.

3. Lock outside face of coping onto continuous cleat and secure inside face as follows:
 - a. For coping widths up to and including 12 inches, secure with screws through waterproof washers and oversized holes at 18 inches on center.
 - b. For coping widths greater than 12 inches, secure inside face with continuous cleats. Secure cleat through vertical face of cleat to blocking with fasteners at 6 inches on center. Locate fasteners no greater than 2 inches from the bottom hem.
4. Coping Seams: Provide drive seam at adjoining coping sections. Turn cover ends back a minimum of 1 inch onto itself. Allow 1/4 inch space between coping sections for expansion and contraction and install sealant. Refer to SMACNA (ASMM) Figure 3-2, Type 4
5. Provide one-piece coping section at corners, four-way intersections and tee intersections. Locate joints within 24 inches from inside corner.
6. Turn coping ends up a minimum of 2 inches at elevation walls and cover termination with surface mounted counterflashing.

M. Through Wall Scupper:

1. Fabricate scupper flange, liner, and faceplate as shown in detail drawings. Scuppers dimensions as indicated in the Contract Drawings with flange extending a minimum of 4 inches on top and sides of scupper and extends a minimum of 4 inches onto the horizontal membrane.
2. Strip in scupper liner as specified.
3. Provide faceplate which extends 1.5 inches around the scupper and secure to wall substrate 12 inches on center with minimum of four fasteners (one in each corner). Set faceplate in a bead of sealant.
4. Extend scupper liner 1 inch beyond the exterior wall face and lock onto faceplate.

N. Conductor Heads:

1. Fabricate collector heads as shown in detail drawings. Refer to SMACNA (ASMM) Figure 1-25F.
2. Set front edge of collector head 1 inch below scupper.
3. Seal and pop rivet joints. Install beads of sealant inside conductor head at seams and rivets.
4. Lock back edge of conductor head on to through-wall scupper. Refer to SMACNA (ASMM) Figure 1-26A.

O. Metal Edge:

1. Fabricate metal edge as shown in detail drawings in 10 foot lengths. Refer to SMACNA (ASMM) Figure 2-1 except for continuous cleat dimensions as shown in Contract Drawings.

- a. Fabricate with 1/2-inch vertical gravel stop at drainage edges and 1-inch vertical gravel stop at non-drainage edges.
 2. Install continuous cleat as indicated in detail drawings fastened to substrate 6" on center. Locate fasteners no greater than 1-3/4 inch from the break at the bottom hem.
 3. Lock metal edge onto continuous cleat and secure flange of metal edge to wood blocking 3 inches on center staggered with first row 1 inch from edge of flange and second row offset 1/2 inch from first row.
 4. Leave a 1/4 inch opening between metal edge sections. Center cover plates over opening, set in roof cement, and install two nails through the center of the cover plate between metal edge sections. Refer to SMACNA (ASMM) Figure 2-5A.
 5. Strip-in flange of metal edge as specified.
 6. Hand tong metal edge onto continuous cleat.
- P. Crimped On Metal Edge:
1. Fabricate metal edge and continuous cleat as shown in detail drawings in 8 foot or 10 foot lengths.
 2. Terminate membrane at roof edge and hot-air weld flashing membrane strip to extend down the outside vertical face over the wall.
 3. Install a continuous cleat as indicated in detail drawings fastened to substrate 6 inches on center in vertical face and secure flange of metal edge to wood blocking 3 inches on center staggered with first row 1 inch from edge of flange and second row offset 1/2 inch from first row. Locate fasteners no greater than 1-3/4 inch from the break at the bottom hem.
 4. Strip flange of continuous cleat as specified.
 5. Lock metal edge onto continuous cleat crimp as shown.
 6. Hand tong metal edge onto continuous cleat.
 7. Metal Edge Joints:
 - a. Leave a 1/4 inch opening between metal edge sections.
 - b. Center 6-inch minimum width cover plate over or back-up plate under joint opening.
 - c. Set cover plate in butyl sealant tape on each side of joint.
- Q. Drip Edge:
1. Fabricate drip edge as shown in detail drawings in 10 foot lengths. Refer to SMACNA (ASMM) Figure 2-1 except for continuous cleat dimensions as shown in Contract Drawings.

2. Secure flange of drip edge to wood blocking 3 inches on center staggered with first row 1 inch from edge of flange and second row offset 1/2 inch from first row.
3. Strip flange of metal edge as specified.
4. Hand tong metal edge onto continuous cleat.
5. Metal Edge Joints:
 - a. Leave a 1/4 inch opening between metal edge sections. Install two roofing nails in the end of the flange, and one roofing nail in the end of the vertical face of each metal edge section.
 - b. Center aluminum tape over joint opening (flange and face).
 - c. Hot-air weld 4-inch wide strip of stripping membrane over joint.
 - d. Strip in flange of metal edge as described above.
 - e. Center 6-inch wide cover plate over joint locking onto notched drip edges of metal edge sections. Refer to SMACNA (ASMM) Figure 2-5A, and Figure 2-5, Detail 1.
 - f. Strip flange of cover plate with hot-air welded flashing membrane. Extend flashing membrane 2 inches beyond the cover plate flange on 3 interior sides.

R. Gutters:

1. Fabricate to profile shown in Contract Drawings. Refer to SMACNA (ASMM) Figure 1.2 Style D.
2. Gutters continuous, roll formed from coil stock on site or formed in 10 foot lengths.
 - a. Lap joints in gutters a minimum of 1 inch, riveted 1 inch on center. Install sealant tape between gutter sections and sealant at exposed inside edge and on rivets. Lap joints in the direction of water flow.
3. Provide butt type expansion joints in gutters at spacing appropriate for the type material used to fabricate gutters. Refer to SMACNA Architectural Sheet Metal Manual Figure 1-7. Maximum length of gutter between expansion joints is 50 feet.
4. Provide downspout outlet tubes in downspout locations. Refer to SMACNA (ASMM) Figure 1-33B and Detail 1. Tab gutter outlet tubes a minimum of 1 inch, set in a bead of sealant and secure to gutter with a minimum of two rivets per tab.
5. Provide coated gutter brackets and spacers as shown in detail drawings by air dried kynar paint or powder coated to match sheet metal finish color. Provide certification delivered to site with materials indicating method of finish utilized.
 - a. Evenly stagger the placement of brackets and spacers. Space brackets and spacers 30 inches on center, staggered.

- b. Rivet spacers to both sides of the gutter only.
 - c. Secure brackets to wood blocking with two fasteners.
 - 6. Fabricate gutter with leading edge 1 inch below the back edge as shown in detail drawing.
 - 7. Hang gutters level.
- S. Downspouts:
 - 1. Fabricate downspouts in 10 foot lengths. Refer to SMACNA (ASMM) Figure 1-32B.
 - 2. Paint hangers with air dried kynar painted or powder coat to match sheet metal finish of downspouts.
 - 3. Secure downspout to the structure with two-piece hangers spaced no more than 8 foot apart with a minimum of two hangers per downspout with a hanger located within 12 inches from bottom. Refer to SMACNA (ASMM) Figure 1-35H.
 - 4. Fashion downspouts to run back to (at overhangs) and be parallel to the facility walls.
 - 5. Where downspouts discharge onto lower adjacent roof areas, provide splash pans at discharge as specified below. Provide discharge elbow at the base of downspout where it kicks out onto splash pan.
 - 6. Tie downspouts into below grade storm drainage system if present.
 - a. Provide square to round transition to tie into below grade system as necessary.
 - 7. If below grade storm drainage system is not present, kick-out downspouts above grade onto concrete splash blocks. Fill in soil to provide slope away from building.
- T. Base Flashing Closure:
 - 1. Install closures where base flashings abruptly end.
 - 2. Hot-air weld joints watertight.
 - 3. Install closures over membrane and under finish ply of base flashing.
 - 4. Extend closures up under counterflashings or copings.
 - 5. Install closures to seal ends of base flashings, membrane and cants as well as end joints of edge metal.

3.3 CLEANING AND PROTECTION

- A. Clean sheet metal work of asphalt, flux, scrapes and dust.

B. Replace sheet metal components with scratches through the metal finish.

END OF SECTION

SECTION 07 92 00

ELASTOMERIC JOINT SEALANTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Replace joint sealants at concrete cornice to include removal of materials, preparation of joints, priming of substrate as determined from sample adhesion tests, installation of backer-rod or tape to prevent 3-sided adhesion, and providing specified sealant properly tooled to ensure adhesion (Alternate No. 6).

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections, apply to this Section:
 - 1. Section 04 05 00 - Mortar and Grout
 - 2. Section 08 41 13 - Aluminum-Framed Storefront

1.3 REFERENCE STANDARDS

- A. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- B. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).
- C. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2022.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Samples for Verification: Provide Manufacturer's standard color selection for Owner's approval. Provide physical sample of preselected color(s) for final approval of color by Owner before installation.
- D. Compatibility and Adhesion Test Reports: Submit Manufacturer's letters indicating substrate samples have been tested for adhesion and compatibility. Include surface preparation methods along with primer requirements for the substrates tested.
- E. Non-Stain Testing: Provide certification for silicone joint sealants indicating completion of stain testing in compliance with ASTM C1248 for non-fluid-staining results on porous surfaces, concrete, granite and marble.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications:
1. Minimum of 5 years successful experience in building envelope restoration with the application of elastomeric joint sealants on projects of similar type and nature.
 2. Approved by Sealant Manufacturer.
- B. Manufacturer's Field Services: During construction and until Final Acceptance, perform monthly quality assurance site visits by manufacturer's technical representative to ensure materials are being properly installed and as required to obtain the specified warranty.
1. Manufacturer present during the field mock-up phase and testing.
 2. Coordinate site visits with Engineer. Submit reports of findings within one week of inspection. Payment applications will be rejected until applicable reports are received.
 3. Inspections to be performed by an employee of the selected manufacturer that is assigned full time to their technical services department. Sales personnel are not acceptable for this function.
 4. Manufacturer's final inspections performed only with REI personnel in attendance. A minimum of seven days' written notice is required. Repeat manufacturer's final inspection conducted without REI personnel in attendance at no additional cost to the Owner.
- C. Source Limitations: Obtain joint sealants, related structural glazing sealant or related elastomeric coatings and joint sealant primers through one source from a single Manufacturer.
- D. Field Mock-up:
1. Before caulking work begins, prepare for caulking three 3 joints, each approximately 48 inches long, in each type material to be caulked. Treat joints as hereinafter specified as to preparation. After the joint preparation has been observed by the Engineer, Sealant Manufacturer, and the Contractor, caulk the joints and allow to reach final cure.
 2. After final cure, obtain samples and test for appropriateness of preparation, installation and for adhesion of sealant to substrate. Test completed by manufacturer.
 3. After the manufacturer's representative has observed the on-site job preparation and sealant application for the test areas, and after the material has been tested for appropriateness of use and field condition compliance with the specifications, present to the Engineer a certification that the sealant material is in compliance with the specifications and that field conditions tests confirm that the sealant material is appropriate and suitable for the intended use. Completed by manufacturer.
 4. Do not begin work on the project until approved field tests have been accepted by the Engineer.

- E. During the progress of the work, after material has received final cure, hand pull test in accordance with procedures as published by SWRI, perform in the presence of the Engineer. Perform tests at random times in random areas selected by the Engineer. Repair test areas at no additional charge to the owner.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials in the manufacturer's original sealed and labeled containers and cartons.
- B. Storage. Store materials out of direct exposure to the elements, located above standing water at least 4 inches above ground level. Place non-sweating tarpaulins to prevent moisture contamination.
- C. Sealants are heat and moisture sensitive; protect from excessive heat exposure and moisture exposure.
- D. Do not allow sealants to be exposed to prolonged freezing temperatures.
- E. Shelf Life: Do not use products over 9 months old unless Manufacturer's published literature allow. Document product self-life information, and check expiration date before use.
- F. Handling: Handle material to prevent exposure to moisture. During cold temperatures (less than 40°F) store containers at room temperature for 24 hours.

