ENGINEERS

PROJECT MANUAL

FOR

BELVILLE ELEMENTARY SCOOL ROOF REPLACEMENT

575 RIVER ROAD SE, LELAND, NC 28451

OCTOBER 4, 2024

REI PROJECT NO. 022CLT-253

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DIVISION 22 - PLUMBING

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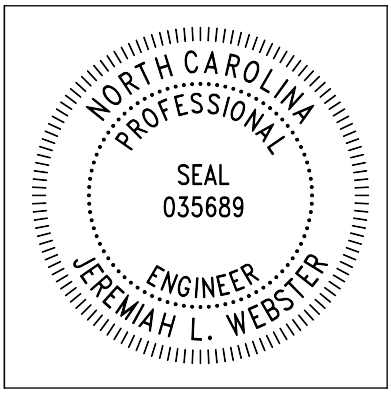
PART 1 - GENERAL

1.1 SUMMARY

A. Design Firm for Belville Elementary School Roof Replacement with Project Manual dated October 4, 2024:

1. REI Engineers, Inc.
2. 1927 J.N. Pease Place, Suite 201, Charlotte, NC 28262
3. North Carolina Firm License C-1520



Professional Engineer

Digitally signed by Jeremiah Webster
DN: C=US, E=jwebster@reiengineers.com, O=REI Engineers, CN=Jeremiah Webster
Date: 2024.10.15 11:04:32-04'00'

END OF SECTION

SECTION 00 01 15

LIST OF DRAWINGS

PART 1 - GENERAL

1.1 SUMMARY

A. The following drawings dated October 4, 2024 are included as part of the Contract Documents:

1. G-001 Cover
2. XR101 Roof Plan
3. XR301 Roof Systems
4. XR501 Details
5. XR502 Details
6. XR503 Details
7. XR504 Details

END OF SECTION

SECTION 00 11 13

ADVERTISEMENT FOR BIDS

PART 1 - GENERAL

1.1 PROJECT INFORMATION

A. Project Name: Belville Elementary School Roof Replacement

B. Project Address: 575 River Road SE, Leland, North Carolina 28451

C. Owner: Brunswick County Schools

1.2 BIDS

A. Sealed bids for the project will be received from bidders by the Owner in the Drop Box at the address listed below until 1:00 PM on November 19, 2024, at which time they will be publicly opened and read.

Brunswick County Schools
Attn: Megan Grissett
199 Sessions Drive,
Bolivia, North Carolina 28422

1.3 PROJECT DOCUMENTS

A. Electronic project documents may be obtained from the Engineer, REI Engineers, Inc., 1927 J.N. Pease Place, Suite 201, Charlotte, NC 28262, at no cost.

1.4 BIDDING REQUIREMENTS

A. All bidders are hereby notified that they shall be properly licensed under the state laws governing their trades.

B. Refer to Section 00 21 13 "Instructions to Bidders" for bid security and bonding requirements.

C. Submit questions to REI Engineers in writing to the email address listed above no later than 5:00 PM on November 12, 2024.

1.5 PRE-BID MEETING

A. A Pre-Bid Meeting is scheduled for 10:00 AM on October 29, 2024 at 575 River Road SE, Leland, North Carolina 28451.

B. Attendance is mandatory.

END OF SECTION

SECTION 00 21 13

INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.1 DEFINITIONS

A. The Bidding Requirements consist of the Advertisement or Invitation to Bid, Instructions to Bidders, Supplementary Instructions to Bidders, the bid form, and other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications and all Addenda issued prior to execution of the Contract.

B. Definitions set forth in Section 00 72 13 "General Conditions of the Contract" for Construction or in other Contract Documents are applicable to the Bidding Documents.

C. Addenda are written or graphic instruments issued by the Engineer prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

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

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

F. An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

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

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

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

1.2 BIDS

A. Submit Section 00 41 13 "Bid Form" along with required enclosures in a sealed envelope, with the Bidder's name, license number, and project name written on the outside; place this sealed envelope in another envelope and deliver to the Owner at the address specified inSection 00 11 13 "Advertisement for Bids".

B. Bids will be received until the date and time specified in Section 00 11 13 "Advertisement for Bids" , at which time they will be publicly opened and read.

C. Fill in and sign the bid form correctly. Bids that show any omission, alterations of form, additions not called for, conditional Bids, or any irregularities of any kind may be rejected. If erasures are necessary and appear on the forms, each such erasure must be initialed by the person signing the proposal. Bid Bond shall be signed by the Bidder and notarized.

D. Bids that are non-responsive or fail to follow the Instructions to Bidders may be rejected.

E. No bid may be withdrawn after receipt of Bids for a period of sixty (60) days.

1.3 ACCEPTANCE OF BID (AWARD)

A. It is the Owner's intention to award a contract for work under this project to the lowest responsible Bidder; however, in the interest of suitability to the Owner's need and/or economy, equipment, materials and furnishings other than the lowest in price may be selected.

B. The Owner reserves the right to reject any or all Bids, to accept any bid submitted, to waive any formalities, and to negotiate with the low Bidder or Bidders any changes considered necessary or desirable. The Owner reserves the right to reject any Bid when such rejection is in the interest of the Owner to reject the bid of the bidder who has previously failed to perform or to complete on time Contracts of a similar nature; and to reject the bid of a bidder who is not, in the opinion of the Engineer, in a position to perform the Contract.

C. The Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted. Alternates may be accepted at any time during the bid holding period.

1.4 PRE-BID MEETING

A. Refer to Section 00 11 13 "Advertisement for Bids" for the date, time and location of the mandatory Pre-Bid Meeting.

B. A Pre-Bid Meeting will be held for purposes of considering questions posed by Bidders. All interpretations and corrections to Contract Documents deriving from this meeting will be documented via Addendum.

1.5 DISQUALIFICATION

A. The Owner reserves the right to disqualify Bids, before or after opening, upon evidence of collusion with intent to defraud or commit other illegal practices upon the part of the Bidder.

1.6 CONTRACTOR'S LICENSE

A. All Bidders must have proper licenses for contractors as required by State Law. The Bidder's license number shall be listed on the bid form and on the outside of the inner sealed envelope in which the bid is submitted.

1.7 CONFLICT OF INTEREST

A. Bidders must disclose in writing with their bid the name of any owner, officer, director, or agent who is also an employee of the Owner.

B. Bidders must disclose in writing with their bid the name of any employee of the Owner who owns, directly or indirectly, an interest of five percent (5%) or more in the Bidder's firm or any of its branches or subsidiaries.

C. By submitting a bid, the Bidder certifies that there is no relationship between the Bidder and any person or entity which is, or gives the appearance of, a conflict of interest related to this project.

1.8 NON-DISCRIMINATION

A. The Bidder shall not discriminate against any individuals and will take proactive measures to assure compliance with all Federal and State requirements concerning fair employment, employment of people with disabilities, and concerning the treatment of all employees without regard to discrimination based upon age, race, color, religion, sex, national origin, or disability.

1.9 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

A. Examine Drawings and Specifications and all Addenda or other revisions thereto and thoroughly familiarize himself with the detailed requirements thereof prior to submitting a proposal.

B. Should a Bidder find discrepancies or ambiguities in, or omissions from the Specifications and Drawings bound herein, or should be in doubt as to their meaning, notify the Engineer in writing immediately. Engineer will issue an interpretation in the form of an addendum. This addendum will be forwarded to all Bidders of record.

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

D. Act promptly and allow sufficient time for a reply to be provided before the date established for submission of Bids.

E. Acknowledge receipt of all addenda on the Bid Form.

F. No oral interpretations will be made to any Bidder as to the meaning or intent of the Contract Documents or be effective to modify any of the provisions of the Contract Documents.

1.10 SUBSTITUTIONS

A. References are made to certain specific products solely to denote the quality standard of the desired product and are not intended to restrict Bidders to a specific brand, make, manufacturer, or name. These products have been noted to assist in establishing material types and acceptable products. Equivalent products will be considered acceptable provided that the approval of the specific product has been given in writing by the Engineer.

B. Written requests for substitution of equivalent products from prime bidders will be considered if received by the Engineer ten (10) calendar days prior to the bid opening.

C. Submit each request for substitution on the form contained in Section 00 63 25 "Substitution Request Form" for consideration in accordance with procedures required below.

D. Identify the product or the fabrication or installation method to be replaced in each request. Include related specification sections and drawing number.

E. Provide complete documentation on both the product specified and the proposed substitution including the following information as appropriate:

1. Comparison of specified and proposed substitute product data, fabrication drawings, and installation procedures.
2. Samples where applicable or requested.
3. Detailed comparison of significant qualities of the proposed substitution with those of the work specified.
4. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors that will become necessary to accommodate the proposed substitution.

F. Certification by the Bidder or manufacturer that the substitution proposed is equal-to or better in every respect to that required by the Contract Documents, and that it will perform equal or superior to product specified in the application indicated. The Bidder waives any right to additional payment or time, which may subsequently become necessary because of the failure of the substitution to perform adequately.

G. Engineer's Action: The Engineer may request additional information or documentation necessary for evaluation of the request. The Engineer will notify the Bidders of acceptance of the proposed substitution by means of an addendum to the bid documents. If the proposed substitute is accepted through an addendum use the product specified by name. Engineer's Substitution Approval during bidding and subsequent addendums does not void the Bidder's responsibility to submit the required shop drawings and comply with the other contract documents and requirements.

1.11 SITE INVESTIGATION

A. Examine and thoroughly familiarize itself with existing conditions including applicable laws, ordinances, rules and regulations that will affect the work prior to submitting a proposal. Visit the site, examine the grounds and existing buildings, utilities and roads and ascertain by any reasonable means conditions that will in any manner affect its work. Ask the Engineer for any additional information that he deems necessary for it to be fully informed as to exactly what is to be expected prior to submitting a proposal. The drawings have been prepared on the basis of surveys and inspections of the site and physical conditions at the site. This, however, does not relieve the Bidder of the necessity for fully informing itself as to the existing physical conditions. Each Carefully examine the existing conditions as compared to the Contract Documents.

B. Secure on-site measurements for quantities upon which proposal is based and has observe existing conditions and limitations.

C. Upon arrival at the Project Site, immediately proceed to the main entrance/office and advise the administrative personnel of its presence and purpose. Sign the visitor's log, giving his name, his company and the time and date of the visit.

D. Inspection of the work areas shall occur between the hours of 8:00 AM and 5:00 PM. No inspections will be conducted on Saturdays, Sundays, or holidays.

1.12 BID SECURITY

A. Each Bidder shall file a bid bond in the amount equal to not less than 5% of the gross amount of the bid executed in accordance with and conditioned as prescribed by GS 143-129, as amended by Chapter 1104 of the North Carolina Public Laws of 1951. In lieu thereof, each bid may be accompanied by a deposit of cash or a certified check drawn on a bank or trust company insured by the Federal Deposit Insurance Corporation in an amount equal to not less than five percent (5%) of the gross amount of the bid.

B. If the successful Bidder fails to execute the contract within 10 days after award, the above deposit will be retained by the Owner on the bid bond executed on liquidated damages.

1.13 PERFORMANCE BOND AND LABOR AND MATERIALS PAYMENT BOND

A. A Performance Bond and Payment Bond in the amount of the contract is required. Include the cost of providing Performance Bond and Payment Bond in the Base Bid.

B. Deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to be commenced prior thereto in response to a letter of intent, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section.