1.7 PROJECT CONDITIONS

- A. Do not apply sealant during precipitation or start in the event there is a probability of precipitation during the application. Forecasted conditions to be dry for no less than 24 hours after application
- B. Ensure sealant Manufacturer's published requirements are followed, including the following general limitations for sealants:
 - 1. Do not apply polyurethane sealants to uncured silicone sealants, or install adjacent to uncured silicone.
 - 2. Do not allow uncured polyurethane sealant to come in contact with alcohol-based sealants, butyl sealants, acrylic sealants or other incompatible materials.
 - 3. Do not allow uncured polyurethane sealant to come in contact with oil-based caulking/sealants, oil, asphalt, polysulfides, or fillers impregnated with oil, asphalt or tar.
 - 4. Do not install sealant on damp substrates.
 - 5. Do not install where sealant where continually immersed in water.
 - 6. Do not apply sealant to "green" treated lumber.
 - 7. Prime masonry, stainless steel, copper, galvanized steel and pre-finished metal with sealant Manufacturer's approved primer. Refer to specified primers.
 - 8. Follow Manufacturer's published precautions.

- C. Do not install more sealant than can cure for 24 hours before precipitation.

1.8 WARRANTY

- A. Material Manufacturer's Warranty:
 - 1. Guarantee material to meet or to exceed the properties specified within this section of the specifications and agree to replace products found defective.
 - 2. Silicone Sealant: 20 year period beginning at date of Final Acceptance of the work.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Silicone Sealant Components:
 - 1. Silicone Sealant: One-component, non-sag, neutral cure, low-modulus, UV resistant, high performance silicone sealant for high movement expansions and control joints meeting AASTM C920, Type S, Grade NS, Class 100/50, Use NT, M, G, A or O. Color chosen by Owner from manufacturer's standard color chart and approved by Owner in advance of application. Acceptable Manufacturers include:
 - a. Dow 790 Building Sealant
 - b. Pecora 890 NST Silicone
 - c. Sikasil-WS 290
 - d. Tremco Spectrum 1
 - e. GE Silicone SilPruf SCS2700 LM
 - 2. Silicone Sealant (Glazing): One-component, non-sag, neutral cure, low-modulus, UV resistant, high performance silicone sealant for high movement expansions and control joints meeting ASTM C920, Type S, Grade NS, Class 50, Use NT, M, G, A or O. Color chosen by Owner from manufacturer's standard color chart and approved by Owner in advance of application. Acceptable Manufacturers include:
 - a. Dow 795 Building Sealant
 - b. Pecora 895 NST Silicone
 - c. Sikasil-WS 295
 - d. Tremco Spectrum 2
 - e. GE Silicone SilPruf SCS2000
 - 3. Primer: Primer manufactured and recommended by Sealant Manufacturer. Consult sealant Manufacturer's published literature for specific substrate and primer types.

4. Backer Rod: Open-cell polyurethane backer-rod or soft polyethylene backer-rod as recommended by sealant Manufacture sized 25% greater than joint for tight fitting compression in the joint.
5. Bond-breaker Tape: Polyethylene strip or tape, as recommended by or supplied by the sealant Manufacturer to prevent 3-sided bond in joints.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Site Verification of Conditions: Inspect joints indicated for restoration and verify joint substrate conditions are acceptable for installation in accordance with sealant Manufacturer's instructions. Correct unsatisfactory conditions before installing sealants.
 1. Determine acceptable removal techniques for contaminants, dust, dirt, grease, oils, curing compounds, form release agents, laitance and waterproofing film or over-spray coatings which are harmful to sealant performance.
 2. Surface Defects and Repairs: Identify contaminants in substrates that are harmful to system performance. Allow substrates or repaired surface defects to cure per manufacturer's recommendations.
- B. Commencement of work signifies acceptance of substrate. Correct defects in work resulting from accepted substrates at no additional expense to the Owner.

3.2 PREPARATION

- A. Protect adjacent work areas and finished surfaces from damage during joint sealant installation.
- B. Prior to installation, remove joint sealant materials and clean substrates of substances that impair the bond of joint sealants. Remove joint sealant residue.
- C. Remove rusting or scaling surfaces using abrasive cleaning methods as recommended by joint sealant Manufacturer prior to joint sealant installation.
- D. Remove and neutralize efflorescence, mold, mildew and algae prior to joint sealant installation.
- E. Clean and prepare joint surfaces before installing joint sealants. Clean and dry surfaces of frost and dust.
 1. Clean porous joint surfaces by using heavy-duty brushing, light abrasive, mechanical abrading or combination of these methods to produce a clean, sound surface for optimum bond with joint sealants per manufacturer's recommendations. Provide dry, dust-free and cleaned substrate for optimum results.
 2. Clean non-porous surfaces using the two-cloth solvent wipe method as referenced in ASTM C1193 and outlined by joint sealant manufacturer's instruction. IPA (isopropyl alcohol) is not a degreasing solvent; utilize for non-porous joint cleaning and preparation. Use xylene, toluene or MEK for degreasing solvent and general cleaning of non-porous surfaces. Follow applicable precautions associated with solvents.

- F. Coordinate cleaning, priming and installation to avoid contamination of wet, freshly coated or on adjacent finished surfaces.
- G. Prepare finish-coated surfaces in accordance with joint sealant Manufacturer's specific recommendations.

3.3 INSTALLATION

- A. Comply with joint sealant Manufacturer's written installation instructions for products, primers and applications.
- B. Mix two components per manufacturer's recommendations.
- C. Apply joint sealants for continuous waterproof sealant joint protection. Lap vertical joints over horizontal joints as recommended by sealant Manufacturer. Comply with installation recommendations in ASTM C1193 for use of joint sealants as applicable to each specific sealant installation.
- D. Install sealant primers when recommended by sealant Manufacturer and demonstrated at pre-construction tests after joint surface preparation has been completed and when surfaces are verified as clean and dry.
 - 1. Apply sealant Manufacturer's primer per Manufacturer's instructions.
 - 2. Follow Manufacturer's specific safety, health and environmental recommendations per most recent Material Safety Data Sheets, technical bulletins and instructions. Handle solvents in compliance with applicable EPA, OSHA and VOC requirements regarding health/safety standards.
 - 3. Allow primer installation to dry or cure prior to installation of backing or joint sealants.
- E. Install joint sealant backings of type and size required.
 - 1. Avoid gaps, twisting, stretching or puncturing joint sealant backing materials. Place backing materials into joint opening using a gauge or roller-tool designed to provide the appropriate uniform depth allowing optimum sealant profile, sealant coverage and long-term joint sealant performance.
 - 2. Install bond-breaker tape behind sealant joints where sealant backings are not feasible and to avoid 3-sided adhesion at backside of sealant joint.
 - 3. Use masking tape to protect adjacent finished surfaces prior to joint sealant installation.
- F. Install joint sealants in accordance with joint sealant Manufacturer's instructions using proven techniques that comply with the following and in proper sequence with installation of joint backings.
 - 1. Using proper joint sealant dispensing equipment, place sealants by pushing sealant beads into opening to wet-out joint sealant substrates. Fill sealant joint opening to proper configuration.
 - 2. Install, providing uniform cross-sectional shapes and depths in relation to joint width for optimum sealant movement capability per joint sealant manufacturer's instructions.

- G. Tool non-sag joint sealant installations. After placing fresh sealants and before skinning or curing begins, tool sealants using metal spatulas designed for this purpose in accordance with sealant Manufacturer's recommendation. Tool to form a smooth, uniform sealant finish, eliminating air pockets and ensuring good contact for optimum joint sealant adhesion within each side of the joint opening.
 - 1. Provide concave joint configuration as indicated per figure 8-A in ASTM C1193 unless otherwise indicated for the project. Wet tooling of joint sealants is not permitted.
 - 2. Remove excess sealant from surfaces adjacent to joint openings using metal spatula, promptly cleaning sealant residue from adjacent finished surfaces. Remove masking after joint sealant is installed.
- H. Allow joint sealants to cure for a minimum of 7 days before adhesion testing is performed as recommended by joint sealant Manufacturer for field-testing.
- I. Match approved sealant mock-up for color, finish and overall aesthetics. Remove, refinish or re-install work not in compliance with the Contract Documents.

3.4 FIELD QUALITY CONTROL

- A. Where required above, ensure Manufacturer's field service is provided consisting of site visits at the start of the project, during application, and upon completion of the project.
- B. Field-Adhesion Testing: keep daily log of sealant installation recording self-performed field-adhesion testing at each elevation of the project and as follows:
 - 1. Document and perform field-adhesion testing in accordance with Manufacturer's recommended field-adhesion testing to qualify for joint sealant Manufacturer's Warranty.
 - 2. Perform 5 field-adhesion tests for the first 1000 lineal feet and one test in each 1000 lineal feet of sealant joint length thereafter. When the sealant is used to weatherseal between two (2) dissimilar substrates, individually test the sealant adhesion to each side of the joint.
 - 3. Field test joint sealants in accordance with Method A, Field-Applied Sealant Joint Hand-Pull Tab, in Appendix X-1 in ASTM C1193 and in compliance with Manufacturer's specific recommendations.
 - 4. In compliance with joint sealant manufacturer, joint sealants tested and not indicating adhesive failure within the substrates are considered satisfactory results. For joint sealants that fail to adhere to the substrate, clean, re-install and then re-test until satisfactory results are obtained.
- C. The Engineer and Owner reserves the right to complete recommended testing required by the Manufacturer at completion of work to ensure warranty requirements and contract compliance are met.

3.5 PROTECTION

- A. Protect installed sealants during and after final curing from damage resulting during construction. Replace damaged joint sealants.

3.6 CLEANING

- A. Clean off/remove excess sealant or sealant residue adjacent to joint sealant installations as the work progresses by methods approved by joint sealant Manufacturer. Do not damage adjacent surfaces with harmful removal techniques and protect finished surfaces beyond those that have been masked.
- B. Remove temporary coverings and masking protection from adjacent work areas upon completion. Remove construction debris from the project site on a planned and regular basis.

END OF SECTION

SECTION 08 11 14

HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Hollow metal doors and frames.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections, apply to this Section:
 - 1. Section 04 05 00 - Mortar and Grout
 - 2. Section 07 92 00 - Elastomeric Joint Sealants

1.3 REFERENCE STANDARDS

- A. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2022.
- B. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2020.
- C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.
- D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2020.
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.
- F. ASTM A924/A924M - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process; 2022a.
- G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2021a.
- H. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus; 2019.
- I. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- J. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.
- K. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2022.

- L. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.
- M. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2023.
- N. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- O. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Shop Drawings:
 - 1. Elevations of each door design.
 - 2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
 - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 - 4. Locations of reinforcement and preparations for hardware.
 - 5. Details of anchorages, joints, field splices, and connections.
 - 6. Details of accessories.
 - 7. Details of moldings, removable stops, and glazing.
 - 8. Details of conduit and preparations for power, signal, and control systems.
- D. Door hardware supplier shall furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Provide hollow metal doors and frames from an SDI Certified manufacturer.
- B. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.
- C. Quality Standard: In addition to requirements specified, furnish SDI-Certified manufacturer products that comply with ANSI/SDI A250.8.

- D. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing according to UL 10C or NFPA 252 at positive pressure (neutral pressure at 40 inches above sill).
 - 1. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction labels certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.
 - 2. Temperature-Rise Limit: Where indicated, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.
 - 3. Smoke Control Door Assemblies: Comply with UL 1784 and NFPA 105.
 - a. Smoke "S" Label: Doors to bear "S" label and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.
- E. Energy Efficient Exterior Openings: Comply with minimum thermal ratings, based on ASTM C1363. Openings to be fabricated and tested as fully operable, thermal insulating door and frame assemblies.
 - 1. Thermal Performance (Exterior Openings): Independent testing laboratory certification for exterior door assemblies being tested in accordance with ASTM C1363 and meet or exceed the following requirements:
 - a. Door Assembly Operable U-Factor and R-Value Ratings: U-Factor 0.395, R-Value 2.53, including insulated door, thermal-break frame and threshold.
 - 2. Air Infiltration (Exterior Openings): Independent testing laboratory certification for exterior door assemblies being tested in accordance with ASTM E283/E283M to meet or exceed the following requirements:
 - a. Rate of leakage of the door assembly shall not exceed 0.25 cfm per square foot of static differential air pressure of 1.567 psf (equivalent to 25 mph wind velocity).

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.
 - 1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.8 COORDINATION

- A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers:
 - 1. Ceco Door.
 - 2. Curries.
 - 3. Deansteel Manufacturing Co.
 - 4. DCI Hollow Metal.
 - 5. Hollow Metal Xpress.
 - 6. Mesker Door, Inc.
 - 7. MPI.
 - 8. Pioneer Industries, Inc.
 - 9. Premier Steel Doors and Frames.
 - 10. Republic Doors & Frames.
 - 11. Security Metal Products Corp.
 - 12. Steelcraft.