C. Unless otherwise provided, write bonds on the forms contained in Section 00 61 13.13 "Performance Bond Form" and Section 00 61 13.16 "Payment Bond Form". Write both bonds in the amount of the Contract Sum.

D. Date bonds on the date of the Contract.

E. Issued by sureties and executed by an attorney-in-fact, on behalf of the surety, who are authorized to do business in the State of North Carolina.

F. Affix thereto a certified and current copy of the power of attorney.

1.14 PRIME CONTRACT

A. Perform all work under the single prime contract.

1.15 PERMITS, FEES AND TAXES

A. Secure and pay the costs of licenses, permits and fees for inspections required by City, County and/or State authorities; Social Security and other applicable Local, State and Federal Government taxes, and sales taxes. Include such costs in its bid.

1.16 SUBCONTRACTORS

A. Names of subcontractors must be listed on Section 00 41 13 "Bid Form". The Bidder shall identify work by the general, subcontractor or not applicable for each trade; utilize parenthesis (_) blanks to list trades not provided in the table. Do not list suppliers. All blanks must be filled in. Failure to do so may result in bid being declared non-responsive. If there is more than one subcontractor per trade identified below, list all. If no subcontractors are to be utilized, indicate by signing at the appropriate place at the bottom of the table.

B. A Bidder whose bid is accepted shall not substitute any person as subcontractor in the place of the subcontractor listed in the original bid, except

1. if the listed subcontractor's bid is later determined by the successful Bidder to be nonresponsible or nonresponsive or the listed subcontractor refuses to enter into a contract for the complete performance of the bid work, or
2. with the approval of the awarding authority, the Owner, for good cause shown by the successful Bidder.

C. The terms, conditions, and requirements of each contract between the successful Bidder and a subcontractor performing work under a subdivision or branch of work listed in this subsection shall incorporate by reference the terms, conditions, and requirements of the contract between the contractor and the Owner.

1.17 FORM OF AGREEMENT

A. The form of agreement to be entered into shall be the sample contained in Section 00 52 13 "Standard Form of Agreement" between Owner and Contractor, as revised.

1.18 ROOF SYSTEM MANUFACTURER

A. The roof system manufacturer shall complete the Section 00 62 33 "Roof Manufacturer's Acknowledgment"; Bidder shall enclose the signed Roof Manufacturer's Acknowledgment form from the manufacturer it intends to use on the project with their bid.

1.19 CONTRACTOR QUALIFICATIONS

A. Bids will be accepted from Bidders who are regularly engaged in, and licensed to perform, the work they are bidding, which represents a significant portion of their total volume and who perform this work with workers regularly employed on their direct payrolls. Before a bid is considered for award, the Bidder may be requested by the Engineer to submit a statement of facts in detail as to its previous experience in performing similar or comparable work and of its business and technical organization and financial resources available to be used in contemplated work. The Bidder may also be required to submit a statement of facts in detail on his proposed subcontractors as to their previous experience and past performance in performing similar work or comparable work.

END OF SECTION

SECTION 00 41 13

BID FORM

To: Attn: Megan Grissett
Brunswick County Schools
199 Sessions Drive,
Bolivia, North Carolina 28422

Project: Belville Elementary School Roof Replacement
REI Project No. 022CLT-253

Date: _____

Bidder: _____

Address: _____

Phone: _____ Email: _____

North Carolina License No.: _____ Classification : _____ Limitation : _____

PART 1 - GENERAL

1.1 BASE BID

A. The undersigned, as bidder, hereby declares that the only person or persons interested in this bid as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this bid 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 dated October 4, 2024 as prepared by REI Engineers, Inc., 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 proposes and agrees if this bid is accepted to contract with the Owner in the form of contract specified, to furnish all necessary materials, equipment, machinery, tools apparatus, means of transportation and labor necessary to complete the construction of the project 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.

1. Words: _____

2. Figures: $_____._____

1.2 ALTERNATES:

A. The undersigned agrees to perform alternative work as described in Section 01 23 00 "Alternates" for the sums stated below resulting in additions to or deductions from the base bid stated above. Additions and deductions shall include any modifications of the Work or additional work that may be reasonably included as part of the alternative work. All alternative work is to be completed within the same timeframe as the base bid work. All alternates must be filled out. A zero or no entry after any alternate indicates no cost change to include that Alternate. The Owner may accept Alternates at any time during the bid holding period. The undersigned acknowledges that failure to complete all information requested in this section may result in the rejection of this bid.

1. Alternate No. 1: Provide Roof Replacement at Roof Area B.

    a. Words:_____
    b. Figures: $_____.___
    c. Select One: ___ Add or ___ Deduct

2. Alternate No. 2: Provide Roof Replacement at Roof Area D.

    a. Words:_____
    b. Figures: $_____.___
    c. Select One: ___ Add or ___ Deduct

3. Alternate No. 3: Provide Roof Replacement at Roof Area F.

    a. Words:_____
    b. Figures: $_____.___
    c. Select One: ___ Add or ___ Deduct

4. Alternate No. 4: Provide Metal Wall Panels where indicated in Contract Drawings.

    a. Words:_____
    b. Figures: $_____.___
    c. Select One: ___ Add or ___ Deduct

1.3 ALLOWANCES:

A. Include in the Base Bid the $25,000.00 Contingency Allowance specified in Section 01 21 00 "Allowances" of the Project Manual.

B. Include in the Base Bid the Quantity Allowances specified in Section 01 21 00 "Allowances" of the Project Manual.

1. Repair 1,000 SF of Corroded Steel Deck (Corrosion Degree 1) with Coating. Refer to Section 05 01 30 "Steel Roof Deck Repair and Securement"
2. Repair 500 SF of Steel Deck (Corrosion Degree 2) with Steel Plates. Refer to Section 05 01 30 "Steel Roof Deck Repair and Securement".
3. Replace 5,000 SF of Wet or Deteriorated Existing Gypsum Substrate. Refer to Section 07 22 16 "Roof Insulation"
4. Replace 5,000 SF of Wet or Deteriorated Existing 3" Insulation. Refer to Section 07 22 16 "Roof Insulation"

5. Replace 200 BF of Deteriorated Wood Blocking. Refer to Section 06 10 00 "Rough Carpentry"
6. Replace 160 SF of Deteriorated Plywood. Refer to Section 06 10 00 "Rough Carpentry"

1.4 UNIT PRICES:

A. 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 scope of the work all in accordance with the contract documents. Refer to Section 01 22 00 "Unit Prices".

1. Repair Corroded Steel Deck with Coating. Refer to Section 05 01 30 "Steel Roof Deck Repair and Securement".

   a. Cost: $_____ per SF

2. Repair Steel Deck with Steel Plates. Refer to Section 05 01 30 "Steel Roof Deck Repair and Securement".

   a. Cost: $_____ per SF

3. Replace Wet or Deteriorated Existing Gypsum Substrate. Refer to Section 07 22 16 "Roof Insulation".

   a. Cost: $_____ per SF

4. Replace Wet or Deteriorated Existing 3" Insulation. Refer to Section 07 22 16 "Roof Insulation".

   a. Cost: $_____ per SF

5. Replace Deteriorated Wood Blocking. Refer to Section 06 10 00 "Rough Carpentry"

   a. Cost: $_____ per BF

6. Replace Deteriorated Plywood. Refer to Section 06 10 00 "Rough Carpentry"

   a. Cost: $_____ per SF

1.5 MANUFACTURERS:

A. Base bid shall utilize roofing materials manufactured by _____ and _____. Only one manufacturer shall be listed. Provide Section 00 62 33 "Roof Manufacturer's Acknowledgment" signed by manufacturer listed above and enclose with bid.

1.6 BID HOLDING TIME AND ACCEPTANCE:

A. The undersigned hereby agrees that this bid may not be revoked or withdrawn after the time set for the opening of bids but shall remain open during the bid holding period as specified in Section 00 21 13 "Instructions to Bidders".

1.7 SCHEDULE OF COMPLETION:

A. The undersigned understands that time is of the essence and agrees to the Contract Time and liquidated damages as indicated in General Conditions of the Contract for Construction and Supplementary Conditions apply to this Work. Furthermore, the project schedule will be considered in the projec award. The successful Contractor shall cooperate with the Owner in order to have an executed contract along with required insurance and bonds in place within thirty (30) days of bid due date.

1. Construction Commencement: May 1, 2025
2. Date of Substantial Completion: August 24, 2025

1.8 ADDENDUM:

A. Addendum received and used in computing bid:

1. Addendum No. 1: _____
2. Addendum No. 2: _____
3. Addendum No. 3: _____
4. Addendum No. 4: _____

1.9 SUBCONTRACTORS:

A. If subcontractors are to be utilized, the Bidder shall fill out all blanks on the list below. All subcontractors shall be listed. The Bidder shall identify work by the general, subcontractor or not applicable for each trade; utilize parenthesis (_) to list trades not provided. Do not list suppliers. All blanks must be filled in. Failure to do so may result in bid being declared non-responsive. If there is more than one subcontractor per trade identified below, list all. If no subcontractors are to be utilized, indicate by signing at the appropriate place at the bottom of the table.

Trade	Company	License #
General (Roofing)		
General (Sheet Metal)		
General (_____)		
Mechanical		
Electrical		
Plumbing		
Masonry		
Concrete		
Waste Disposal		
Utility Locate		
Other (_____)		
Other (_____)		
Other (_____)		
We do not plan to use subcontract forces		

1.10 ENCLOSURES:

A. Provide the following enclosures with submitted bid:

1. Bid Bond
2. Minority, Woman, and Small Business Enterprises Submittals as required by Section 00 43 39 "Minority Business Enterprise":

    a. MWSBE Identification Form
    b. State of North Carolina Affidavit A - Listing of the Good Faith Effort
    c. or
    d. State of North Carolina Affidavit B - Intent to Perform Contract with Own Workforce

3. Section 00 62 33 "Roof Manufacturer's Acknowledgment" for Manufacturer listed above.

Respectfully submitted this _____ day of _____, _____.

Company: _____

Printed Name: _____

Signature: _____

Title: _____

_____(State)

County of _____

I, _____, a Notary Public for _____ County, _____ (State), do hereby certify that _____ 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____.

_____ (OFFICIAL SEAL)
Notary Public

My commission expires _____, 20___.

SECTION 00 43 39

MINORITY BUSINESS ENTERPRISE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Owner's required Minority Business Enterprise Program and Forms.

1.2 RELATED DOCUMENTS

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

GUIDELINES FOR RECRUITMENT AND SELECTION OF MINORITY BUSINESSES FOR PARTICIPATION IN BRUNSWICK COUNTY SCHOOL CONSTRUCTION CONTRACTS

In accordance with G. S. 143-128, these guidelines establish goals for minority participation in single-prime, separate-prime bidding, construction manager at risk, and alternative contracting methods, on building construction or repair projects in the amount of $300,000.00 or more.

SECTION A: INTENT

It is the intent of these guidelines that Brunswick County Schools, as awarding authority for building construction or repair 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 goal of 10% (ten percent) for participation by minority businesses in each building construction or repair project as required by G. S. 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, 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 (MBE)- 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 complete 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 –Brunswick County Schools
6. Designer – Any person, firm, partnership, or corporation which has contracted with Brunswick County Schools 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 Brunswick County Schools to perform building construction or repair work.

10. Subcontractor – A firm under contract with the prime contractor or construction manager at risk for supplying 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. 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 biding, 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 D: DISPUTE RESOLUTION PROCEDURES

Pursuant to G. S. 143-128(fl), all disputes involving contractors on a building construction or repair project with Brunswick County Schools shall be resolved pursuant to Brunswick County Schools Dispute Resolution Policy 9120 or State of North Carolina Policy G. S. 143-135.26(11)

SECTION E: In addition to these guidelines, there will be issued with each construction bid package provisions for providing minority business participation in the construction projects.

MINORITY BUSINESS CONTRACT PROVISIONS (CONSTRUCTION)

APPLICATION:

The **Guidelines for Recruitment and Selection of Minority Businesses for Participation in Construction Contracts** are hereby made a part of these contract documents. These guidelines shall apply to all contractors regardless of ownership.

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.

Attach this form and AFFIDAVIT A or this form and AFFIDAVIAT B to the Bid

Identification of Minority Business Participation

I,_____,
(Name of Bidder)
do hereby certify that on this project, we will use the following minority business enterprises as construction subcontractors, vendors, suppliers or providers of professional services.

Firm Name, Address and Phone #	Work type	*Minority Category

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

The total value of minority business contracting will be ($)_____.

Attach AFFIDAVIT A or AFFIDAVIAT B to the Bid

State of North Carolina AFFIDAVIT A – Listing of the Good Faith Effort

County of _____

Affidavit of_____
(Name of Bidder)

I have made a good faith effort to comply under the following areas checked:

(*A minimum of 50 points must be checked in order to have achieved a "good faith effort"*)

- ☐ **1 -** 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. Value = 10 points.
- ☐ **2**.-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. Value =10 points.
- ☐ **3** - Broken down or combined elements of work into economically feasible units to facilitate minority participation. Value = 15 points.
- ☐ **4** - 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. Value = 10 points.
- ☐ **5** - Attended prebid meetings scheduled by the public owner. Value = 10 points.
- ☐ **6** - Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors. Value = 20 points.
- ☐ **7** - 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. Value = 15 points.
- ☐ **8** - 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. Value = 25 points.
- ☐ **9** - 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. Value = 20 points.
- ☐ **10** - Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands. Value = 20 points.

In accordance with GS143-128.2(d) the undersigned will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon execution of a contract with the Owner. Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby 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:_____

SEAL

State of North Carolina, County of_____

Subscribed and sworn to before me this ___day of _____***20***_____

Notary Public_____

My commission expires _____

Attach AFFIDAVIT A or AFFIDAVIAT B to the Bid

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 undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date:_____ **Name of Authorized Officer:**_____

Signature:_____

Title:_____

SEAL

State of North Carolina, County of _____
Subscribed and sworn to before me this _____day of _____20___
Notary Public _____
My commission expires_____

State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by Minority Firms

County of _____

********(NOTE: THIS FORM IS NOT TO BE SUBMITTED WITH THE BID PROPOSAL)********

If the portion of the work to be executed by minority businesses as defined in GS143-128.2(g) 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	Work description	Dollar Value

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

Pursuant to 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:_____

SEAL

Title:_____

State of North Carolina, 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 _____

If the goal of 10% participation by minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

(Name of Bidder)

Affidavit of: _____

I do certify the attached documentation as true and accurate representation of my good faith efforts.

(Attach additional sheets if required)

Name and Phone Number	*Minority Category	Work description	Dollar Value

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

Documentation of the Bidder's good faith efforts to meet the goals set forth in these provisions. Examples of documentation include, but are not limited to, the following evidence:

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.

Date:_____Name of Authorized Officer:_____

Signature:_____

Title:_____

SEAL

State of North Carolina, County of _____

Subscribed and sworn to before me this _____day of _____20_____

Notary Public_____

My commission expires _____

APPENDIX E

MBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor/Architect: _____

Address & Phone: _____

Project Name: _____

Pay Application #: _____ Period: _____

The following is a list of payments to be made to minority business contractors on this project for the above-mentioned period.

Firm Name	*Minority Category	Amount to be Paid form this pay Request	Total Payments to date	Total Amount Committed

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

Date: _____ Approved/Certified By: _____
Name

_____
Title

_____
Signature

****THIS DOCUMENT MUST BE SUBMITTED WITH EACH PAY REQUEST & FINAL PAYMENT****

SECTION 00 52 13

STANDARD FORM OF AGREEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Owner's Standard Form of Agreement

1.2 RELATED DOCUMENTS

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

SAMPLE

OWNER-CONTRACTOR AGREEMENT

PROJECT: _____

SCHOOL NAME(S): _____

THIS AGREEMENT made this __th day of _____, 2023 by and between the Owner, Brunswick County Board of Education (herein referred to as the "Owner"), whose mailing address is 35 Referendum Drive NE, Bolivia, NC 28422 and _____(herein referred to as the "Contractor"), whose mailing address is _____. Correspondence, submittals, and notices relating to or required under this Contract shall be sent in writing to the above addresses; unless either party is notified in writing by the other, of a change in address.

WITNESSETH:

WHEREAS, it is the intent of the Owner to obtain the services of the Contractor in connection with the _____ (hereinafter referred to as the "Project" or the "Work"); and

WHEREAS, the Contractor desires to perform such construction in accordance with the terms and conditions of this Agreement,

NOW, THEREFORE, in consideration of the promises made herein and other good and valuable consideration, the following terms and conditions are hereby mutually agreed to, by and between the Owner and Contractor:

Article 1

DEFINITIONS

1.1 All terms in this Agreement which are defined in the Information for Bidders and the General Conditions shall have the meanings designated therein.

1.2 The Contract Documents are as defined in the General Conditions. Such documents form the Contract, and all are as fully a part thereof as if attached to this Agreement or repeated herein.

Article 2

STATEMENT OF THE WORK

2.1 The Project is the Work identified in the plans and specifications prepared by _____ dated _____ for Brunswick County Board of Education, _____, including the following addenda:

Addendum No. 1 dated _____

A listing of the plans and specifications included in the Contract Documents is attached as Exhibit A.

2.2 The Parties agree that the Project shall include the following alternates:

_____

2.3 The Parties agree to the following modifications to the Project's plans and specifications, including the noted value engineering items: None

2.4 The Parties agree that the following allowances are included in the Contract Sum in Section 5.1 below:

_____

2.5 The Contractor shall provide and pay for all materials, tools, equipment, labor and professional and non-professional services, and shall perform all other acts and supply all other things necessary, to fully and properly perform and complete the Work, as required by the Contract Documents.

2.6 The Contractor shall further provide and pay for all related facilities described in any of the Contract Documents, including all work expressly specified therein and such additional work as may be reasonably inferred therefrom, saving and excepting only such items of work as are specifically stated in the Contract Documents not to be the obligation of the Contractor. The totality of the obligations imposed upon the contractor by this Article and by all other provisions of the Contract Documents, as well as the structures to be built and the labor to be performed, is herein referred to as the "Work".

Article 3

DESIGN CONSULTANT

3.1 The Design Consultant (as defined in the General Conditions) shall be _____ whose address is _____; provided, however, that the Owner may, without liability to the Contractor, unilaterally amend this Article from time to time by designating a different person or organization to act as its Design Consultant and so advising the Contractor in writing, at which time the person or organization so designated shall be the Design Consultant for purposes of this Contract.

Article 4

TIME OF COMMENCEMENT AND COMPLETION

4.1 The Contractor shall commence the Work promptly upon the date established in the Notice to Proceed. If there is no Notice to Proceed, the date of commencement of the Work shall be the date of this Agreement or such other date as may be established herein.

4.2 Time is of the essence. The Contractor shall achieve Final Completion, as defined in the General Conditions on or before the date established for Final Completion in the Supplemental Conditions.

4.3 The Supplemental Conditions contains certain specific dates that shall be adhered to and are the last acceptable dates unless modified in writing by mutual agreement between the Contractor and the Owner. All dates indicate midnight unless otherwise stipulated. The only exceptions to this schedule are defined in the General Conditions under 7.2 DELAYS AND EXTENSIONS OF TIME.

4.4 Should the Contractor fail to complete the Work on or before the dates stipulated for Substantial Completion and/or Final Completion, or such later date as may result from an extension of time granted by the Owner, he shall pay the Owner, as liquidated damages the sums set forth in the General and Supplemental Conditions.

Article 5

CONTRACT SUM

5.1 Provided that the Contractor shall strictly and completely perform all of its obligations under the Contract Documents, and subject only to additions and deductions by Modification or as otherwise provided in the Contract Documents, the Owner shall pay to the Contractor, in current funds and at the time and in the installments hereinafter specified, the sum of _____ Dollars ($_____) herein referred to as the "Contract Sum". This amount includes the base bid and the Alternates in Section 2.2

5.2 The Contract Sum includes the value engineering items and other contract modifications noted in Section 2.3 above that total $0.

5.3 Unit Prices are established as follows for the Project: N/A

Article 6

PROGRESS PAYMENTS

6.1 The Contractor hereby agrees that on or about the First day of the month for every month during the performance of the Work he will deliver to the Owner's Project Manager an Application for Payment in accordance with the provisions of Article 8 of the General Conditions. This date may be changed upon mutual agreement, stated in writing, between the Owner and Contractor. Payment under this Contract shall be made as provided in the General Conditions. Payments due and unpaid under the Contract Documents shall not bear interest.

Article 7

OTHER REQUIREMENTS

7.1 The Contractor shall submit the Performance Bond, Labor and Material Payment Bond and Certification of Insurance as required by the Contract Documents.

7.2 The Owner shall furnish to the Contractor one (1) set of drawings and one (1) set of specifications, at no extra cost, for use in the Construction of the Work. Additional sets of drawings or specifications may be obtained by the Contractor by paying the Owner for the costs of reproduction, handling and mailing.

7.3 The Contractor shall make a good faith effort to utilize Historically Underutilized Businesses (HUB's) per N.C. Gen. Stat. 143-128.2, and as described in the construction documents.

7.4 The General Conditions, Supplemental Conditions and the plans and specifications, including any addenda, are incorporated herein by reference.

7.5 This Agreement, together with any amendments or modifications, may be executed in one or more counterparts, each of which shall be deemed an original and all of which shall be considered one and the same agreement. This Agreement may also be executed electronically. By signing electronically, the parties indicate their intent to comply with the Electronic Commerce in Government Act (N.C.G.S § 66-58.1 et seq.) and the Uniform Electronic Transactions Act (N.C.G.S § 66-311 et seq.). Delivery of an executed counterpart of this Agreement by either electronic means or by facsimile shall be as effective as a manually executed counterpart.

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK]

Brunswick County Schools

_____
Chairman

ATTEST:

_____
Superintendent

_____.

By: _____
_____, President

ATTEST:

_____
_____, Vice President and Corporate Secretary

This Instrument Has Been Pre-audited In The Manner Required By The School Budget And Fiscal Control Act

_____
Cherie Wisse, Chief Finance Officer
Brunswick County Board of Education

SECTION 00 60 00

PROJECT FORMS

PART 1 - GENERAL

1.1 SUMMARY

A. The following documents are included in the Project Manual:

1. Section 00 61 13.13 "Performance Bond Form"
2. Section 00 61 13.16 "Payment Bond Form"
3. Section 00 62 43 "Sexual Offender Registry Check Certification Form"
4. Section 00 63 13 "Request for Interpretation"
5. Section 00 63 25 "Substitution Request Form"
6. Section 00 65 36 "Contractor's Warranty"
7. Section 00 65 37 "Asbestos Free Warranty"

END OF SECTION

SECTION 00 61 13.13

PERFORMANCE BOND FORM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Utilize Owner's required Performance Bond Form attached to this section.