2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.
- C. Frame Anchors: ASTM A653/A653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

2.3 HOLLOW METAL DOORS

- A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8.
- B. Exterior Doors (Energy Efficient): Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A924/A924M A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model, and ANSI/SDI A250.4 for physical performance level.
1. Design: Flush panel.
 2. Core Construction: Foamed in place polyurethane and steel reinforced core with no stiffener face welds.
 - a. Provide 18 gauge steel vertical reinforcements 6 inches apart and welded in place. Foamed in place polyurethane core is chemically bonded to all interior surfaces. No face welding is permitted.
 - b. Thermal properties to rate at a fully operable minimum U-Factor 0.374 and R-Value 2.53, including insulated door, Mercury thermal-break frame and threshold.
 3. Level/Model: Level 3 and Physical Performance Level A (Extra Heavy Duty), Minimum 16 gauge (0.053-inch - 1.3-mm) thick steel, Model 2.
 4. Vertical Edges: Vertical edges to be mechanically interlocked with hairline seam. Beveled Lock Edge, 1/8 inch in 2 inches (3 mm in 50 mm).
 5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
 6. Hinge Reinforcement: Minimum 7 gauge (3/16 inch) plate 1-1/4 inch x 9 inch.
 7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- C. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A1008/A1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
1. Design: Flush panel.
 - a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
 2. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 2.

3. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
4. Hinge Reinforcement: Minimum 7 gauge (3/16 inch) plate 1-1/4 inch x 9 inch or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
5. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

2.4 ACCESSORIES

- A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.
- B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.5 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.
- C. Hollow Metal Doors:
 1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.
 2. Glazed Lights: Factory cut openings in doors with applied trim or kits to fit. Factory install glazing where indicated.
 3. Louvers: Factory cut openings in door and install louvers into prepared openings where indicated.
 4. Astragals: Provide overlapping astragals on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.
 5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges.
- D. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, tapping and templates.
 1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
 2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
 3. Comply with applicable requirements in ANSI/SDI A250 specifications for preparation of hollow metal work for hardware.

2.6 STEEL FINISHES

- A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.
 - 1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

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 the Work.
- B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.
- C. Tolerances shall comply with SDI 117.
- D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
 - 1. Non-Fire-Rated Standard Steel Doors:
 - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
 - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.

d. Between Bottom of Door and Top of Finish Floor (No Threshold):
Maximum 3/4 inch.

2. Fire-Rated Doors: Install doors in accordance with NFPA 80.

3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow metal work immediately after installation.
- C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

END OF SECTION

SECTION 08 41 13

ALUMINUM-FRAMED STOREFRONT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Provide entrance door along with associated components and hardware (Alternate No. 3).

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections, apply to this Section:
1. Section 07 62 00 - Sheet Metal Flashing and Trim
 2. Section 07 92 00 - Elastomeric Joint Sealants
 3. Section 08 81 00 - Glass Glazing

1.3 REFERENCE STANDARDS

- A. AA DAF-45 - Designation System for Aluminum Finishes; 2003 (Reaffirmed 2009).
- B. AAMA 501.1 - Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure; 2017.
- C. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.
- D. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- E. AAMA AG-13 - AAMA Glossary; 2013.
- F. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- H. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2017 (Reapproved 2022).
- I. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.

- J. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- K. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).
- L. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).
- M. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015 (Reapproved 2023).

1.4 DEFINITIONS

- A. For fenestration industry standard terminology and definitions refer to AAMA AG-13.

1.5 PERFORMANCE REQUIREMENTS

- A. General Performance: Withstand the effects of the specified performance requirements without failure due to defective manufacture, fabrication, installation, or other defects.
- B. Design Wind Loads: Determine design wind loads applicable to the Project from basic wind speed indicated in miles per hour, according to ASCE 7, code referenced edition, based on mean building heights above grade indicated on Drawings.
 - 1. Wind Speed: 130 mph
 - 2. Importance Category: III
 - 3. Exposure: C
- C. Storefront System Performance Requirements:
 - 1. Wind loads: Provide storefront system and anchorage capable of withstanding wind load design pressures.
 - 2. Air Infiltration: Tested in accordance with ASTM E283/E283M not to exceed 0.06 cfm/ft² at a static air pressure differential of 6.24 psf.
 - 3. Water Resistance: Tested in accordance with ASTM E331 with no leakage at a minimum static air pressure differential of 12 psf as defined in AAMA 501.1.
 - 4. Uniform Load:
 - a. Static air design load of 20 psf applied in the positive and negative direction in accordance with ASTM E330/E330M with no deflection in excess of L/175 of the span of framing members.
 - b. No glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans for structural test load of 1.5 times the specified design load.

5. Condensation Resistance (CRF): When tested to AAMA 1503, not be less than 57 frame.

1.6 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type of aluminum-framed storefront.
- D. Shop Drawings:
 1. Include plans, elevations, sections, details, hardware, and attachments to other work, operational clearances and installation details.
 2. Shop drawings shall be approved by the storefront manufacturer and sealed by a Professional Engineer licensed in the State of the project.
- E. Samples for Initial Selection: For units with factory-applied color finishes including samples of hardware and accessories involving color selection.
- F. Samples for Verification: For aluminum framed storefront system and components required.
- G. Fabrication Sample: Of each vertical-to-horizontal intersection of aluminum-framed systems, made from 12 inch lengths of full-size components and showing details of the following:
 1. Joinery, including concealed welds.
 2. Anchorage.
 3. Expansion provisions.
 4. Glazing.
 5. Flashing and drainage.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.
- B. Manufacturer Qualifications: Capable of providing aluminum framed storefront system that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.
- C. Source Limitations: Obtain aluminum framed storefront system through one source from a single manufacturer.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum framed storefront system and are based on the specific system indicated.

1. Do not modify size and dimensional requirements.
 2. Do not modify intended aesthetic effects, as judged solely by Engineer, except with Engineer's acceptance.
 3. If modifications are proposed, submit comprehensive explanatory data to Engineer for review.
- E. Mockups: Build mockups to for types of storefront elevations indicated to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1.8 PROJECT CONDITIONS

- A. Field Measurements: Verify dimensions of aluminum framed storefront openings by field measurements before fabrication and indicate field measurements on Shop Drawings.

1.9 WARRANTY

- A. Manufacturer's Warranty: Submit manufacturer's standard 2 year warranty.

PART 2 PRODUCTS

2.1 PRODUCTS

- A. Storefront: 2-inch by 4-1/2 inch thermally broken, center set, flush glazed framing system incorporating 1 inch insulating glass.
1. Kawneer Trifab® VG 451 T (thermal)
 2. YKK AP YES 45 TU
 3. EFCO Series 403 (T)
 4. Oldcastle Series 3000 Thermal Multiplane
 5. US Aluminum Series IT 451 Thermal

2.2 MATERIALS

- A. Aluminum Extrusions: Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070-inch wall thickness for the main frame and complying with ASTM B221, 6063-T6 alloy and temper.
- B. Fasteners: Aluminum, nonmagnetic stainless steel or other non-corrosive materials and compatible with aluminum window members, trim hardware, anchors, and other components.
- C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

- D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
- E. Sealant: For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.
- F. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

2.3 STOREFRONT FRAMING SYSTEM

- A. Thermal Barrier: Thermal break with a 1/4-inch separation consisting of a two-part chemically curing, high-density polyurethane, which is mechanically and adhesively joined to aluminum storefront sections. Design thermal Break in accordance with AAMA TIR-A8 and test in accordance with AAMA 505.
- B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Utilize stainless steel where exposed.
- D. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- E. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- F. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after storefront installation.

2.4 GLAZING SYSTEMS

- A. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.
- B. Glass:
 - 1. 1 inch (overall) insulating units (1/4 inch glass, 1/2 inch air space, 1/4 inch glass).
 - 2. Refer to Section 08 81 00 - Glass Glazing.
- C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.
- D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to prevent sealants from developing adhesion.

2.5 FABRICATION

- A. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
 - 1. Profiles that are sharp, straight, and free of defects or deformations.
 - 2. Accurately fit joints; make joints flush, hairline and weatherproof.
 - 3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
 - 4. Physical and thermal isolation of glazing from framing members.
 - 5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 - 6. Provisions for field replacement of glazing.
 - 7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- B. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- C. Storefront Framing: Fabricate components for assembly using manufactures standard installation instructions.
- D. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.6 ALUMINUM FINISHES

- A. Finish designations comply with AA DAF-45.
- B. Factory Finishing: Kawneer Permafluor™ (70% PVDF), AAMA 2605, Fluoropolymer Coating. Color selected from manufacturer's standard colors.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine openings, substrates, structural support, anchorage, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weather tight framed aluminum storefront system installation.
 - 1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
 - 2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches of opening.

3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum framed storefront system, accessories, and other components.
- B. Install aluminum framed storefront system level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- C. Set sill members in bed of sealant or with gaskets, as indicated, for weather tight construction.
- D. Install aluminum framed storefront system and components to drain condensation, water penetrating joints, and moisture migrating within sliding door to the exterior.
- E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Upon Owner's written request, provide periodic site visit by manufacturer's field service representative.
- B. Field Testing will be performed by a firm hired by the Owner. Testing will be performed in accordance with ASTM E1105 on a minimum of 10% but not less than 3 of the units at a test pressure equal to 2/3 of the reported laboratory water test pressure.
 1. In the event water infiltration occurs, whether attributable to the unit or surrounding wall system, the unit shall be retested after repairs at the Contractor's expense.

3.4 PROTECTION

- A. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

3.5 CLEANING

- A. Clean aluminum surfaces after installing aluminum framed storefronts. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- B. Clean glass after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove non-permanent labels, and clean surfaces.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Provide door hardware.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections, apply to this Section:
 - 1. Section 08 41 13 – Aluminum-Framed Storefront

1.3 DEFINITIONS

- A. For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) - AAMA Glossary (AAMA AG).

1.4 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Sealed Engineering Drawings
- D. Door hardware submittals are to be reviewed and approved by the Owner's Lockshop. Lockshop is to be provided with the latest revision of all submittals.

1.5 INSTALLER REQUIREMENTS

- A. Contractors doing work on/or installing said equipment will follow all manufacturer specifications, installation instructions, and sealed engineering drawings (provided by the access control provider and the installation contractor).
- B. All work performed by the access control provider or by their contracted agents must meet current National Electric Code (NEC), NFPA and all other applicable codes for low voltage installations. Typical drawings should be used for reference only and will not be used for construction.
- C. Contractors and on site installers of access control will be certified by Access Control integrator.
- D. All drawings will be reviewed and approved by the ASU Lock Shop, Controls team, and Planning, Design and Construction.

- E. The access control provider will be responsible for any and all subcontractors that are hired for the purpose of the installation and programming of the access control system.
- F. The access control provider will be responsible for the coordination of all work that contractors or sub-contractors perform in order to provide a properly installed, complete, and working access control system. Any delays, unforeseen constraints, installation issues or problems should be communicated to the assigned representative of the ASU Planning, Design, and Construction group.
- G. A pre-construction meeting will be held with the ASU Lock Shop, ASU Planning, Design and Construction, ASU Controls Team, and the ASU Campus Card Office in order to determine responsibility for each phase of the proposed work by the access control provider and any and/or all sub-contractors involved in the installation and programming of the access control system.
- H. Sealed engineered drawings, specifications, and submittals will be the latest version and will be provided to the ASU Lock Shop, the ASU Controls team, and ASU Planning, Design and Construction for review and approval before any work begins.
- I. Low voltage access controls will be noted on sealed engineering drawings, including any AC voltage wiring, data connections, and any other required connections made to equipment.
- J. The access control provider and appropriate subcontractors will provide training on the completed access controls system to designated ASU staff members and a one (1) year warranty for all parts and labor starting from the date of project deliverable acceptance and closeout by designated ASU authorities.
- K. The access control provider or their contractors or subcontractors will be mindful of noise levels created by their work so as to minimize interruption or disturbance of ongoing student or office activities.
- L. Access control providers and their contractors or subcontractors will keep all tools and work areas in a safe and uncongested state so as to provide unrestricted public access to campus buildings.
- M. All access control providers and their contractors or subcontractors are expected to interact with campus personnel in a polite and respectful manner appropriate for students and an educational institution.
- N. During installation access control providers and their contractors or subcontractors are expected to maintain and keep buildings, doors, or rooms secure so as to protect all occupants and property.
- O. Access Control provider and their contractors or subcontractors are responsible for cleaning up all materials they have used in a work areas and removing any waste or scrap they have created.
- P. Access control integrator shall commission the completed access system, verifying proper installation and functions before deliverable acceptance and project closeout can begin.