1.2 RELATED DOCUMENTS

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

END OF SECTION

PERFORMANCE BOND

IT IS HEREBY AGREED that _____

_____
(Insert full name and address of Contractor)

as Principal, hereinafter called Contractor, and, _____

_____
(Insert full name and address of Surety)

as Surety, hereinafter called Surety, are held and firmly bound unto the as Obligee, hereinafter called Owner, in the amount of _____ Dollars ($_____), for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these obligations.

WHEREAS, Contractor has by written agreement dated _____, 20___, entered into a contract with Owner for the construction of West Brunswick High School Steep Slope Roof Replacement in accordance with Drawings and Specifications prepared by REI Engineers, Inc., 1927 J.N. Pease Place, Suite 201, Charlotte, North Carolina 28173 which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect. The Surety hereby waives notice of any alteration or extension of time made by the Owner.

Whenever Contractor shall be, and declared by Owner to be in default, under the Contract, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

1) Complete the Contract in accordance with its terms and conditions, or

2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the Owner elects, upon determination by the Owner and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and Owner, and make available as Work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by Owner to Contractor under the Contract and any amendments thereto, less the amount properly paid by Owner to Contractor.

Any suit under this bond must be instituted before the expiration of any applicable statute of limitations under the Contract.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators or successors of the Owner.

Signed and sealed this _____ day of _____ 20_____.

PRINCIPAL

[Affix corporate seal]

_____

(Name)_____

(Title)_____

_____

(Witness)

SURETY

[Affix corporate seal]

_____

(Name)_____

(Title)_____

_____

(Witness)

R1726188

SECTION 00 61 13.16

PAYMENT BOND FORM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Utilize Owner's required Payment Bond Form attached to this section.

1.2 RELATED DOCUMENTS

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

END OF SECTION

LABOR AND MATERIAL PAYMENT BOND

THIS BOND IS ISSUED SIMULTANEOUSLY WITH PERFORMANCE BOND IN FAVOR OF THE OWNER CONDITIONED ON THE FULL AND FAITHFUL PERFORMANCE OF THE CONTRACT

IT IS HEREBY AGREED that _____

_____
(Insert full name and address of Contractor)

as Principal, hereinafter called Contractor, and, _____

_____
(Insert full name and address of Surety)

as Surety, hereinafter called Surety, are held and firmly bound unto the as Obligee, hereinafter called Owner, in the amount of _____ Dollars ($_____), for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these obligations.

WHEREAS, Contractor has by written agreement dated _____, 20___, entered into a contract with Owner for the construction of West Brunswick High School Steep Slope Roof Replacement in accordance with Drawings and Specifications prepared by REI Engineers, Inc., 1927 J.N. Pease Place, Suite 201, Charlotte, North Carolina 28173 which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. A claimant is defined as one having a direct contract with the principal or with a Subcontractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

2. The above named Principal and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any costs or expenses of any such suit.

3. No suit or action shall be commenced hereunder by any claimant:

    a) Unless claimant, other than one having a direct contract with the Principal, shall have given written notice to any two of the following: the Principal, the Owner, or the Surety above named, within ninety (90) days, after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the

work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail; postage prepaid, in an envelope addressed to the Principal, Owner or Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer.

b) After the expiration of one (1) year following the date on which Principal ceased Work on said Contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

c) Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the state in which the Project, or any part thereof, is situated, or in the United States District Court for the district in which the Project, or any part thereof, is situated, and not elsewhere.

4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

Signed and sealed this _____ day of _____ 20 _____.

PRINCIPAL

[Affix corporate seal]

_____

(Name)_____

(Title)_____

_____

(Witness)

SURETY

[Affix corporate seal]

_____

(Name)_____

(Title)_____

_____

(Witness)

R1726188

SECTION 00 62 33

ROOF MANUFACTURER'S ACKNOWLEDGMENT

Owner: Brunswick County Schools

Project Name: Belville Elementary School Roof Replacement

Project Address: 575 River Road SE, Leland, North Carolina 28451

Roofing Contractor: _____

Address: _____

Telephone: _____

This is to advise the Owner that having thoroughly reviewed the Specifications and Drawings contained within the Project Manual dated October 4, 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 outlined in the project specifications. Having reviewed the project requirements in detail, the Manufacturer will provide a written response of exceptions to the Engineer through the contractor before five (5) days of the bid due date or as otherwise outlined in the Instructions to Bidders, 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.

_____

Print or type name of manufacturer's designated Liaison on this project

_____

Telephone and Email

_____

Roof Manufacturer's Company Name

_____

Roof Manufacturer Representative's Signature Date

_____

Roof Manufacturer Representative's Name Title

_____

Roof Manufacturer's Address

END OF SECTION

SECTION 00 62 43

SEXUAL OFFENDER REGISTRY CHECK CERTIFICATION FORM

Check the appropriate item to indicate the type of check:

___ Initial
___ Supplemental
___ Annual

I, _____ (insert name), _____ (insert title) of _____ (insert company name) hereby certify that I have performed all of the required sexual offender registry checks required under this Agreement for all contractual personnel (employees, agents, ownership personnel, or contractors) who may be used to deliver goods or provide services under this Agreement, including the North Carolina Sex Offender and Public Protection Registration Program, the North Carolina Sexually Violent Predator Registration Program, and the National Sex Offender Registry. I further certify that none of the individuals listed below appears on any of the above-named registries and that I will not assign any individual to deliver goods or perform services under this Agreement if said individual appears on any of the sex offender registries. I agree to maintain all records and documents associated with these registry checks, and that I will provide such records and documents to the school system upon request. I specifically acknowledge that the Owner retains the right to audit these records to ensure compliance with this section at any time at the Owner™s sole discretion. I acknowledge that I am required to perform these checks and provide this certification form before any work is performed under the Agreement (initial check), any time additional contractual personnel may perform work under the Agreement (supplemental check), and at each anniversary date of the Agreement (annual check).

	Contractor Personnel Names	Job Title
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

(attach additional page(s) if needed)

I attest that the forgoing information is true and accurate to the best of my knowledge.

_____ (print name)

_____ (signature)

_____ (title)

_____ (date)

SECTION 00 63 13

REQUEST FOR INTERPRETATION

Project:	Belville Elementary School Roof Replacement	RFI Number:	
From:		Date:	
Engineer:	REI Engineers	REI Project No.:	022CLT-253

Specification Section: Paragraph: Drawing Reference:

Request:

Signed By:

Response:

Attachments:

Response From: _____ Date Rec'd: _____ Date Ret'd: _____

Signed By: _____ Date: _____

Copies: __ Owner __ Contractor __ Engineer __ Other

END OF SECTION

SECTION 00 63 25

SUBSTITUTION REQUEST FORM

Project Name: Belville Elementary School Roof Replacement

Date: _____

Product and/or Fabrication Method: _____

Specification Section: _____

Related Drawings: _____

Criteria or Specified Product	Included
Product Data	
Fabrication Drawings	
Samples Where Applicable	
List of changes or Modifications Needed to Work as Specified	

Criteria or Specified Product	Included
Product Data	
Fabrication Drawings	
Samples Where Applicable	
List of changes or Modifications Needed to Work as Specified	

The substitution proposed is equal-to or better in every respect to that required by the Contract Documents, and it will perform equal or superior to product specified in the application indicated. The Contractor waives right to additional payment or time, that may subsequently become necessary because of the failure of the substitution to perform adequately.

Signed: _____

END OF SECTION

SECTION 00 65 36

CONTRACTOR'S WARRANTY

Know all men by these presents, that we, (Contractor) _____, having installed roofing system, flashings and sheet metal on the Belville Elementary School Roof Replacement under contract between Brunswick County Schools (Owner) and Contractor, warrant to the Owner with respect to said work that for the period specified below, the work shall be watertight and free from defects, provided however the following are excluded from this Warranty:

1) defects or failures resulting from abuse by the Owner
2) damages caused by fire, tornado, hail, hurricane, acts of God, wars, vandalism, riots or civil commotion
3) defects in design involving failure of structural frame, load bearing walls, and/or foundations

We, Contractor, agree that should any leaks 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 accetpable to the Manufacturer, all at no expense to the Owner. 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.

We, Contractor, agree to attend one post construction field inspection no earlier than one month prior to the Contractor's Warranty expiration date and to complete corrective actions requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

Warranty Period: Two (2) years from date of substantial completion of _____ ____, 20____. Performance Bond shall be limited to the first two years of the Contractor's five (5) year warranty period.

Signature: _____ Title: _____

_____(State), County of _____

I, _____, a Notary Public for _____ County, _____ (State), do hereby certify that _____ 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____.

_____ (OFFICIAL SEAL)
Notary Public

My commission expires _____, 20___.

END OF SECTION

SECTION 00 65 37

ASBESTOS FREE WARRANTY

Owner: Brunswick County Schools
Project Name: Belville Elementary School Roof Replacement
Project Address: 575 River Road SE, Leland, North Carolina 28451
Project Manual Date: June 17, 2024

Date of Substantial Completion: _____

Know all men by these presents, that we, _____
(Contractor, Subcontractor, Material Supplier or Equipment Manufacturer)
having furnished labor, materials, equipment and/or supplies; removed existing roof system; installed new roof system and/or miscellaneous roof system 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.

Exceptions: _____
If there are no exceptions, state "No Exceptions" here.

Signature: _____

Title: _____

_____(State)

County of _____

I, _____, a Notary Public for _____ County, _____ (State), do hereby certify that _____ 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____.

_____ (OFFICIAL SEAL)
Notary Public

My commission expires _____, 20___.

END OF SECTION

SECTION 00 72 13

GENERAL CONDITIONS OF THE CONTRACT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General Conditions of the Contract for Construction

1.2 RELATED DOCUMENTS

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

SECTION GC

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION FOR ROOFING PROJECTS

TABLE OF ARTICLES

ARTICLE 1

CONTRACT DOCUMENTS

1.1 GENERAL

1.1.1 The Contract Documents consist of the Owner-Contractor Agreement, the Conditions of the Contract (General, Supplementary and other Conditions), the Drawings, the Specifications, and all Addenda issued prior to and all Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order issued pursuant to the provisions of Article 10, (3) a written interpretation issued by the Design Consultant, or (4) a written order for a minor change in the Work issued pursuant to this contract.

1.1.2 By executing the Contract, the Contractor represents that he has visited the site, familiarized himself with the local conditions under which the Work is to be performed, and correlated his observations with the requirements of the Contract Documents.

1.1.3 All Drawings, Specifications and copies thereof furnished by the Design Consultant are and shall remain his property. They are to be used only with respect to this Project and are not to be used on any other project.

1.1.4 The Contractor will be furnished with one set of drawings and specifications at no cost. Additional copies may be purchased.

END OF ARTICLE 1

ARTICLE 2

OWNER

2.1 INFORMATION, SERVICES AND RIGHTS OF THE OWNER

2.1.1 The Owner shall at all times have access to the Work whenever it is in preparation or progress. The Contractor shall provide safe facilities for such access.

2.1.2 The Owner shall not be responsible for or have control or charge of the construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, and will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. This requirement applies continuously throughout contract performance and is not limited to regular working hours.