1.6 MINIMUM REQUIREMENTS

- A. Aluminum Doors

1. All doors not requiring an exit device to be prepped for a Sargent 8200 series mortise lock.
 2. All door closers shall be Sargent 281.
 3. Exit devices shall be Von Duprin 99/98, with cylinder dogging (if not electrified) if electrified they are to be QEL.
 4. Any exterior door is to have a continuous gear hinge.
 5. Continuous hinges are to be used unless otherwise approved by the Office of Design & Construction. Use a Select (SL- 11HD) geared aluminum continuous hinge or equal.
- B. Interior Doors
1. Single Interior doors to be prepped for Sargent 8200 series mortise lock or Von Duprin 99/98 exit device.
- C. Exterior Doors
1. Double doors are to have a removable keyed mullion.
 2. Due to high wind conditions, all exterior doors (unless on an automatic or ADA door entrance) shall require a lever handle and must latch.
 3. Exterior single doors are to be prepped for a Sargent 8200 series mortise lock or Von Duprin 99/98 exit device with cylinder dogging (QEL, if electrified).
 4. Where double doors are required, a Von Duprin removable steel keyed mullion, such as a 4954 SP28, will be used with Sargent 6300 LFIC cylinders and either Sargent 60-42X626 Mortise or 60- 34X626 Rim Housings to be keyed by the ASU Lock Shop.
 5. Use manual flush bolts unless both doors often need to be open at the same time. Auto flush bolts, with coordinators are to be used only when necessary. No vertical ods.
 6. Roof doors to be lockable from the inside of the building and allow free egress from the roof.

1.7 ADA REQUIREMENTS

- A. ADA equipment will be wired and installed per ADA Code, NEC, and all applicable codes and sealed engineering drawings.
- B. All ADA operators and controls must be integrated into access control systems where they exist in the accepted scope of an access control system(s) being provided.

PART 2 MATERIALS

2.1 GENERAL

- A. Appalachian State University (ASU) uses access control equipment that is supported by its access control provider. The preferred installation of equipment will be made to stay consistent with existing versions of equipment unless the current equipment will be obsolete by the time of the project completion or is no longer supported by the manufacturer or provider. New equipment must be supported by the ASU access control provider, be compatible with ASU Lock Shop designated hardware, and receive approval of the ASU Lock Shop and the ASU Planning, Design and Construction group.

2.2 DOOR HARDWARE

- A. Preferred finish for all hardware is Satin Chrome, US26D-626. In renovation projects match existing finishes unless all door hardware involved is changing. Other finishes with longer lead times are generally discouraged and should not be specified.
- B. Locksets shall be purchased by and shipped to the contractor.
- C. Exit devices
 - 1. Von Duprin 99/98 rim device is the preferred device, or 33A/356A Panic Devices. Exterior trim is to be Von Duprin 996 lever trim
 - a. If the exit device is electrified for access control, device should be the QEL.
 - b. Sargent 88 series would be the alternate model exit device. Exterior trim should be Sargent ET lever trim - Sargent Series 8200 Mortise, 10XG04 or 10XG05 Cylindrical, 8800 or 8500 Panic Devices.
 - 2. All non-electrified exit devices (except fire) should have cylinder dogging.
 - 3. Where possible, the panic bars shall be equipped with cylinder dogging in lieu of allen- wrench dogging and will use the Sargent 6300 LFIC cylinder with the Sargent 60-42X626 housing.
 - 4. Interior door panic hardware shall be Von Duprin 99 series.
 - 5. Stairway and corridor doors shall be UL listed Von Duprin 99L-F series.
 - 6. Electrified exit devices should use the manufacturer's solenoid solution – Von Duprin: QEL.
 - 7. All Cylinders for exit devices and mullions will be Sargent 6300 LFIC.
 - 8. No vertical rod or less bottom rod exit devices are allowed.
- D. Mortise Locks
 - 1. All mortise locks are to be Sargent 8200 series mortise locks with no exceptions. Trim must return to within ½ inch to the door.
 - 2. Preferred trim is the LNL, alternate trim is LNP

E. Cylindrical Locks

1. Cylindrical locks are to be Sargent 10 line with Sargent LFIC Cylinders with the "L L" handle. Lock functions are to be determined by what the room's use and purpose for that the lock.

F. Door Closers

1. Closers shall be heavy duty and have adjustments for back check, closing speed, latching speed, and delayed action cycle. Bracket type shall be specified.
2. Exterior Door Closers shall be Sargent series 281. Closer shall be heavy duty and have adjustments for back check, closing speed, latching speed, delayed action cycle and spring power adjustments.
3. No floor mounted or concealed top jamb closers.
4. Cold Weather CWF) shall be used in all exterior door closers. Fluid (
5. Labeled doors closers shall be Sargent series 281 non-hold open type.
6. Non-labeled doors shall have Sargent series 1431 and hold open feature at maximum degree of swing.

G. ADA Door Operators

1. ADA door operators are to be LCN model 4642 no exceptions or alternates.
2. Automatic door openers shall be provided at all handicapped accessible entrances and work in conjunction with the University card reader system.
3. Operators shall be completely protected from the weather.
4. The housing for the push button shall have a weatherproof seal to prevent water from entering to prevent freezing during cold weather.
5. All ADA buttons, transmitters and receivers will be BEA brand. Boxes will be BEA 4.5" round boxes with a weather ring.

H. Door Stops - Bumpers

1. Wall mounted door bumpers are to be used whenever possible. Floor bumpers are discouraged and used only when no other option is available, due to safety tripping hazard.

I. Electric Strikes

1. HES 9600 Electric Strike
2. HES 1600 – recessed electronic strike
3. HES 8500 with 851M kit for mortise lock interior doors
4. HES 8000C/8300C for Cylindrical lock interior doors

J. Request to Exit – (not in exit device)

1. Bosch – DS160/161
- K. Door Position Switches
1. Securitron – DPS-M-GY or DPS-M-WH
- L. Door Prop Horns
1. Schlage 1910 series
 2. Designed Security – ES411-K1
- M. Hinges - Continuous Hinges
1. Hinges for aluminum storefront doors use: Continuous Gear Hinge, Select (SL11HD) for non-electric doors.
 2. Aluminum continuous gear hinge, Select (SL- 11HD) prepped for a standard Von Duprin EPT-10 Power Transfer Bar.
 3. SP28 finish is to be used for electronically controlled doors with continuous hinges.
 4. Continuous hinges for fire doors shall be stainless steel pin and barrel.
 5. Interior and corridor doors shall have heavy weight, premium quality stainless steel ball bearing hinges.
 6. All interior and corridor doors wider than three feet (3'- 0") and/or taller than seven feet (7' 0") shall have four (4) ball bearing hinges with Square corners.
 7. All reverse swing doors shall have heavy weight, premium quality stainless steel non removable pin butt hinges.
- N. Miscellaneous Hardware
1. Thresholds for all exterior conditions shall be aluminum with thermal break.
 2. Sound gaskets are required on mechanical room doors directly accessed off public corridors.
 3. Thumb turns with visual indicators indicating locked/unlocked will be installed on the interior side of the door in all classrooms, offices, conference rooms and any other doors decided upon by the ASU Lockshop and Design & Construction.
 4. Magnetic Hold Open Devices for fire doors shall be provided at stairways and corridors. Kick Plates shall be US18 gauge 18-8 type, 302 stainless steel, satin finish, and shall be eight inches (8") high by two inches (2") less than the width of the door.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Use appropriately certified or approved enclosures for all controllers.

- B. All access control equipment will be installed in keyed lockable cabinets, with a tamper switch that is compatible with the access control provider's equipment and programming.
- C. Board enclosure panels, power supplies, and any and all access control enclosures will be installed with keyed locks and all keys turned over to ASU Lock Shop.
- D. No keys are to be left in control box after initial control box installation is completed by the access control provider or its contractors or subcontractors.
- E. All access control equipment will be mounted on ¾" fire rated painted exterior plywood per applicable codes, sized to accommodate all access control equipment.
- F. There are to be no wireless installations except when necessary and approved by ASU Lock Shop, ASU Controls team, and ASU Planning, Design and Construction.
- G. There are to be no mag-lock installations except when necessary and approved by ASU Lock Shop, ASU Controls team, and ASU Planning, Design and Construction.
- H. All access control equipment will be located in approved data, electrical, or telecom rooms as determined by the by ASU Lock Shop, ASU Controls team, and ASU Planning, Design and Construction.
- I. Emergency power should be provided for the access control system whenever possible.
- J. Power supplies will not be loaded with more than 80% of their output rating.
- K. Recess all electrical supply boxes when practical.
- L. Card reader locations shall control one door or paired set of two doors only. Any adjacent doors must be controlled by door control schedule (via an additional controller).
- M. All hardware, wiring, and new equipment must have cut sheets submitted and approved by ASU Lock Shop, ASU Controls team, and ASU Planning, Design and Construction prior to installation to ensure compatibility with existing systems.

3.2 DOOR HARDWARE

- A. All door hardware in the scope of the access control system being provided, shall have mechanical bypass keying. Please refer to the door hardware guidelines for preferred manufacturers in the ASU Design Guideline section 3.7.7.
- B. All door hardware that is not being replaced with new purpose built access control compatible capabilities, will use manufacturer supplied conversion kits whenever possible. Third party conversion kits are to be used only if manufacturer provided kits are unavailable.
- C. All dogging holes and internal dogging cylinders should be replaced by contractors or subcontractors during conversion with mechanically secure plugs or screws during installation of approved conversions.
- D. All exterior mechanical locks on access control doors will provide latch retraction night latch function and no interior dogging capabilities.

- E. Install security screws on the card readers when provided by the card reader manufacturer. If not provided by the manufacturer or misplaced during installation the access control provider or their contractors or subcontractors will provide and install readers with security screws.

3.3 PROGRAMMING

- A. All programming by the access control provider and its subcontractors will be done in conjunction with the ASU Controls Team, ASU Campus Security, and the ASU Campus Card Office.
- B. All REX (request to exit) activation times will be 4 seconds unless otherwise noted. Special consideration will be given to ADA and card activation points that make this time impractical and may vary as needed. Any variations in activation times must be approved by ASU Lock Shop, ASU Controls team, and ASU Planning, Design and Construction prior to programming.
- C. All programming will denote that doors fail secure.
- D. Programming of DPS, REX, inputs/outputs, horns and other peripheral door devices will be approved by ASU Lock Shop, ASU Controls team, and ASU Planning, Design and Construction prior to programming.

3.4 WIRING

- A. Access control provider or their contractors or subcontractors will use existing door frames, wall, or ceiling to connect wire paths to operable equipment. Where such conditions do not exist, an enclosed and code compliant raceway will be installed for inaccessible locations.
- B. As per applicable equipment specification, access control provider and their contractors or subcontractors will keep with Class 2, VDC power as required.
- C. All incoming power to control boxes should be 12 AWG with appropriate installed strain reliefs.
- D. Proper wire size and load requirements will be calculated for the length of run to all equipment using the National Electric Code (NEC), manufacturer specifications and product installation instructions, and applicable codes for the equipment being installed.
- E. All wiring should be labeled at wiring termination in legible type written font. No hand written labeling.
- F. As much as is possible, all wiring runs are to be "home run" connections with no splices.
- G. If wiring splices are required either for distance or to support multiple door controls, all splices should be sealed in appropriate junctions boxes (8"x8" minimum) with strain reliefs and all empty knock out holes filled with approved plugs.
- H. All wiring runs will use existing conduit or wiring trays whenever possible and technically feasible. Lacking these opportunities, all wiring should be properly hung from "J" hooks.
- I. A coil of 5' to 8' of excess wire should be safely secured to the first and last "J" hook of the specified wire run.

- J. All non-connected ends of wire should be secured and wrapped with appropriate electrical tape.
- K. Use RS485 cable where required.
- L. DPS (door position switch) and REX (request to exit) switches are to be wired as supervised inputs.

3.5 CYLINDER AND KEYING

- A. Keying: Appalachian State Lock Shop will do all keying for all projects with the exception of student dorm rooms in residence halls.
- B. Keyway - ASU Lock Shop is to be contacted to determine the appropriate keyway for each project.
- C. Cylinders
 - 1. All Sargent cylinders are to be delivered 1 bitted to the Lockshop for keying.
 - 2. The ASU Lock Shop sets up the system, keys the cylinders, and will notify the project manager or contractors when the cylinders can be picked up for installation.
 - 3. Each cylinder is to have 4 blank keys accompanying it.
 - 4. The contractor is required to give the Lockshop 30 days to key the cylinders prior to installation.
- D. Construction Cylinders
 - 1. The ASU Lock Shop will provide up to 5 construction cylinders and 4 keys as needed by the contractor.
 - 2. The construction cylinders and keys are to be returned to the ASU Lock Shop when the permanent cylinders are installed.
 - 3. When the permanent cylinders are installed the contractor may check out a set of keys from the ASU Lock Shop.
 - 4. All keys are to be returned to the Lockshop at the completion of the project or the contractor will be billed for rekeying the building.
- E. Residence Hall Cylinders and Locks
 - 1. All residence hall cylinders shall be Medeco - Keymark IV.
 - 2. Medeco will determine the key codes, and do the keying for the dorm rooms only.
 - 3. All other rooms and spaces in the residence hall are to be keyed by the ASU Lock Shop.

END OF SECTION

SECTION 08 81 00

GLASS GLAZING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Glass for aluminum-framed storefront (Alternate No. 3).
 - 2. Glazing sealants and accessories (Alternate No. 3).

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections, apply to this Section:
 - 1. Section 08 41 13 - Aluminum-Framed Storefront

1.3 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- C. ASTM C1036 - Standard Specification for Flat Glass; 2021.
- D. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.
- E. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2023.
- F. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2023.
- G. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.
- H. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.
- I. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers Version 1.2; 2017.
- J. GANA (GM) - GANA Glazing Manual; 2022.
- K. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

- L. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use; 1990 (2016).
- M. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.
- N. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2023.
- O. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2023.

1.4 DEFINITIONS

- A. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C1036.
- B. Interspace: Space between lites of an insulating-glass unit.

1.5 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.6 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 - Quality Requirements, to design glazing.
- C. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the ICC (IBC) and ASTM E1300.
 - 1. Design Wind Pressures: As indicated in Contract Drawings.
 - 2. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.
- D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- E. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
 - 1. For monolithic-glass lites, properties are based on units with lites 1/4-inch thick.
 - 2. For laminated-glass lites, properties are based on products of construction indicated.

3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
4. U-Factors: Center-of-glazing values, according to NFRC 100, expressed as Btu/sq. ft. x h x deg F.
5. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200.
6. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

1.7 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches square.
- C. Glazing Accessory Samples: For sealants, in 12 inch lengths.
- D. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- E. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- F. Qualification Data: For manufacturer/fabricator and Installer.
- G. Product Test Reports: For tinted glass, coated glass, insulating glass, and glazing sealants, for tests performed by a qualified testing agency.
- H. Sample Warranties.

1.8 QUALITY ASSURANCE

- A. Manufacturer/Fabricator Qualifications: A qualified firm certified by the primary glass manufacturer employing technicians for this Project who are currently certified under the National Glass Association's Certified Glass Installer Program.
- B. Installer Qualifications: Fabricator of glazing units, or qualified firm acceptable to fabricator employing technicians for this Project who are currently certified under the National Glass Association's Certified Glass Installer Program.

1.9 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
 1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.

2. Use ASTM C1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
3. Test no fewer than eight Samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
4. Schedule enough time for testing and analyzing results to prevent delaying the Work.
5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including the use of specially formulated primers.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
- B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.11 FIELD CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
- B. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

1.12 WARRANTY

- A. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
 1. Warranty Period: 10 years from date of Final Acceptance.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with requirements, provide products as scheduled, or a comparable product by one of the following:
 1. Guardian Industries Corp.
 2. PPG Industries, Inc.
 3. Viracon, Inc.

- B. Source Limitations: Obtain from single source from single manufacturer for each glass type and product.

2.2 GLASS PRODUCTS

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. GANA (GM)
 - 2. IGMA TM-3000
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.
- D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.
 - 1. Minimum Glass Thickness for Exterior Lites: 1/4-inch

2.3 GLASS PRODUCTS

- A. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.
- B. Tinted Annealed Float Glass: ASTM C1036, Type I, Class 2 (tinted), Quality-Q3.
- C. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
 - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
 - 2. Roll Wave Maximum Distortion Tolerance: 0.003-inch target with 0.005-inch maximum peak to valley measurement.
 - 3. Bow and Warp Maximum Tolerance: 50 percent of the maximum allowed in ASTM C1048.
- D. Heat-Strengthened Float Glass: ASTM C1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
 - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
 - 2. Roll Wave Maximum Distortion Tolerance: 0.003-inch target with .005 inch maximum peak to valley measurement.

3. Bow and Warp Maximum Tolerance: 50 percent of the maximum allowed in ASTM C1048.

E. Ceramic-Coated Spandrel Glass: ASTM C1048, Type I, Condition B, Quality-Q3.

2.4 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E2190.
1. Sealing System: Dual seal, with polyisobutylene and silicone primary and secondary sealants.
 2. Spacer: Thermally broken aluminum or stainless steel, painted black.
 3. Desiccant: Molecular sieve or silica gel, or a blend of both.
 4. Edge Deletion: Delete low-E coating prior to fabrication of insulating units according to coated glass manufacturer's instructions.

2.5 GLAZING SEALANTS

- A. General:
1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 3. Low-Emitting Materials: Sealants shall comply with the testing and product requirements of the CAL (CDPH SM).
 4. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.
- B. Glazing Sealant: One-part non-acidic moisture curing neutral-curing silicone glazing sealant complying with ASTM C920, Class A, Type S, Grade NS, Class 100/50, Use NT.
1. Products:
 - a. Dow Corning Corporation; 790
 - b. GE Advanced Materials - Silicones; SilPruf LM SCS2700
 - c. Pecora Corporation; 890
 - d. Tremco Incorporated; Spectrem 1
 2. Applications: High movement joints at metal-to metal and glass to metal.
- C. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C920, Type S, Grade NS, Class 50, Use NT.

1. Products:
 - a. Dow Corning Corporation; 795 or 995
 - b. GE Advanced Materials -Silicones; SilPruf NB SCS9000 or SilPruf SCS2000
 - c. Pecora Corporation; 864
 - d. Tremco Incorporated; Spectrem 2
 2. Applications: General applications in glazing installation subject to high movement including perimeter; use non-staining formula at absorbent perimeter applications.
- D. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C920, Type S, Grade NS, Class 25, Use NT.
1. Products:
 - a. Dow Corning Corporation; 799
 - b. GE Advanced Materials-Silicones; UltraGlaze SSG4000 or UltraGlaze SSG4000AC
 - c. Tremco Incorporated; Proglaze SSG or Tremsil 600
 2. Applications: General applications in glazing installation including perimeter; use non-staining formula at absorbent perimeter applications.

2.6 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.7 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.8 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
 - 1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
 - a. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 - 2. Presence and functioning of weep systems.
 - 3. Minimum required face and edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches.
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

- K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until right before each glazing unit is installed.
- F. Apply heel bead of elastomeric sealant.
- G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

3.5 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

- A. Immediately after installation remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Final Acceptance. Wash glass as recommended in writing by glass manufacturer.

3.8 INSULATING GLASS SCHEDULE

- A. Glass Type IG#2: Low-E-coated, clear insulating glass.
 - 1. Overall Unit Thickness: 1 inch.
 - 2. Outdoor Lite: Clear annealed float glass, except heat-strengthened float glass where required, and fully tempered float glass where safety glass is indicated.
 - a. Minimum Thickness of Outdoor Glass Lite: 1/4-inch.
 - b. Low-E Coating: Sputtered on second surface.
 - c. Products:
 - 1) Guardian Industries, Inc., SunGuard SN 68 on Clear.
 - 2) Comparable Product: PPG Industries, Inc., Solarban 60.
 - 3) Comparable Product: Viracon, VE1-2M.
 - 3. Interspace Content: Air.

4. Indoor Lite: Clear annealed float glass, except heat-strengthened float glass where required, and fully tempered float glass where safety glass is indicated.
 - a. Minimum Thickness of Indoor Glass Lite: 1/4-inch.
5. Winter Nighttime U-Value: 0.29
6. Visible Light Transmittance: 68 percent minimum.
7. Solar Heat Gain Coefficient: 0.38 maximum.
8. Outdoor Visible Light Reflectance: 11 percent maximum
9. Safety glazing label where required.

END OF SECTION

SECTION 09 91 13

EXTERIOR PAINT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Prepare substrates, prime and paint in accordance with Manufacturer's instructions for building components specified. Substrates included in the Work are as follows:
 - a. Parking Bollards (Alternate No. 2)
 - b. Canopy Supports (Alternate No. 2)
 - 2. Complete sampling, testing and abatement requirements for existing lead-based paint included in Work.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections apply to this Section.

1.3 REFERENCE STANDARDS

- A. NACE No. 2 - Joint Surface Preparation Standard Near-White Metal Blast Cleaning; 1994 (Reaffirmed 2006).
- B. NACE No. 3 - Joint Surface Preparation Standard Commercial Blast Cleaning; 1994 (Reaffirmed 2006).
- C. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
- D. SSPC-SP 2 - Hand Tool Cleaning; 2018.
- E. SSPC-SP 3 - Power Tool Cleaning; 2018.
- F. SSPC-SP 5 - White Metal Blast Cleaning; 2007.
- G. SSPC-SP 6 - Commercial Blast Cleaning; 2007.
- H. SSPC-SP 7 - Brush-Off Blast Cleaning; 2007.
- I. SSPC-SP 10 - Near-White Metal Wet Abrasive Blast Cleaning; 2015.
- J. SSPC-SP 11 - Power-Tool Cleaning to Bare Metal; 2020.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.

- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Samples: Submit color chart that represents Manufacture's color samples available for Owner's selection.
- D. Mockup: Submit mockup of paint system before starting work as required by Owner for color selection/acceptance.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver Manufacturer's unopened containers to the work site labeled with the following list of information:
 - 1. Product name, type (description)
 - 2. Application & use instructions
 - 3. Surface preparation
 - 4. VOC content
 - 5. Environmental issues
 - 6. Batch date
 - 7. Color number
- B. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction. Store materials in an area that is within the acceptable temperature range, per Manufacturer's instructions. Protect from freezing.
- C. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.
- D. Provide fire safety and prevention requirements for materials.

1.6 PROJECT CONDITIONS

- A. Ensure or maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by Manufacturer for optimum results. Do not apply coatings under environmental conditions outside Manufacturer's absolute limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers:
 - 1. The Sherwin-Williams Company
 - 2. Duron, Inc.
 - 3. PPG Paints

- B. Manufacturer's exterior primer and paint system for optimum performance for exposed, exterior building type, compatible with the following substrate surfaces.
 - 1. Galvanized Metal
 - 2. Structural Steel
 - 3. Wood

2.2 MATERIALS

- A. Paints and Coatings: Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with Manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in Manufacturer's product instructions.
- B. Primers: Where the Manufacturer offers options on primers for a particular substrate, use primer categorized for optimum performance by the Manufacturer.
- C. Structural Steel Repair Coating: High solids, low VOC, self-priming epoxy coating for use on steel structures.
 - 1. Products:
 - a. PPG Amerlock 400
 - b. Duron High Build Epoxy Mastic
 - c. Sherwin Williams Pro Industrial High Performance Epoxy

2.3 ACCESSORIES:

- A. Coating Application Accessories: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required per Manufactures printed requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin application of coatings until substrates have been properly prepared. Notify Engineer of unsatisfactory conditions before proceeding.
- B. Proceed with work only after conditions have been corrected otherwise application of coatings is considered acceptance of surface conditions.

3.2 PREPARATION

- A. Consult Manufacturer to ensure proper product selection, surface preparation, and application for optimum coating performance. Provide proper product selection, surface preparation, and application.
- B. Ensure surface is dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint, coatings, or other contamination to ensure good adhesion.