2.1.3 The Owner will have authority to require special inspection or testing of the work whether or not such Work is then fabricated, installed, or completed. However, neither the Owner's authority to act under Subparagraph 2.2.4, nor any decision made by the Owner in good faith either to exercise or not to exercise such authority shall give rise to any duty or responsibility of the Owner to the Contractor, any Subcontractor, any of their agents or employees, or any other person performing any of the Work.

2.1.4 The Owner shall have the authority and discretion to call, schedule, and conduct job meetings to be attended by the Contractor, representatives of his Subcontractors, and the Design Consultant, to discuss such matters as procedures, progress, problems, and scheduling.

2.1.5 The Owner and Design Consultant shall not be responsible or liable to Contractor for the acts, errors or omission of the Contractor, any separate Subcontractor, any separate contractor or any contractor's or subcontractor's agents or employees, or any other persons performing any of the Work.

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

2.1.7 The parties acknowledge that the Owner may perform all or part of its obligations pursuant to this Agreement through the Superintendent or his designee.

2.1.8 The foregoing rights are in addition to other rights of the Owner enumerated herein and those provided by law.

2.2 OWNER'S RIGHT TO STOP OR TO SUSPEND THE WORK

2.2.1 If the Contractor fails to correct defective Work or fails to carry out the Work or supply labor and materials in accordance with the Contract Documents, the Owner by a written order may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the Owner to stop the Work shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

2.2.2 The Owner may order the Contractor in writing to suspend, delay, or interrupt all or any part of the Work for such period of time as he may determine to be appropriate for the convenience of the Owner.

2.2.3 If the performance of all or any part of the Work (including the work of the Contractor and its subcontractors) is, for an unreasonable period of time, suspended, delayed, or interrupted by an act of the Owner or the Design Consultant in the administration of this Contract, or by failure of any one of them to act within the time specified in this Contract (or if no time is specified, within a reasonable time), an adjustment shall be made for an increase in the actual time required for performance of the Work by the Contractor, due solely to such unreasonable suspension, delay, or interruption and the Contract modified in writing accordingly. However, no claim shall be made under this Subparagraph for any suspension, delay, or interruption pursuant to Subparagraph 2.3.1, or for which claim is provided or excluded under any other provision of this Contract. No claim under this Subparagraph shall be allowed on behalf of the Contractor or its subcontractors, unless within 10 days after the act or failure to act involved, and for continuing or ongoing acts or failures to act within 10 days of the first day of the act or failure to act the Contractor submits to the Owner a written statement setting forth, as fully as then practicable, the extent of such claim, and unless the claim is asserted in writing within 20 days after the termination of such suspension, delay, or interruption. For continuing or ongoing acts or failures to act, the Contractor shall update its written statement every 15 days until the suspension, delay or interruption is terminated. The Contractor shall waive any and all claims not filed in strict conformance with this paragraph. The Contractor shall indemnify, defend and hold the Owner harmless from any claim by a Subcontractor that is waived because it is not filed in strict conformance with this paragraph or any other provision of this Agreement regarding claims.

2.2.4 In the event of a suspension of work or delay or interruption of work, the Contractor will and will cause his subcontractors to protect carefully his, and their, materials and work against damage or injury from the weather and maintain completed and uncompleted portions of the work as required by the Contract Documents. If, in the opinion of the Owner, any work or material shall have been damaged or injured by reason of failure on the part of the Contractor or any of his subcontractors to so protect same, such work and materials shall be removed and replaced at the expense of the Contractor.

2.2.5 No claim by the Contractor shall be allowed if asserted after final payment under this Contract or if it is not asserted in strict conformance with Subparagraph 2.2.

2.3 OWNER'S RIGHT TO CARRY OUT THE WORK

2.3.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within ten days after the date written notice is mailed by the Owner to commence and continue remedy of such default or neglect with diligence and promptness, the Owner may, without prejudice to any other remedy he may have, make good such deficiencies and may further elect to complete all Work thereafter through such means as the Owner may select, including the use of a new contractor. In such case the Owner shall issue a Change Order deducting from the payments then or thereafter due the Contractor the cost of correcting such

deficiencies, including compensation for the Design Consultant's additional services made necessary by such default, neglect or failure. Such action by the Owner and the amount charged to the Contractor are both subject to the prior approval of the Design Consultant. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner. Notwithstanding the Owner's right to carry out a portion of the work, warranty, maintenance and protection of the work remains the Contractor's responsibility. Further, the provisions of this paragraph do not affect the Owner's right to require the correction of defective or non-conforming work in accordance with this contract.

END OF ARTICLE 2

ARTICLE 3

CONTRACTOR

3.1 DEFINITION

3.1.1 This entire Contract is not one of agency by the Contractor for Owner but one in which Contractor is engaged independently in the business of providing the services and performing the Work herein described as an independent contractor.

3.2 REVIEW OF CONTRACT DOCUMENTS

3.2.1 Before placing his proposal to the Owner, and continuously after execution of the Contract, the Contractor shall carefully study and compare the Contract Documents and shall at once report to the Owner any error, inconsistency or omission he may discover, including any requirement which may be contrary to any law, ordinance, rule, regulation or order of any public authority bearing on the performance of the Work. If the Contractor has reported in writing an error, inconsistency or omission, has promptly stopped the affected work until otherwise instructed, and has otherwise followed the instructions of the Owner, the Contractor shall not be liable to the Owner or the Design Consultant for any damage resulting from any such errors, inconsistencies or omissions in the Contract Documents. The Contractor shall perform no portion of the Work at any time without Contract Documents and, where required, approved Shop Drawings, Product Data or Samples for such portion of the Work.

3.2.2 All designs, drawings, specifications, design calculations, notes and other works provided for this contract are the sole property of the Owner and may not be used on any other design or construction project. The use of the design, including tracings and specifications, by any person or entity, for the purpose other than the Project, shall be at the full risk of such person or entity

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.1 The Contractor shall supervise and direct the Work, using his best skill and attention. He shall be solely responsible for and have control over all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract. The Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work and all statutory or legal requirements. This requirement applies continuously throughout contract performance and is not limited to regular working hours.

3.3.2 The Contractor shall be responsible to the Owner for the acts and omissions of his employees, Subcontractors and Sub- subcontractors, suppliers, their agents and employees, and other persons performing any of the Work and for their compliance with each and every requirement of the Contract Documents, in the same manner as if they were directly employed by the Contractor.

3.3.3 The Contractor shall not be relieved from his obligations to perform the Work in accordance with the Contract Documents either by the acts, failures to act or duties of the Owner or the Design Consultant in their

administration of the Contract, or by inspections, tests or approvals (or the lack thereof) required or performed under Paragraph 6.5 by persons other than the Contractor.

3.3.4 The Contractor shall verify all grades, lines, levels and dimensions as indicated and shown on the plans and specifications prior to beginning the work and shall immediately report in writing any errors or inconsistencies to the Design Consultant before commencing the work.

3.3.5 Contractor shall protect existing surfaces, finishes and adjacent facilities from damage during construction. Any damage shall be repaired by Contractor at his own expense prior to completion of the Project. Prior to construction start, Contractor and Owner shall perform an inspection to record existing conditions, damaged and undamaged.

3.4 LABOR AND MATERIALS

3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all labor, materials, equipment, supplies, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary or proper for or incidental to the execution and completion of the Work required by and in accordance with the Contract Documents and any applicable code or statute, whether specifically required by the Contract Documents or whether their provision may reasonably be inferred as necessary to produce the intended results, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. Final payment will not be made until the Work is so completed.

3.4.2 The Contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the Work any unfit person or anyone not skilled in the task assigned to him. The Owner may, by notice in writing, require the Contractor to remove from the work any employee the Owner deems incompetent, careless or otherwise objectionable. All agents and workers of the contractor and its subcontractors shall wear identification badges provided by the Contractor at all times they are on the Owner's property. The identification badges shall at a minimum display the company name, telephone number and employee's picture and name and must be worn in plain view at all times. Additionally, once school staff occupies the building, all contractors and their respective subcontractors shall be required to sign in and out of the visitor's log each day they are performing services. They must also wear a visitor's pass which will indicate to staff that they have met this requirement which applies to anyone performing services anywhere on the school property.

3.4.3 The Contractor shall be responsible for ensuring that the work is completed in a skillful and workmanlike manner.

3.4.4 All equipment, apparatus and/or devices of any kind to be incorporated into the work that are shown or indicated on the drawings or called for in the specifications or required for the completion of the work shall be entirely satisfactory to the Owner and the Design Consultant as regards operations, capacity and/or performance. No approval, either written or verbal, of any drawings, descriptive data or samples of such equipment, apparatus and/or device shall relieve the Contractor of his responsibility to turn over the same in good working order for its intended purpose at the completion of the Work in complete accordance with the Contract Documents. Any equipment, apparatus and/or device not fulfilling these requirements shall be removed and replaced by proper and acceptable equipment, etc. or put in good working order satisfactory to the Owner and Design Consultant without additional cost to the Owner.

3.4.5 All materials and Work shall meet North Carolina Building Codes. Should there be any discrepancies between design and code, the more stringent requirement shall apply. All materials shall comply with standards (or approved products) as set by the specifications. Unless otherwise specified, NO ASBESTOS CONTAINING MATERIALS SHALL BE INSTALLED. BY DEFINITION, INSTALLATION OF ASBESTOS MATERIALS WILL BE CONSIDERED CONTRACTOR'S NEGLIGENCE AND THE CONTRACTOR SHALL PERFORM ALL NECESSARY WORK TO REMOVE THE ASBESTOS AND RESTORE THE SITE TO THE 'PRE-CONTRACT' CONDITION. Contractor shall assume all facilities built prior to 1979 have lead-based paint. Any paint removal shall be in accordance with OSHA standard pertaining to lead (29 CFR 1915.1025).

3.5 WARRANTY

3.5.1 The Contractor warrants to the Owner and the Design Consultant that all materials and equipment furnished under this Contract will be new unless otherwise specified, and that all workmanship will be of first class quality, free from faults and defects and in conformance with the Contract Documents and all other warranties and guaranties specified therein. Where no standard is specified for such workmanship or materials, they shall be the best of their respective kinds. All Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the Owner or the Design Consultant, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty is not limited by the provisions of Article 11.

3.5.2 The warranties set forth in this Paragraph 3.5 and elsewhere in the Contract Documents shall survive Final Completion of the Work.

3.5.3 If, within one year after the Date of Substantial Completion of the Work or designated portion thereof or within one year after acceptance by the Owner of designated equipment or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be defective, not in accordance with the Contract Documents, or not in accordance with the guarantees and warranties specified in the Contract documents, the Contractor shall correct it within five (5) working days or such other period as mutually agreed, after receipt of a written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice with reasonable promptness after discovery of the condition. For items, which remain incomplete or uncorrected on the date of Substantial Completion, the one-year warranty shall begin on the date of Final Completion of the Work. If the Contract Documents include painting work, the one year warranty period in this section shall be extended to two years.

3.5.4 If at any time deficiencies in the Work are discovered which are found to have resulted from fraud or misrepresentation, or an intent or attempt to or conspiracy to defraud the Owner by the Contractor, any Subcontractor or Supplier, the Contractor will be liable for replacement or correction of such Work and any damages which Owner has incurred related thereto, regardless of the time limit of any guarantee or warranty.

3.5.5 The Contractor shall bear the cost of making good all work of the Owner, separate contractors or others, destroyed or damaged by such correction or removal required under this Article 3, Article 11 or elsewhere in the Contract Documents.