- C. Remove mildew before painting by washing with a solution of 1-part liquid household bleach and 3 parts of warm water. Apply the solution and scrub the mildewed area. Allow the solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow the surface to dry 48 hours before painting.
- D. Do not paint after a rain, during foggy weather, when rain is predicted, or when the temperature is below 50°F, unless products are designed specifically for these conditions. Follow Manufacturer's printed instructions.
- E. Methods:
 - 1. Galvanized Metal: Clean using detergent and water or a degreasing cleaner to remove greases and oils. Apply a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast to remove these treatments.
 - 2. Steel: Structural, Plate, etc.: Clean by one or more of the ten surface preparations described below:
 - a. SSPC-SP 1, Solvent Cleaning: Solvent cleaning is a method for removing visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants. Solvent cleaning does not remove rust or mill scale. Change rags and cleaning solution frequently so that deposits of oil and grease are not spread over additional areas in the cleaning process. Be sure to allow adequate ventilation.
 - b. SSPC-SP 2, Hand Tool Cleaning: Hand Tool Cleaning removes loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before hand tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
 - c. SSPC-SP 3, Power Tool Cleaning: Power Tool Cleaning removes loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before power tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
 - d. SSPC-SP 5, White Metal Blast Cleaning: A White Metal Blast Cleaned surface, when viewed without magnification, free of visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter. Before blast cleaning, remove visible deposits of oil or grease by the methods specified in SSPC-SP1 or other agreed upon methods.
 - e. SSPC-SP 6 or NACE No. 3, Commercial Blast Cleaning: A Commercial Blast Cleaned surface, when viewed without magnification, free of visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Limit staining to no more than 33 percent of each square inch of surface area and can consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Before blast cleaning, remove visible deposits of oil or grease by the methods specified in SSPC-SP1 or other agreed upon methods.

- f. SSPC-SP 7: A Brush-Off Blast Cleaned surface, when viewed without magnification, free of visible oil, grease, dirt, dust, loose mill scale, loose rust, and loose paint. Tightly adherent mill scale, rust, and paint can remain on the surface. Before blast cleaning, remove visible deposits of oil or grease by the methods specified in SSPC-SP 1 or other agreed upon methods.
 - g. SSPC-SP 10 or NACE No. 2: A Near-White Blast Cleaned surface, when viewed without magnification, free of visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Limit staining to no more than 5 percent of each square inch of surface area and can consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Before blast cleaning, remove visible deposits of oil or grease by the methods specified in SSPC-SP1 or other agreed upon methods. High- and Ultra-High-Pressure Water Jetting for Steel and Other Hard Materials, SSPC-SP12 or NACE 5: This standard provides requirements for the use of high- and ultra-high pressure water jetting to achieve various degrees of surface cleanliness. This standard is limited in scope to the use of water only without the addition of solid particles in the stream.
 - h. SSPC-SP 11: Metallic surfaces that are prepared according to this specification, when viewed without magnification, free of visible oil, grease, dirt, dust, mill scale, rust, paint, oxide corrosion products, and other foreign matter. Slight residues of rust and paint can be left in the lower portions of pits if the original surface is pitted. Prior to power tool surface preparation, remove visible deposits of oil or grease by the methods specified in SSPC-SP1, Solvent Cleaning, or other agreed upon methods.
 - i. Water Blasting, NACE Standard RP-01-72: Removal of oil grease dirt, loose rust, loose mill scale, and loose paint by water at pressures of 2,000 to 2,500 psi at a flow of 4 to 14 gallons per minute.
3. Wood:
- a. Seal knots, pitch streaks, and sap areas with manufacturer's approved exterior sealer:
 - b. Fill nail recesses with putty or a glazing compound.
 - c. Let fillers dry, then sand surfaces smooth.
 - d. Fill cracks or joints in or between wood with a quality acrylic or siliconized acrylic latex caulk.
 - e. Apply primer coat to wood.

3.3 INSTALLATION

- A. Apply coatings and materials in accordance with Manufacturer printed recommendations. Apply a no less than a single coat of primer, and two coats of paint. Thickness determined by Manufacturer's printed requirements for optimum or best performance.

- B. Do not apply coatings to wet or damp surfaces, during periods of fog, or at or below the dew point temperature.
- C. Apply coatings using methods and application tools recommended by Manufacturer.
- D. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.
- E. Apply coatings at spreading rate required to achieve the Manufacturers recommended dry film thickness.
- F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
- G. Time between primer and coats as required by Manufacturer's printed requirements.

3.4 PROTECTION

- A. Protect finished coatings from damage until completion of project.
- B. Touch-up damaged coatings after substantial completion, following manufactures recommendation for touch up or repair of damaged coatings. Repair defects that hinder the performance of the coatings.

3.5 CLEANING

- A. Clean-up and remove spills, and coatings on adjacent substrates to the Owner's satisfaction.
- B. Dispose of containers and waste in a legal manner.

END OF SECTION

SECTION 11 81 29

ROOFTOP FALL PROTECTION SYSTEM

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Provide rooftop fall protection anchorage system at roof surfaces where employees are exposed to fall hazards as indicated in Contract Drawings.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections, apply to this Section:
 - 1. Section 07 54 00 - Thermoplastic Single Ply Roofing

1.3 REFERENCE STANDARDS

- A. 29 CFR 1926.502 - Fall protection systems criteria and practices; Current Edition.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Shop Drawings: Drawings showing plans and details of components sealed by a licensed Not Listed Professional Engineer.

1.5 DELEGATED DESIGN

- A. Building anchorages, tie-downs, and other affected parts of the building designed and certified by a North Carolina Professional Engineer (PE) with extensive experience in fall protection to provide the most appropriate fall prevention or protection solution.

1.6 PERFORMANCE REQUIREMENTS

- A. Provide a fall protection system that best suits the conditions and maintenance functions in compliance with current jurisdictional requirements including 29 CFR 1926.502, ANSI and building code.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the job site in good condition and adequately protected against damage.
- B. Store products in manufacturer's unopened packaging until ready for installation.

1.8 PROJECT CONDITIONS

- A. Field Measurements: Check dimensions of other construction by accurate field measurements before fabrication.

1.9 WARRANTY

- A. Provide manufacturer's 10-year warranty on system anchorage components.

PART 2 PRODUCTS

2.1 ROOFTOP FALL PROTECTION SYSTEM

- A. Galvanized steel roof anchors secured to structural framing system as required by design engineer along with stainless steel horizontal lifeline system.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates and components have been properly examined and prepared.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.3 OPERATIONS AND MAINTENANCE DOCUMENTS

- A. Provide documentation of anchorage certification and annual recertification requirements to the Owner prior to the system being put into use.
- B. Owner training by fall protection system manufacturer's technical representative to include training on use of system and system maintenance requirements.
- C. Print and provide detailed user instructions for the fall arrest system to include at least the following:
 - 1. manufacturer's name, address, and telephone number
 - 2. manufacturer's user instructions for part and model number
 - 3. statement of manufacturer's intended use and purpose
 - 4. description of proper methods and limitations on use
 - 5. printed information or illustrations of fixed equipment markings
 - 6. description of detailed inspection/recertification procedures for fall arrest system
 - 7. criteria for failing inspections and determining unusable equipment
 - 8. procedures for maintenance and repair requirements (who is authorized to make adjustments and repair to equipment)

- 9. appropriate warnings regarding altering, misusing, and limitations of equipment
- D. Submit reduced shop drawings of the fall protection system for posting at roof accesses.
- E. Submit manufacturer warranty information and documentation that the system was installed in accordance with manufacturer's instructions.

END OF SECTION

SECTION 22 14 26

ROOF DRAINS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Water test of below grade storm drain leaders and roof drains.
 - 2. Replacement of existing roof drain components.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications sections apply to this section, including but not limited to:
 - 1. Section 07 01 50 - Preparation for Reroofing
 - 2. Section 07 22 16 - Roof Insulation
 - 3. Section 07 54 00 - Thermoplastic Single Ply Roofing

1.3 REFERENCE STANDARDS

1.4 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Shop Drawings: Include plans, elevations, sections and details.

1.5 QUALITY ASSURANCE

- A. Ensure plumbing systems and components are installed by licensed, qualified personnel.
- B. Ensure roof drains, couplings, piping, supports, fixtures, pipe hangers, fasteners, fittings, etc. are installed in compliance with the referenced plumbing code, and installed in accordance with the component manufacturer's published guidelines and instructions, and referenced standards.
- C. Field test completed storm drain systems as required by the referenced plumbing code.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials in the manufacturer's original sealed and labeled packaging.
- B. Storage: Store materials to prevent damage and not encumber Owner's operations.

- C. Handling: Handle materials in such a manner as to prevent damage and contamination.

1.7 PROJECT CONDITIONS

A. Environmental Requirements:

1. Install roof drains and associated plumbing during periods of no precipitation to prevent water from entering the building.
2. Prevent damage to the building and contents during roof drain and associated plumbing installations.
3. Comply with applicable rules and regulations of Authorities Having Jurisdiction pertaining to storm sewage systems.
4. Flood test roof drain systems to verify functional operation prior to roof replacement operations and report deficiencies to Engineer and Owner.

B. Protection:

1. Ensure roof drainage systems remain in service and restore to operational before leaving the site.
2. Protect building interior and exterior surfaces during construction.

PART 2 PRODUCTS

2.1 ROOF DRAINS

- A. Existing Roof Drains: Replace clamping ring and strainer dome to match existing drain manufacturer and model with cast iron clamping ring and strainer dome. Replace bolts with stainless steel clamping ring bolts. Restore threads as necessary using taps to ensure positive fastening; clean metal shavings, chips and debris before fastening clamping ring.

PART 3 EXECUTION

3.1 INSPECTION

- A. Conduct a pre-job conference including the Engineer, Contractor, and the Owner's representative prior to the installation of roof drains and associated piping and plumbing fixtures.
- B. Verify that conditions are acceptable to begin the installation.
- C. Inspect daily the plumbing installation to ensure conditions remain satisfactory.

3.2 PREPARATION

- A. Inspect building components and conditions before proceeding with plumbing installation.
- B. Where decking is cut for drains, inspect building interior for utilities, structural members and occupancy conditions to ensure conditions are satisfactory to proceed.
- C. Where decking is cut to install roof drains, provide minimum steel angle around perimeter of deck opening for additional deck support.

- D. Inspect the piping route and hanger attachment points to ensure conditions are satisfactory to install piping and associated plumbing fixtures for the completed drainage system.
- E. Route piping to maintain working spaces around electrical equipment by NEC.
- F. Do not route piping and fixtures to interfere with the service of in-place equipment and systems.
- G. Do not close off or obstruct streets, walks or other adjacent occupied facilities without permission from Owner, Engineer, and Authorities Having Jurisdiction.

3.3 DRAIN LEADERS AND ROOF DRAINS

- A. Prior to commencement of work on the project inspect for damage and water flow.
 - 1. Clean drains of accumulated debris and loose gravel.
 - 2. Clean drain bowl and drain outlet of bitumen build-up to bare metal by hand scraping.
 - 3. Power vacuum debris, loose gravel, and bitumen scraping down to the first elbow in the drain line.
 - 4. After cleaning bitumen from the drain bowl, inspect the bowl carefully for cracks, and the drainpipe connection for possible deterioration.
 - 5. Flood test to determine that there are no plumbing leaks unrelated to the existing roof system and to verify proper function and flow.
 - 6. Complete inspection and testing prior to roofing tear-off. If deficiencies or damages are observed, record the deficiency on a Roof Plan and forward to the Engineer. The Engineer will notify the Owner accordingly. Allow 48 hours after notification for corrective work by the Owner.
 - 7. If no deficiencies or damages are reported to the Owner prior to commencement of work, assume responsibility for the condition and operation of the leaders and drains including the connection between the roof drain and associated plumbing/leaders.
- B. Install temporary drain plugs during roofing activities to prevent foreign materials from entering drainage system. Remove drain plugs at the end of each workday to maintain drains in operational condition.
- C. Reinstall clamping rings, bolts and strainer domes at the end of each working day.
- D. Repair drain piping clogged by construction debris at no cost to the Owner.
- E. Repair leaks associated with damage, following successful flood testing, to the roof drain connection to associated plumbing at no cost to the Owner.

3.4 ROOF DRAIN INSTALLATION

- A. Install roof drains and associated components in accordance with the drain manufacturer's published instructions.

- B. Install roof drains, piping and associated plumbing to meet applicable requirements of the local plumbing, building and fire code.

END OF SECTION

FORM OF PROPOSAL

Watson-Brumitt Hall Roof Replacement
Appalachian State University
24-27762-01

Contract: Single Prime
Bidder: _____
Date: _____

The undersigned, as bidder, hereby declares that the only person or persons interested in this proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud. The bidder further declares that he has examined the site of the work and the contract documents relative thereto, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed. The bidder further declares that he and his subcontractors have fully complied with NCGS 64, Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).