3.6 TAXES

3.6.1 The Contractor shall pay all sales, consumer, use and other similar taxes for the Work or portions thereof provided by the Contractor which are legally enacted at the time bids are received, whether or not yet effective.

3.6.2 The Contractor shall provide a completed Contractor's Sales Tax Report (attached hereto as Appendix A) with each application for payment for all items provided by the Contractor or any Sub-Contractors and incorporated into this project. The Contractor shall account for at least 2% of the total contract amount in sales tax or provide justification satisfactory to the Owner that the actual sales tax paid is less than 2%. In the event the Contractor does not provide adequate justification to support the shortfall, the Contractor shall pay the Owner the difference between the amount accounted for and the 2% minimum. Such compensation shall not be deemed a penalty, but reimbursement of funds the Owner would otherwise be entitled to recover from the State.

3.6.3 Sales and Use Tax. Contractor shall be responsible for complying with any applicable sales and use tax obligations imposed by Chapter 105, Article 5 of the North Carolina General Statutes. Where Contractor has been contracted with to oversee "new construction" or "reconstruction" as defined in G.S. 105-164.4H, Contractor shall be responsible for issuing and maintaining an Affidavit of Capital Improvement.

3.7 PERMITS, FEES AND NOTICES

3.7.1 The Contractor shall secure and pay for the building permit and for all other permits and governmental fees necessary for the proper execution and completion of the Work. Costs for service and final service connections by public utilities will be reimbursed to the Contractor by the Owner. The Owner shall not be responsible for the cost of any temporary utilities.

3.7.2 Each Contractor will pay for his own license and reinspection fees for his part of the work necessary for the proper execution and completion of the work.

3.7.3 The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the Work.

3.8 PROGRESS SCHEDULE

3.8.1 The Contractor shall prepare and submit to the Owner for the Owner's review and approval an estimated progress schedule for the Work. This schedule shall be in accordance with any general requirements included in the specifications for this project.

3.9 RESPONSIBILITY FOR COMPLETION

3.9.1 The Contractor shall furnish such manpower, materials, facilities and equipment and shall work such hours, including night shifts, overtime operations and Sundays and holidays, as may be necessary to ensure the performance of the Work within the Milestone and Completion dates specified in the Owner-Contractor Agreement.

3.9.2 If the actions taken by the Contractor are not satisfactory, the Design Consultant or Owner may direct the Contractor to take any and all actions necessary to ensure completion within the required Milestone and Completion dates, without additional cost to the Owner. In such event, the Contractor shall continue to assume responsibility for his performance and for completion within the required dates.

3.10 DOCUMENTS AND SAMPLES AT THE SITE

3.10.1 The Contractor shall maintain at the site for the Owner one record copy of all Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record all changes made during construction, and approved Shop Drawings, Product Data and Samples. These shall be delivered to the Owner upon completion of the Work.

3.11 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.11.1 The Contractor shall review, approve and submit, with reasonable promptness and in such sequence as to cause no delay in the Work or in the work of the Owner or any separate contractor, all Shop Drawings, Product Data, Manuals and Samples required by the Contract Documents.

3.11.2 Do not order materials until receipt of written approval. Furnish materials equal in every respect to approved samples.

3.11.3 By approving and submitting Shop Drawings, Product Data, Manuals and Samples, the Contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents. The Contractor shall adhere to any supplementary processing and scheduling instructions pertaining to Shop Drawings, which may be issued by the Design Consultant.

3.11.4 The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Design Consultant's review of Shop Drawings, Product Data, Samples or Manuals under unless the Contractor has specifically informed the Design Consultant in writing of such deviation at the time of submission and the Design Consultant has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the Shop Drawings, Product Data, Samples, or Manuals by the Design Consultant's review thereof.

3.11.5 The Contractor shall make corrections required by the Design Consultant and shall resubmit the required number of corrected copies of Shop Drawings or new Product Data or Samples. The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data or Samples, to revisions other than those requested by the Design Consultant on previous submittals. Resubmittals necessitated by required corrections due to Contractor's errors or omissions shall not be cause for extension of Contract Time, and any costs associated with the processing of these resubmittals shall be paid by the Contractor.

3.11.6 No portion of the Work requiring submission of Shop Drawings, Product Data, Samples or Manuals shall be commenced until the submittal has been approved by the Design Consultant. All such portions of the Work shall be in accordance with approved submittals.

3.12 EQUAL PRODUCTS AND SUBSTITUTIONS

3.12.1 All materials, supplies and articles furnished under this Contract shall, whenever specified and otherwise practicable, be the standard products of recognized, reputable manufacturers. Unless otherwise specifically provided in the Contract Documents, the naming of a certain brand, make, manufacturer or article, device, product, material, fixture or type of construction shall convey the general style, type, character and standard of quality of the article desired and shall not be construed as limiting competition. The Contractor, in such cases, may with Owner approval, use any brand, make, manufacturer, article, device, product, material, fixture, form or type of construction which in the judgment of the Design Consultant is equal to that specified. An item may be considered equal to the item so named or described if, in the opinion of the Owner and Design Consultant (1) it is at least equal in quality, durability, appearance, strength, and design; (2) it will perform at least equally the specific function imposed by the general design for the work being contracted for or the material being purchased; and (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the specifications. Approval by the Owner and Design Consultant will be granted based upon considerations of quality, workmanship, economy of operation, suitability for the purpose intended, and acceptability for use on the Project.

3.12.2 Contractor must provide evidence that proposed substitution does not require revisions to the Contract Documents, that is consistent with Contract Documents, and will produce the indicated results, and is comparable with other portions of the Work. Contractor must provide a detailed comparison of significant qualities or proposed substitution with those of the Work Specified, including but not limited to the following significant qualities: performance, weight, size, durability, visual effect, sustainable design features, warranties, and any specific features and requirements indicated in Contract Documents. An annotated copy of applicable Specification Section and point-by-point comparison between specified product and the proposed substitution describing each point of compliance, non-compliance, and variance between the specified and proposed product shall be provided.

3.13 USE OF SITE

3.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits, easements, right-of- way agreements and the Contract Documents. The Contractor shall not unreasonably encumber the site, in the opinion of the Owner, with any materials, equipment or trailers nor shall he block the entrances or otherwise prevent reasonable access to the site, other working and parking areas, completed portions of the Work and/or properties, storage areas, areas of other facilities that are adjacent to the worksite. If the Contractor fails or refuses to move said material, equipment or trailers within 24 hours of notification by the Owner, to so do, the Owner shall have the right, without further notice, to remove, at the Contractor's expense, any material, equipment and/or trailers which the Owner deems are in violation of this paragraph.

3.14 CUTTING AND PATCHING OF WORK

3.14.1 The Contractor shall not damage or endanger any portion of the Work or the work of the Owner or any separate contractors by cutting, patching or otherwise altering any work, or by excavation.

3.14.2 Existing structures and facilities including but not limited to building, utilities, topography, streets, curbs, walks, etc., that are damaged or removed due to required excavations or other construction work, shall be patched, repaired or replaced by the Contractor to satisfaction of the Design Consultant and the Owner of such structures and facilities and authorities having jurisdiction.

3.15 CLEANING UP

3.15.1 The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. If the Contractor fails to clean up during or at the completion of the Work, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.16 INDEMNIFICATION

3.16.1 To the fullest extent permitted by law, the Contractor shall, at his sole cost and expense, indemnify, defend, and hold harmless the Owner and the Design Consultant and their agents, representatives, and employees from and against all claims, actions, judgments, costs, liabilities, penalties, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or caused by any negligent act, error or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable. The above 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 Paragraph 3.16. The parties agree that this indemnification clause is an “evidence of indebtedness” for purpose of N.C. Gen. Stat. § 6-21.2. The parties also specifically acknowledge that the Owner is a public body and it is the intent of the parties that the Owner not incur any expenses when the Contractor is solely responsible for the claims.

3.16.2 In any and all claims against the Owner or the Design Consultant or any of their agents, representatives, or employees by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Paragraph 3.16 shall not be limited in any way by Contractor’s insurance coverage required herein.

3.16.3 No provision of this Paragraph 3.16 shall give rise to any duties on the part of the Design Consultant or the Owner, or any of their agents, representatives, or employees.

3.18 CONDITIONS AFFECTING THE WORK

3.18.1 The Contractor shall be responsible for taking all steps necessary to ascertain the nature and location of the Work and the general and local conditions, which can affect the Work or the cost thereof. The Owner assumes no responsibility for any understanding or representation about conditions affecting the Work made by any of his officers, employees, representatives, or agents prior to the execution of the Contract, unless such understandings or representations are expressly stated in the Contract Documents.

3.19 MISCELLANEOUS.

3.19.1 The Contractor shall provide documentation acceptable to the Owner showing the amount of MBE participation (including a complete list of all subcontractors and their final subcontract amounts) and sales tax paid by the Contractor and its subcontractors for materials purchased for Projects completed under this contract.

3.20 APPLICABLE LAWS.

3.20.1 This Contract and the relationship of the parties shall be governed by the laws of the state of North Carolina.

3.20.2 Contractor shall comply with all applicable laws and regulations in providing services under this Contract. Contractor shall not employ any individuals to provide services to the Owner who are not authorized

by federal law to work in the United States. Contractor represents and warrants that it is not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from participation in this Contract by any governmental department or agency. Contractor must notify Owner within thirty (30) days if debarred by any government entity during this Contract. The Contractor represents that it is aware of and in compliance with the Immigration Reform and Control Act and North Carolina law (Article 2 of Chapter 64 of the North Carolina General Statutes) requiring use of the E-Verify system. The Contractor further warrants that it will use the E-Verify system to verify employment eligibility of all its employees throughout the term of this Contract, and that it will remain in compliance with all I-9 requirements throughout the term of this Contract. The Contractor shall also ensure that any subcontractors use the E-Verify system at all times while providing subcontracted services in connection with this Contract. Contractor is responsible for providing affordable health care coverage to all of its full-time employees providing services to the school system. The definitions of "affordable coverage" and "full-time employee" are governed by the Affordable Care Act and accompanying IRS and Treasury Department regulations.

3.20.3 The Contractor also acknowledges that G.S. § 14-208.18 prohibits anyone required to register as a sex offender under Article 27A of Chapter 14 of the General Statutes from knowingly being on the premises of any school. The Contractor shall conduct or arrange to have conducted, at its own expense, sexual offender registry checks on each of its employees, agents, ownership personnel, or contractors ("contractual personnel") who will engage in any service on or delivery of goods to school system property or at a school-system sponsored event, except checks shall not be required for individuals who are solely delivering or picking up equipment, materials, or supplies at: (1) the administrative office, provided that such office is not located at a school site; (2) non-school sites; (3) schools closed for renovation; or (4) school construction sites. The checks shall include at a minimum checks of the State Sex Offender and Public Protection Registration Program, the State Sexually Violent Predator Registration Program, and the National Sex Offender Registry ("the Registries"). For the Contractor's convenience only, all of the required registry checks may be completed at no cost by accessing the United States Department of Justice Sex Offender Public Website at http://www.nsopw.gov/. The Contractor shall provide certification on the Sexual Offender Registry Check Certification Form that the registry checks were conducted on each of its contractual personnel providing services or delivering goods under this Agreement prior to the commencement of such services or the delivery of such goods. The Contractor shall conduct a current initial check of the registries (a check done more than 30 days prior to the date of this Agreement shall not satisfy this contractual obligation). In addition, the Contractor agrees to conduct the registry checks and provide a supplemental certification form before any additional contractual personnel are used to deliver goods or provide services pursuant to this Agreement. The Contractor further agrees to conduct annual registry checks of all contractual personnel and provide annual certifications at each anniversary date of this Agreement. The Contractor shall not assign any individual to deliver goods or provide services pursuant to this Agreement if said individual appears on any of the listed registries. The Contractor agrees that it will maintain all records and documents necessary to demonstrate that it has conducted a thorough check of the registries as to each contractual personnel, and agrees to provide such records and documents to the Owner upon request. The Contractor specifically acknowledges that the Owner retains the right to audit these records to ensure compliance with this section at any time in the Owner's sole discretion. Failure to comply with the terms of this provision shall be deemed a material breach of the Agreement. In addition, the Owner may conduct additional criminal records checks at the Owner's expense. If the Owner exercises this right to conduct additional criminal records checks, the Contractor agrees to provide within seven (7) days of request the full name, date of birth, state of residency for the past ten years, and any additional information requested by the Owner for all contractual personnel who may deliver goods or perform services under this Agreement. The Contractor further agrees that it has an ongoing obligation to provide the Owner with the name of any new contractual personnel who may deliver goods or provide services under the Agreement. The Owner reserves the right to prohibit any contractual personnel of the Contractor from delivering goods or providing services under this Agreement if the Owner determines, in its sole discretion, that such contractual personnel may pose a threat to the safety or well-being of students, school personnel or others.