The Bidder proposes and agrees if this proposal is accepted to contract with the

State of North Carolina through Appalachian State University

in the form of contract specified below, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of

Watson-Brumitt Hall Roof Replacement

in full in complete accordance with the plans, specifications and contract documents, to the full and entire satisfaction of the State of North Carolina, and the

Appalachian State University and REI Engineers

with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and the contract documents, for the sum of:

SINGLE PRIME CONTRACT:

Base Bid: _____ Dollars(\$)

General Subcontractor:
_____ Lic _____

Plumbing Subcontractor:
_____ Lic _____

Mechanical Subcontractor:
_____ Lic _____

Electrical Subcontractor:
_____ Lic _____

GS143-128(d) requires all single prime bidders to identify their subcontractors for the above subdivisions of work. A contractor whose bid is accepted shall not substitute any person as subcontractor in the place of the subcontractor listed in the original bid, except (i) 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 bid work, or (ii) with the approval of the awarding authority for good cause shown by the contractor.

ALTERNATES:

Should any of the alternates as described in the contract documents be accepted, the amount written below shall be the amount to be "added to" or "deducted from" the base bid. (Strike out "Add" or "Deduct" as appropriate.)

Alternate No. 1: Provide Quantity Allowance for 3,000 LF of Masonry Repointing.

(Add) _____ Dollars(\$)

Alternate No. 2: Provide Parking Bollards and Canopy Supports where indicated in the Contract Drawings. Provide paint as specified.

(Add) _____ Dollars(\$)

Alternate No. 3: Replace Aluminum-Framed Storefront at Roof Area A7.

(Add) _____ Dollars(\$)

Alternate No. 4: Remove existing vapor retarder.

(Add) _____ Dollars(\$)

Alternate No. 5: Provide Quantity Allowance to remove 1,000 SF of existing vapor retarder.

(Add) _____ Dollars(\$)

Alternate No. 6: Provide repairs at Concrete Cornice as specified Properly clean and provide fluid applied water repellent at exterior masonry walls.

(Add) _____ Dollars(\$)

UNIT PRICES

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the base bid quantity of the work all in accordance with the contract documents.

- No. 1. Replace Deteriorated Plywood Deck SF Unit Price (\$) _____
- No. 2. Repair Unsuitable Concrete Roof Deck CF Unit Price (\$) _____
- No. 3. Replace Deteriorated Wood Blocking BF Unit Price (\$) _____
- No. 4. Replace Deteriorated Plywood SF Unit Price (\$) _____
- No. 5. Provide Additional Manufacturer's Walk Pad Material LF Unit Price (\$) _____

The bidder further proposes and agrees hereby to commence work under this contract on a date to be specified in a written order of the designer and shall fully complete all work thereunder within the time specified in the Supplementary General Conditions Article 23. Applicable liquidated damages amount is also stated in the Supplementary General Conditions Article 23.

MINORITY BUSINESS PARTICIPATION REQUIREMENTS

Provide with the bid - Under GS 143-128.2(c) the undersigned bidder shall identify **on its bid** (Identification of Minority Business Participation Form) the minority businesses that it will use on the project with the total dollar value of the bids that will be performed by the minority businesses. **Also** list the good faith efforts (Affidavit **A**) made to solicit minority participation in the bid effort.

NOTE: A contractor that performs all of the work with its own workforce may submit an Affidavit **(B)** to that effect in lieu of Affidavit **(A)** required above. The MB Participation Form must still be submitted even if there is zero participation.

After the bid opening - The Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low bidder, the bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:

An Affidavit **(C)** 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 10% goal established. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort and Affidavit **D** is not necessary;

*** OR ***

If less than the 10% goal, Affidavit **(D)** of its good faith effort to meet the goal shall be provided. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

Note: Bidders must always submit with their bid the Identification of Minority Business Participation Form listing all MB contractors, vendors and suppliers that will be used. If there is no MB participation, then enter none or zero on the form. Affidavit **A** or Affidavit **B**, as applicable, also must be submitted with the bid. Failure to file a required affidavit or documentation with the bid or after being notified apparent low bidder is grounds for rejection of the bid.

Proposal Signature Page

The undersigned further agrees that in the case of failure on his part to execute the said contract and the bonds within ten (10) consecutive calendar days after being given written notice of the award of contract, the certified check, cash or bid bond accompanying this bid shall be paid into the funds of the owner's account set aside for the project, as liquidated damages for such failure; otherwise the certified check, cash or bid bond accompanying this proposal shall be returned to the undersigned.

Respectfully submitted this day of _____

(Name of firm or corporation making bid)

WITNESS:

(Proprietorship or Partnership)

By: _____
Signature

Name: _____
Print or type

Title _____
(Owner/Partner/Pres./V.Pres)

Address _____

ATTEST:

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

License No. _____

Federal I.D. No. _____

Email Address: _____

(CORPORATE SEAL)

Addendum received and used in computing bid:

Addendum No. 1 _____ Addendum No. 3 _____ Addendum No. 5 _____ Addendum No. 6 _____

Addendum No. 2 _____ Addendum No. 4 _____ Addendum No. 6 _____ Addendum No. 7 _____

Identification of HUB Certified/ Minority Business Participation

I, _____,
(Name of Bidder)

do hereby certify that on this project, we will use the following HUB Certified/ minority business as construction subcontractors, vendors, suppliers or providers of professional services.

Firm Name, Address and Phone #	Work Type	*Minority Category	**HUB Certified (Y/N)

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

The total value of minority business contracting will be (\$) _____.

State of North Carolina AFFIDAVIT A – Listing of Good Faith Efforts

County of _____

(Name of Bidder)

Affidavit of _____

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- 1 – (10 pts)** Contacted 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 date and notified them of the nature and scope of the work to be performed.
- 2 --(10 pts)** Made 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 bids are due.
- 3 – (15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- 4 – (10 pts)** Worked 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.
- 5 – (10 pts)** Attended prebid meetings scheduled by the public owner.
- 6 – (20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- 7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject 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.
- 8 – (25 pts)** Provided 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. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- 9 – (20 pts)** Negotiated 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.
- 10 - (20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

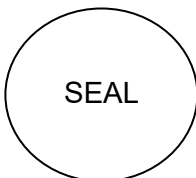
The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies 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: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract with Own Workforce.

County of _____

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

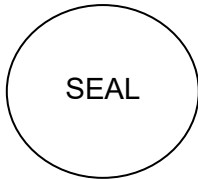
The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement. The Bidder agrees to make a Good Faith Effort to utilize minority suppliers where possible.

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: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20__

Notary Public _____

My commission expires _____

State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by HUB Certified/Minority Businesses

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by HUB certified/minority businesses as defined in GS143-128.2(g) and 128.4(a),(b),(e) is equal to or greater than 10% of the bidders total contract price, then 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 _____
 (Name of 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	**HUB Certified Y/N	Work Description	Dollar Value

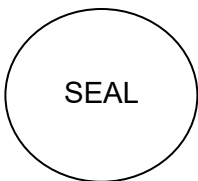
*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Pursuant to GS143-128.2(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 _____

State of North Carolina AFFIDAVIT D – Good Faith Efforts

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by HUB Certified/ minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of _____ I do hereby certify that on the _____
(Name of Bidder)

Project ID# _____ (Project Name) Amount of Bid \$ _____

I will expend a minimum of _____% of the total dollar amount of the contract with HUB certified/ 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	**HUB Certified Y/N	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**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Examples of documentation that may be required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

- A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State 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 contact, 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 business 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.

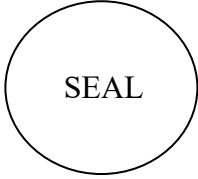
Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

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 _____

FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS THAT _____

_____ as principal, and _____, as surety, who is duly licensed to act as surety in North Carolina, are held and firmly bound unto the State of North Carolina* through Appalachian State University as obligee, in the penal sum of _____ DOLLARS, lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Signed, sealed and dated this ____ day of ____ 20__

WHEREAS, the said principal is herewith submitting proposal for and the principal desires to file this bid bond in lieu of making the cash deposit as required by G.S. 143-129.

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such, that if the principal shall be awarded the contract for which the bid is submitted and shall execute the contract and give bond for the faithful performance thereof within ten days after the award of same to the principal, then this obligation shall be null and void; but if the principal fails to so execute such contract and give performance bond as required by G.S. 143-129, the surety shall, upon demand, forthwith pay to the obligee the amount set forth in the first paragraph hereof. Provided further, that the bid may be withdrawn as provided by G.S. 143-129.1

_____(SEAL)

_____(SEAL)

_____(SEAL)

_____(SEAL)

_____(SEAL)

FORM OF CONSTRUCTION CONTRACT

(ALL PRIME CONTRACTS)

THIS AGREEMENT, made the _____ day of _____ in the year of 20__ by and between _____

hereinafter called the Party of the First Part and the *State of North Carolina, through Appalachian State University hereinafter called the Party of the Second Part.

WITNESSETH:

That the Party of the First Part and the Party of the Second Part for the consideration herein named agree as follows:

1. Scope of Work: The Party of the First Part shall furnish and deliver all of the materials, and perform all of the work in the manner and form as provided by the following enumerated plans, specifications and documents, which are attached hereto and made a part thereof as if fully contained herein: advertisement; Instructions to Bidders; General Conditions; Supplementary General Conditions; specifications; accepted proposal; contract; performance bond; payment bond; power of attorney; workmen's compensation; public liability; property damage and builder's risk insurance certificates; approval of attorney general; certificate by the Office of State Budget and Management, and drawings, titled:

Watson-Brumit Hall Roof Replacement

Consisting of the following sheets: G-001 Cover, G-002 Code Summary, XR 101 Roof Plan, XR301 Roof Systems, XR501 Details, XR502 Details, XR503 Details, XR504 Details, XR505 Details, XR506 Details, XW201 Elevations, XW202 Elevations

Dated: March 25, 2024 and the following addenda:

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

2. That the Party of the First Part shall commence work to be performed under this agreement on a date to be specified in a written order of the Party of the Second Part and shall fully complete all work hereunder within 60 consecutive calendar days. For each day in excess thereof, liquidated damages shall be as stated in Supplementary General Conditions. The Party of the First Part, as one of the considerations for the awarding of this contract, shall furnish to the Party of the Second Part a construction schedule setting forth planned progress of the project broken down by the various divisions or part of the work and by calendar days as outlined in Article 14 of the General Conditions of the Contract.

3. The Party of the Second Part hereby agrees to pay to the Party of the First Part for the faithful performance of this agreement, subject to additions and deductions as provided in the specifications or proposal, in lawful money of the United States as follows:

(\$ _____)

Summary of Contract Award:

4. In accordance with Article 31 and Article 32 of the General Conditions of the Contract, the Party of the Second Part shall review, and if approved, process the Party of the First Party's pay request within 30 days upon receipt from the Designer. The Party of the Second Part, after reviewing and approving said pay request, shall make payments to the Party of the First Part on the basis of a duly certified and approved estimate of work performed during the preceding calendar month by the First Party, less five percent (5%) of the amount of such estimate which is to be retained by the Second Party until all work has been performed strictly in accordance with this agreement and until such work has been accepted by the Second Party. The Second Party may elect to waive retainage requirements after 50 percent of the work has been satisfactorily completed on schedule as referred to in Article 31 of the General Conditions.

5. Upon submission by the First Party of evidence satisfactory to the Second Party that all payrolls, material bills and other costs incurred by the First Party in connection with the construction of the work have been paid in full, final payment on account of this agreement shall be made within thirty (30) days after the completion by the First Party of all work covered by this agreement and the acceptance of such work by the Second Party.

6. It is further mutually agreed between the parties hereto that if at any time after the execution of this agreement and the surety bonds hereto attached for its faithful performance, the Second Party shall deem the surety or sureties upon such bonds to be unsatisfactory, or if, for any reason, such bonds cease to be adequate to cover the performance of the work, the First Party shall, at its expense, within five (5) days after the receipt of notice from the Second Party so to do, furnish an additional bond or bonds in such form and amount, and with such surety or sureties as shall be satisfactory to the Second Party. In such event no further payment to the First Party shall be deemed to be due under this agreement until such new or additional security for the faithful performance of the work shall be furnished in manner and form satisfactory to the Second Party.

7. The Party of the First Part attest that it and all of its subcontractors have fully complied with all requirements of NCGS 64 Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).

IN WITNESS WHEREOF, the Parties hereto have executed this agreement on the day and date first above written in 4 counterparts, each of which shall without proof or accounting for other counterparts, be deemed an original contract.

Witness:

(Proprietorship or Partnership)

Contractor: (Trade or Corporate Name)

By: _____

Title: _____
Owner, Partner, or Corp. Pres. or Vice Pres. only)

Attest: (Corporation)

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

The State of North Carolina through*

(CORPORATE SEAL)

(Agency, Department or Institution)

Witness:

By: _____

Title: _____

FORM OF PERFORMANCE BOND

Date of Contract: _____

Date of Execution: _____

Name of Principal
(Contractor) _____

Name of Surety: _____

Name of Contracting
Body: _____

Amount of Bond: _____

Project _____

KNOW ALL MEN BY THESE PRESENTS, that we, the principal and surety above named, are held and firmly bound unto the above named contracting body, hereinafter called the contracting body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind, ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the contracting body, identified as shown above and hereto attached:

NOW, THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the contracting body, with or without notice to the surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in 4 counterparts.

Witness:

(Proprietorship or Partnership)

Attest: (Corporation)

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

(Corporate Seal)

Contractor: (Trade or Corporate Name)

By: _____

Title: _____
(Owner, Partner, or Corp. Pres. or Vice Pres. only)

(Surety Company)

By: _____

Title: _____
(Attorney in Fact)

(Surety Corporate Seal)

Witness:

Countersigned:

(N.C. Licensed Resident Agent)

Name and Address-Surety Agency

Surety Company Name and N.C.
Regional or Branch Office Address

FORM OF PAYMENT BOND

Date of Contract: _____

Date of Execution: _____

Name of Principal
(Contractor) _____

Name of Surety: _____

Name of Contracting
Body: _____

Amount of Bond: _____

Project _____

KNOW ALL MEN BY THESE PRESENTS, that we, the principal and surety above named, are held and firmly bound unto the above named contracting body, hereinafter called the contracting body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the contracting body identified as shown above and hereto attached:

NOW, THEREFORE, if the principal shall promptly make payment to all persons supplying labor/material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Executed in 4 counterparts.

Witness:

(Proprietorship or Partnership)

Attest: (Corporation)

By: _____

Title: _____
(Corp. Sec. or Asst. Sec. only)

(Corporate Seal)

Contractor: (Trade or Corporate Name)

By: _____

Title: _____
(Owner, Partner, or Corp. Pres. or Vice Pres. only)

(Surety Company)

By: _____

Title: _____
(Attorney in Fact)

(Surety Corporate Seal)

Witness:

Countersigned:

(N.C. Licensed Resident Agent)

Name and Address-Surety Agency

Surety Company Name and N.C.
Regional or Branch Office Address

Sheet for Attaching Power of Attorney

Sheet for Attaching Insurance Certificates

APPROVAL OF THE UNIVERSITY ATTORNEY

**CERTIFICATION BY THE OFFICE OF STATE
BUDGET AND MANAGEMENT REMOVE THIS PAGE FOR UNIVERSITY PROJECTS**

Provision for the payment of money to fall due and payable by the

under this agreement has been provided for by allocation made and is available for the purpose of carrying out this agreement.

This _____ day of _____ 20____.

Signed _____
Budget Officer

STATE OF NORTH CAROLINA
 COUNTY SALES AND USE TAX REPORT
 SUMMARY TOTALS AND CERTIFICATION

CONTRACTOR: _____

Page 1 of

PROJECT: _____

FOR PERIOD: _____

	TOTAL FOR COUNTY OF:	TOTAL FOR COUNTY OF:	TOTAL FOR COUNTY OF:	TOTAL FOR COUNTY OF:	TOTAL FOR COUNTY OF:	TOTAL FOR COUNTY OF:	TOTAL ALL COUNTIES
CONTRACTOR							
SUBCONTRACTOR(S)*							
COUNTY TOTAL							

* Attach subcontractor(s) report(s)
 ** Must balance with Detail Sheet(s)

I certify that the above figures do not include any tax paid on supplies, tools and equipment which were used to perform this contract and only includes those building materials, supplies, fixtures and equipment which actually became a part of or annexed to the building or structure. I certify that, to the best of my knowledge, the information provided here is true, correct, and complete.

Sworn to and subscribed before me,

This the _____ day of _____, 20____

 Signed

 Notary Public

My Commission Expires: _____

 Print or Type Name of Above

Seal

NOTE:
 This certified statement may be subject to audit.

STATE OF NORTH CAROLINA
SALES AND USE TAX REPORT DETAIL

CONTRACTOR: _____

Page 2 of _____

SUBCONTRACTOR _____

FOR PERIOD: _____

PROJECT: _____

PURCHASE DATE	VENDOR NAME	INVOICE NUMBER	TYPE OF PROPERTY	INVOICE TOTAL	COUNTY TAX PAID	COUNTY OF SALE *
				\$	\$	
				TOTAL:	\$	

* If this is an out-of-state vendor, the County of Sale should be the county to which the merchandise was shipped.

SECTION 316

Owner

Designer

Contractor Code _____ Item _____

Surety

Other

CONTRACTOR'S

AFFIDAVIT OF

RELEASE OF LIENS

For Use with State of North Carolina Projects

TO: (OWNER)

CONTRACT FOR:

CONTRACT DATE:

SCO PROJECT ID:

PROJECT INFORMATION:
(Name & Location)

State of:

County of:

The undersigned, pursuant to Article 36 of the General Conditions of the Contract, hereby certifies that to the best of his knowledge, information and belief, 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 against any property of the owner arising in any manner out of the performance of the contract referenced above.

SUPPORTING DOCUMENTS

ATTACHED HERETO:

CONTRACTOR:

Address:

By

Subscribed and sworn to before me
this day of 20

Signature Notary Public:

Printed Name of Notary Public:

My Commission Expires:

**CONTRACTOR'S
AFFIDAVIT OF PAYMENT
OF DEBTS AND CLAIMS**

Owner
Designer
Contractor Code _____ Item _____
Surety
Other

For Use with State of North Carolina Projects

TO (OWNER)

CONTRACT FOR:

CONTRACT DATE:

PROJECT INFORMATION:
Name & Location:

State of:

County of:

The undersigned, pursuant to Article 36 of the General Conditions of the Contract, hereby certifies that, he has paid in full or has otherwise satisfied all obligations 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 his property might in any way be held responsible.

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Consent of Surety to Final Payment. Whenever surety is involved, Consent of Surety is required. Indicate attachment: (yes) (no).
The following supporting documents should be attached hereto if required by the owner:
 - a. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
 - b. 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.
 - c. Contractor's Affidavit of Release of Liens.

CONTRACTOR:
Address:

By:
Subscribed and sworn to before me this ___ day of _____ 20__

Signature of Notary Public:

Printed Name of Notary Public:

My Commission Expires:

Owner

Designer

Contractor SCO ID # _____

Surety

Other

CONSENT OF SURETY

COMPANY TO FINAL

PAYMENT

For Use with State of North Carolina Projects

PROJECT Name & Location:

TO: (OWNER)

CONTRACT FOR:

CONTRACT DATE:

CONTRACTOR:

In accordance with the provisions of the contract between the owner and the contractor as indicated above, the (here insert name and address of surety company)

SURETY COMPANY

on bond of (here insert name and address of contractor)

CONTRACTOR

hereby approves of the final payment to the contractor, and agrees that final payment to the contractor shall not relieve the surety company of any of its obligations to (here insert name and address of owner)

OWNER

as set forth in said surety company's bond.

IN WITNESS WHEREOF,
the surety company has hereunto set its hand this day of 20

Surety Company

Signature of Authorized
Representative

Attest:

Title

(Visible Seal):

ROOF MANUFACTURER'S ACKNOWLEDGMENT

PART 1 GENERAL

1.1 FROM:

- A. Roofing Contractor: _____
- B. Address: _____
- C. Phone: _____ Email: _____

1.2 FOR:

- A. Owner: Appalachian State University
- B. Project: Watson-Brumit Hall Roof Replacement
- C. REI Project No.: 4738
- D. Address: 150 University Drive, Boone, North Carolina 28607

1.3 ACKNOWLEDGEMENT

- A. This is to advise the Owner that having thoroughly reviewed the Specifications and Drawings contained within the Project Manual dated 03-25-2024, the above-titled project, we acknowledge that the roof system(s) and flashing system(s) specified are suitable for the issuance of the specified Manufacturer's warranty on this project and have been tested and approved for the wind uplift pressures and specified external fire resistance rating outlined in the project specifications. Having reviewed the project requirements in detail, the Manufacturer will provide a written response of exceptions or exclusions to the Engineer through the contractor as otherwise outlined in the Advertisement or Invitation for Bids, if conflicts exist between the Manufacturer's warranty requirements and the above listed documents. Exceptions not submitted accordingly are subject to rejection. The manufacturer also certifies that the installer is approved, authorized, or licensed by the manufacturer to install the specified roof system and is eligible to provide the specified manufacturer's warranty. The manufacturer will comply with the specified requirements for on-site technical support.

1.4 EXECUTED BY:

- A. Manufacturer's Company Name: _____
- B. Designated Reviewer Name and Title: _____
- C. Signature: _____ Date: _____

END OF SECTION

CONTRACTORS GUARANTEE

PART 1 GENERAL

1.1 WARRANTY

- A. Know all men by these presents, that we, _____ (Contractor), having installed roofing system, flashings and sheet metal on the Watson-Brumit Hall Roof Replacement under contract between Appalachian State University and Contractor, unconditionally guarantee materials and workmanship against patent defects arising from faulty materials, faulty workmanship or negligence for a period of 24 months following the date of final acceptance of the work which occurred on _____, 20____; and shall replace such defective materials or workmanship without cost to the Owner. Where items of equipment or material carry a manufacturer's warranty for any period in excess of 24 months, then the manufacturer's warranty shall apply for that particular piece of equipment or material. The Contractor shall replace such defective equipment or materials, without cost to the Owner, within the manufacturer's warranty period. Additionally, the Owner may bring an action for latent defects caused by the negligence of the Contractor which is hidden or not readily apparent to the Owner at the time of final acceptance, whichever occurred first, in accordance with the applicable law.
- B. We, Contractor, further agree that for the period specified below, we will make repairs at no expense to the Owner to defects which may develop in the work in a manner compatible to the system, acceptable under industry standards and general practice as established by the Engineer and acceptable to the Manufacturer.
- C. We, Contractor, warrant the materials and workmanship against leakage and defects due to faulty materials, workmanship and contract negligence for a period of 24 months following the date of final acceptance of the work. We, Contractor, agree that should any leakage occur in the work we will perform emergency repairs within 24 hours' notice and perform permanent repairs promptly in a manner to restore the work to a watertight condition by methods compatible to the system, acceptable under industry standards and general practice, and acceptable to the Manufacturer, all at no expense to the Owner.
- D. We, Contractor, agree to attend one post construction field inspection no earlier than one month prior to the Guarantee expiration date and to complete corrective actions requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

1.2 EXECUTED BY

Contractor: _____

Authorized Signing Officer Name: _____

Authorized Signing Office Title: _____

Signature: _____ Date: _____

1.3 NOTARIZED BY:

I, _____(print name), a Notary Public for _____ County of _____ (State), do hereby certify that _____(officer listed above) personally appeared before me this day and acknowledged the due execution of the foregoing instrument. Witness my hand and official seal, this ____ day of _____, 20 ____ . My commission expires ____ of _____, 20 ____ .

Signed: _____

(OFFICIAL SEAL)

END OF SECTION

ASBESTOS FREE WARRANTY

PART 1 GENERAL

1.1 FOR

- A. Owner: Appalachian State University
- B. Project: Watson-Brumit Hall Roof Replacement
- C. Project Address: 150 University Drive, Boone, North Carolina 28607

1.2 WARRANTY

- A. Date of Substantial Completion: _____
- B. Know all men by these presents, that we, _____ (Contractor) having furnished labor, materials, equipment and/or supplies, removed existing roof system; installed new roof system and/or miscellaneous components; from, to and/or on the above referenced project under contract between the Owner and Contractor, warrant to Owner with respect to said work that no materials containing asbestos fibers were incorporated into the work, and that, to our knowledge and belief, no materials containing asbestos remain in or are covered by the work.
- C. Exceptions: _____ If there are no exceptions, state "None".

1.3 EXECUTED BY

- A. Contractor: _____
- B. Authorized Signing Officer Name: _____
- C. Authorized Signing Office Title: _____
- D. Signature: _____ Date: _____

1.4 NOTARIZED BY:

- A. I, _____ (print name), a Notary Public for _____ County of _____ (State), do hereby certify that _____ (officer listed above) personally appeared before me this day and acknowledged the due execution of the foregoing instrument. Witness my hand and official seal, this _____ day of _____, 20 _____. My commission expires _____ of _____, 20 _____.
- B. Signed: _____

(OFFICIAL SEAL)

END OF SECTION