3.20.4 Anti-Nepotism. Contractor warrants that, to the best of its knowledge and in the exercise of due diligence, none of its corporate officers, directors, or trustees and none of its employees who will directly provide services under this Agreement are immediate family members of any member of the Board of Education or of any principal or central office staff administrator employed by the Board. For purposes of this provision, "immediate family" means spouse, parent, child, brother, sister, grandparent, or grandchild, and includes step, half, and in-law

relationships. Should Contractor become aware of any family relationship covered by this provision or should such a family relationship arise at any time during the term of this Agreement, Contractor shall immediately disclose the family relationship in writing to the Superintendent of the Schools. Unless formally waived by the Board, the existence of a family relationship covered by this Agreement is grounds for immediate termination by Owner without further financial liability to Contractor.

3.20.5 Restricted Companies Lists. Contractor represents that as of the date of this Contract, Contractor is not included on the Final Divestment List created by the North Carolina State Treasurer pursuant to N.C. Gen. Stat. § 147-86.58. Contractor also represents that as of the date of this Contract, Contractor is not included on the list of restricted companies determined to be engaged in a boycott of Israel created by the North Carolina State Treasurer pursuant to N.C. Gen. Stat. § 147-86.81.

3.21 COMPLIANCE WITH BOARD POLICIES AND PROCEDURES

The Contractor agrees to comply with the all of the Owner's policies at all times that the Contractor, its subcontractors and employees are on the Owner's property. The Contractor acknowledges that Board policies are available for review at the Owner's website and agrees to comply with the policies. The Contractor also agrees to comply with the following provisions:

3.21.1 The Contractor, its Subcontractors and employees shall not possess or carry, whether openly or concealed, any gun, rifle, pistol, or explosive on any property owned by the Owner. This includes firearms locked in containers, vehicles or firearm racks within vehicles. The Contractor, its Subcontractors and employees shall not cause, encourage or aid a minor, who is less than 18 years old to possess or carry, whether openly or concealed, any weapons on any property owned by the Owner.

3.21.2 The Contractor, its Subcontractors and employees, are prohibited from profane, lewd, obscene or offensive conduct or language, including engaging in sexual harassment.

3.21.3 The Contractor and its Subcontractors shall not manufacture, transmit, conspire to transmit, possess, use or be under the influence of any alcoholic or other intoxicating beverage, narcotic drug, hallucinogenic drug, amphetamine, barbiturate, marijuana or anabolic steroids, or possess, use, transmit or conspire to transmit drug paraphernalia on any property owned by the Owner.

3.21.4 The Contractor and its Subcontractors may not at any time use or display tobacco or nicotine-containing products, including but not limited to electronic cigarettes (e-cigarettes), on school premises, both indoor and outdoor. The prohibition of the display of tobacco or nicotine products shall not extend to a display that has a legitimate instructional or pedagogical purpose. For purposes of this Contract, "tobacco product" is defined to include cigarettes, cigars, blunts, bidis, pipes, chewing tobacco, snuff, and any other items containing or reasonably resembling tobacco, tobacco products, or any facsimile thereof. "Tobacco use" includes smoking, chewing, dipping, or any other use of tobacco products.

3.21.5 The Contractor, its Subcontractors and employees shall not solicit from or sell to students or staff within the Owner's facilities or campuses, and shall not give gifts of any value to school system employees.

3.21.6 Operators of all commercial vehicles on any property owned by the Owner shall be subject to post-accident, random, reasonable suspicion and follow-up testing for drugs and alcohol.

3.21.7 The Contractor, its Subcontractors and employees are prohibited from using access to the site pursuant to this Agreement as a means to date, court, or enter into a romantic or sexual relationship with any student enrolled in the School System. The Contractor agrees to indemnify the Owner for claims against the Owner resulting from relationships which have occurred or may occur between a student and an employee of the Contractor or Subcontractor.

END OF ARTICLE 3

ARTICLE 4

SUBCONTRACTORS

4.1 DEFINITION

4.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform any of the Work at the site. The term Subcontractor may be referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Subcontractor or his authorized representative. The term Subcontractor does not include any Separate Contractor or his subcontractors.

4.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform any of the Work at the site or who contracts to perform or supply any of the Work under the scope of a Subcontractor's subcontract. The term Sub-subcontractor may be referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Sub-subcontractor or an authorized representative thereof.

4.1.3 Nothing contained in the Contract Documents is intended to, nor shall it create, any contractual relationship between the Owner, the Design Consultant, or any of their agents, consultants, employees, independent contractors, or representatives and any Subcontractor, Sub-subcontractor, Supplier or Vendor of the Contractor, except the relationship between Owner and Contractor, but the Owner shall be entitled to performance of all obligations intended for his benefit, and to enforcement thereof.

4.1.4 The Owner and Design Consultant will not deal directly with any Subcontractor, Sub-subcontractor or Material Supplier. Communication will be made only through the Contractor. Subcontractor, Sub-subcontractors or Material Suppliers shall route requests for information or clarification through the Contractor to the Design Consultant.

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

4.2.1 The Contractor, in compliance with the requirements of the Contract Documents and within ten (10) days after the Notice to Proceed, shall furnish in writing to the Owner the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work. The Owner will promptly reply to the Contractor in writing stating whether or not the Owner, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner to reply within a reasonable time shall constitute notice of no reasonable objection. The Contractor understands and agrees that no contractual agreement exists for any part of the Work under this Contract between the Owner and any of the Contractor's Subcontractors or Sub-subcontractors. Further, the Contractor understands and agrees that he alone is responsible to the Owner for the Work under this Contract and that any review of Subcontractors or Sub-subcontractors by the Owner will not in any way make the Owner responsible to any Subcontractor, nor responsible for the actions or failures of any Subcontractor or Sub-subcontractor.

4.2.1.1 The Contractor shall identify in the list of names of the Subcontractors proposed, those Subcontractors that are Historically Underutilized Businesses (HUB's) and indicate the portion of the Work that each Subcontractor will perform.

4.2.2 The Contractor shall not contract with any such proposed person or entity to whom the Owner has made reasonable objection under the provisions of Paragraph 4.2.1. The Contractor shall not be required to contract with anyone to whom he has a reasonable objection.

4.2.3 If the Owner has reasonable objection to any proposed person or entity under Paragraph 4.2.1, the Contractor shall name a substitute to whom the Owner has no reasonable objection. The Contract Sum shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate Change Order shall be issued, subject to an audit of said difference by the Owner; provided, however, that no increase in the

Contract Sum shall be allowed for any such substitution unless the Contractor has acted promptly and responsively in submitting names as required by Paragraph 4.2.1 and the original proposed Subcontractor was: (i) able to carry out his work under his proposed subcontract, (ii) able to comply with all applicable laws, (iii) was an ongoing business in the field of his proposed subcontract, and (iv) had a labor force, capital and a means of supply compatible with the scope of his proposed subcontract.

4.2.4 If the Owner requires a change of any proposed Subcontractor or person or organization previously accepted by him on the Project, the Contract Sum shall be increased or decreased by the difference in cost occasioned by such change and an appropriate Change Order shall be issued, subject to an audit by Owner.

4.2.5 The Contractor shall notify the Owner and the Design Consultant of any substitution for any Subcontractor identified in accordance with Subparagraph 4.2.1.1. The Contractor shall make no substitution for any Subcontractor, person or entity previously selected if the Owner or the Design Consultant makes reasonable objection to such substitution. Also, Contractor may make no substitution of Subcontractors in violation of applicable law.

4.2.6 If during the duration of the Project, the Contractor effects a substitution for any Subcontractor per Paragraph 5.2.5, or if additional subcontract opportunities become available, the Contractor shall make a good faith effort to utilize Historically Underutilized Businesses (HUB's).

4.3 SUBCONTRACTUAL RELATIONS

4.3.1 By an appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these Contract Documents, assumes toward the Owner. Said agreement shall preserve and protect the rights of the Owner under the Contract Documents with respect to the Work to be performed by the Subcontractor so that the subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the agreement between the Contractor and Subcontractor, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by these Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with his Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract, copies of the Contract Documents to which the Subcontractor will be bound by this Section 4.3, and identify to the Subcontractor any terms and conditions of the proposed Subcontract which may be at variance with the Contract Documents. Each Subcontractor shall similarly make copies of such Contract Documents available to his Sub-subcontractors.

4.3.2 The provisions herein regarding Subcontractor approvals shall in no way affect the liability of the Contractor to the Owner regarding performance of all obligations by or payment of Subcontractors. Approval to subcontract with any given Subcontractor shall not to any degree relieve the Contractor of his obligation to perform or have performed to the full satisfaction of the Owner the Work required by this Contract.

4.3.3 The Contractor shall submit Notice to the Owner of any Claims by Subcontractors for which the Owner is believed to be responsible, in strict conformance with the same time requirements and other procedures established for the submission of the Contractor's Claims to the Owner.

4.4 QUALIFICATION SUBMITTALS

4.4.1 Specific qualification submittals may be required of Subcontractors, installers and suppliers for certain critical items of the Work. Required qualification submittals are set forth in detail in the Specifications and shall be collected and submitted by the Contractor for review and approval by the Design Consultant. All information required of a single Subcontractor, installer or supplier shall be contained in a single, complete submittal. The Contractor shall submit the required qualification information within ten (10) days after receipt of the Design Consultant's request.

4.4.2 The Owner and Design Consultant shall reject any proposed Subcontractor, installer or supplier, or any

qualification submittals related thereto, for the following reasons:

.1 The Contractor's failure to submit requested information within the specified time; or

.2 The Contractor's failure to provide all of the requested information; or

.3 The Contractor's submission of a Subcontractor, installer or supplier, or qualifications thereof, which are unacceptable in the judgment of the Owner or Design Consultant.

4.4.3 Should the Owner or Design Consultant have reasonable objection to any proposed Subcontractor, installer or supplier, the Contractor shall submit another person or firm who are reasonably acceptable to the Owner and Design Consultant.

4.5 PREPARATORY WORK

4.5.1 Before starting a portion of the Work, the Contractor and the responsible Subcontractor shall carefully examine all preparatory work that has been executed to receive his work. The Subcontractor shall check carefully, by whatever means are required, to ensure that his work and adjacent related work will finish to proper contours, planes and levels. He shall promptly notify the Contractor and the Design Consultant of any defects or imperfections in preparatory work, which will, in any way, affect satisfactory completion of his work. Absence of such notification will be construed as an acceptance of preparatory work and later Claims of defects therein will not be recognized.

4.5.2 Under no conditions shall a portion of the Work proceed prior to preparatory work having been completed, cured, dried, and otherwise made satisfactory to receive such related work. Responsibility for timely installation of all materials rests solely with the Contractor, who shall maintain coordination control at all times.

END OF ARTICLE 4

ARTICLE 5

WORK BY OWNER OR BY SEPARATE CONTRACTORS

5.1 OWNER'S RIGHT TO PERFORM WORK AND TO AWARD SEPARATE CONTRACTS

5.1.1 The Owner reserves the right to perform work related to the Project with his own forces, and to award separate contracts in connection with other portions of the Project or other work on the site under these or similar Conditions of the Contract.

5.2 MUTUAL RESPONSIBILITY

5.2.1 Should the Contractor cause damage to the work or property of the Owner or of any separate contractor on the Project, or to other work on the Site, or delay or interfere with the Owner's work on ongoing operations or facilities or adjacent facilities or said separate contractor's work, the Contractor shall be liable for the same; and, in the case of another contractor, the Contractor shall attempt to settle said claim with such other contractor prior to such other contractor's institution of litigation or other proceedings against the Contractor.

5.2.2 Should a separate contractor cause damage to the Work or to the property of the Contractor or cause delay or interference with the Contractor's performance of the Work, the Contractor shall present directly to said separate contractor any claims it may have as a result of such damage, delay or interference (with an information copy to the Owner) and shall attempt to settle its claim against said separate contractor prior to the institution of litigation or other proceedings against said separate contractor.

5.2.3. In no event shall the Contractor seek to recover from the Owner or the Design Consultant, and the Contractor

hereby waives any claims against the Owner and Design Consultant relating to any costs, expenses (including, but not limited to, attorney's fees) or damages or other losses incurred by the Contractor as a result of any damage to the Work or property of the Contractor or any delay or interference caused by any separate contractor.

5.3 COORDINATION OF THE WORK

5.3.1 By entering into this contract, Contractor acknowledges that there may be other contractors on the site whose work will be coordinated with that of his own. Contractor expressly warrants and guarantees that he will cooperate with other contractors and will do nothing to delay, hinder or interfere with the work of other separate contractors, the Owner or Design Consultant. Contractor also expressly agrees that, in the event his work is hindered, delayed, interfered with or otherwise affected by a separate contractor, his sole remedy will be a direct action against the separate contractor as described in this Article 5. Contractor will have no remedy, and hereby expressly waives any remedy, against the Owner and/or the Design Consultant on account of delay, hindrance, interference or other event caused by a separate contractor.

END OF ARTICLE 5

ARTICLE 6

MISCELLANEOUS PROVISIONS

6.1 GOVERNING LAW

6.1.1 This contract shall be governed by the law of the State of North Carolina. The Contractor and Owner agree that the county where the Project is located shall be the proper venue for any litigation arising out of this Agreement.

6.1.2 Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein. If through mistake or otherwise, any such provision is not inserted or is not correctly or fully inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion.

6.2 CLAIMS AND DAMAGES

6.2.1 Should the Contractor or any of its Subcontractors suffer injury or damage to person or property because of any act or omission of the Owner or Design Consultant, or of any of their employees, agents or others for whose acts either is legally liable, the claim on behalf of the Contractor or its subcontractors shall be made in writing to the Owner within 10 days after the first observance of such injury or damage; otherwise, the Contractor shall have waived any and all rights he may have against the Owner or the Design Consultant, or their employees, representatives and agents. The Contractor shall indemnify, defend and hold the Owner harmless from any claim by a Subcontractor that is waived because it is not filed in strict conformance with this paragraph or any other provision of this Agreement regarding claims.

6.4 RIGHTS AND REMEDIES

6.4.1 The duties and obligations of the Contractor imposed by the Contract Documents and the rights and remedies of the Owner available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

6.4.2 Except as may be specifically agreed in writing, the failure of the Owner or the Design Consultant to insist in any one or more instances upon the strict performance of any one or more of the provisions of this Contract, or to exercise any right herein contained or provided by law, shall not be construed as a waiver or relinquishment of the performance of such provisions or right(s) or of the right to subsequently demand such

strict performance or exercise such right(s), and the rights shall continue unchanged and remain in full force and effect.

6.4.3 The Contractor agrees that he can be adequately compensated by money damages for any breach of this Contract which may be committed by the Owner and hereby agrees that no default, act, or omission of the Owner or the Design Consultant, except for failure to make progress payments as required by the Contract Documents, shall constitute a material breach of the Contract entitling the Contractor to cancel or rescind the provisions of this Contract or (unless the Owner shall so consent or direct in writing) to suspend or abandon performance of all or any part of the Work. The Contractor hereby waives any and all rights and remedies to which he might otherwise be or become entitled, save only his right to money damages.

6.4.4 Contractor and Owner acknowledge that the Contract Documents shall not be construed against Owner due to the fact that they may have been drafted by Owner. For purposes of construing the Contract Documents, both Contractor and Owner shall be considered to have jointly drafted the Contract Documents.

6.4.5 In the event that Owner incurs attorney's fees or litigation expenses in connection with enforcing or protecting its rights under the Contract Documents or defending any claim or lawsuit brought against it arising out of the Work or the Contract Documents, Contractor shall reimburse Owner for such reasonable attorney's fees and expenses.

6.5 TESTS AND INSPECTIONS

6.5.1 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any portion of the Work to be inspected, tested, or approved, the Contractor shall give the Owner timely notice of its readiness so the Design Consultant and the Owner may observe such inspection, testing or approval. The Contractor shall bear all costs of such inspections, tests or approvals conducted by public authorities. Unless otherwise provided, the Owner shall bear all costs of other inspections, tests or approvals.

6.5.2 Unless otherwise stipulated in other Contract Documents, the Contractor shall pay for all utilities required for testing of installed equipment of all of his work and work of each Subcontractor. Boiler fuel other than gas shall be provided by Subcontractor furnishing boilers. Labor and supervision required for making such tests shall be provided at no additional cost to the Owner.

6.5.3 If the Design Consultant or the Owner determines that any Work requires special inspection, testing, or approval which Subparagraph 6.51 does not include, the Owner will instruct the Contractor to order such special inspection, testing or approval, and the Contractor shall give notice as provided in Subparagraph 6.51. If such special inspection or testing reveals a failure of the Work to comply (1) with the requirements of the Contract Documents, or (2) with respect to the performance of the Work, with laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction, the Contractor shall bear all costs thereof, including compensation for the Design Consultant's and Owner's additional construction management expenses made necessary by such failure.

6.6 UNENFORCEABILITY OF ANY PROVISION

6.6.1 If any provision of this Contract is held as a matter of law to be unenforceable or unconscionable, the remainder of the Contract shall be enforceable without such provision.

6.7 ATTORNEYS' FEES AND OTHER EXPENSES

6.7.1 The Contractor hereby agrees that he will not submit, assert, litigate or otherwise pursue any frivolous or unsubstantiated claims or claims he has specifically waived under the terms of the Contract Documents. In the event that the Contractor's or its Subcontractor's claims, or any separate item of a claim, is without substantial justification, the Contractor shall reimburse the Owner or Design Consultant for all costs and expenses associated with defending such claim or separate item, including but not limited to, attorneys' fees, audit costs, accountants' fees, expert witness' fees, additional Design Consultant expenses, additional construction

management expenses, or services and any other consultant costs.

6.7.2 If the Contractor breaches any obligation under the Contract Documents, the Contractor shall reimburse the Owner and Design Consultant for all costs and expenses incurred by the Owner relating to such breach, including but not limited to attorneys' fees, audit costs, accountants' fees, expert witness' fees, additional Design Consultant expenses, additional construction management expenses, and any other consultant costs.

6.7.3 If the Owner or Design Consultant prevails in a claim brought against the Contractor, including but not limited to, claims for fraud or misrepresentation, overpayment, defective work, delay damages, and recovery of termination expenses, the Contractor shall reimburse the Owner and Design Consultant for all costs and expenses incurred by them relating to such claim, including but not limited to attorneys' fees, audit costs, accountants' fees, expert witness' fees, additional Design Consultant expenses, additional construction management expenses, and any other consultant costs.

6.8 SUCCESSORS AND ASSIGNS

6.8.1 The Owner and the Contractor each binds himself, his partners, successors, assigns and legal representatives to the other party hereto and to the partners, successors, assigns and legal representatives of such other party in respect to all covenants, agreements and obligations contained in the Contract Documents. The Contractor shall not assign the Contract or sublet it as a whole without the written consent of the Owner, nor shall the Contractor assign any moneys due or to become due to him hereunder, without the previous written consent of the Owner and the Contractor's Surety.

END OF ARTICLE 6

ARTICLE 7

TIME

7.1 DEFINITIONS

7.1.1 Unless otherwise provided, the Contract Time is the period of time allotted in the Contract Documents for Substantial and Final Completion of the Work, as defined in Subparagraph 7.1.3 and 7.1.4, including any allowances and alternates. The Contractor shall complete his Work within Contract Time, unless the Contract Time is modified.

7.1.2 The date of commencement of the Work is the date established in a notice to proceed. If there is no notice to proceed, it shall be the date of the Owner-Contractor Agreement or such other date as may be established therein. The Contractor shall not commence Work or store materials or equipment on site until written Notice to Proceed is issued or until the Contractor otherwise receives the Owner's written consent.

7.1.3 The Date of Substantial Completion of the Work or designated portion thereof is the Date certified by the Design Consultant and the Owner when the Work or a designated portion thereof is sufficiently complete, in accordance with the Contract Documents, so the Owner can fully occupy and utilize the Work or designated portion thereof for the use for which it is intended, with all of the Project's parts and systems operable as required by the Contract Documents. Only incidental corrective work and any final cleaning beyond that needed for the Owner's full use may remain for final completion. The issuance of a temporary or final certificate of occupancy shall not, in itself, constitute Substantial Completion. Educational operational systems such as voice, data, security cameras, security card readers, security motion detection systems and building automation systems including functional graphics at the site are required for Substantial Completion.

7.1.4 The date of Final Completion of the work is the date certified by the Design Consultant and the Owner when the Work is totally complete, to include punch list work, in accordance with the Contract Documents and the Owner may fully occupy and utilize the work for the use for which it is intended. The issuance of a temporary or final certificate of occupancy shall not, in itself, constitute Final Completion.

7.2 DELAYS AND EXTENSIONS OF TIME

7.2.1 The time during which the Contractor or any of its subcontractors delayed in the performance of the Work by the acts or omissions of the Owner, Design Consultant or their employees or agents, acts of God, unusually severe and abnormal climatic conditions, fires, floods, epidemics, quarantine restrictions, strikes, riots, civil commotions or freight embargoes, or other conditions beyond the Contractor's or its subcontractors' control and which the Contractor or its subcontractors could not reasonably have foreseen and provided against, shall be added to the time for completion of the Work (i.e., the Contract Time) stated in the Agreement; provided, however, that no claim by the Contractor for an extension of time for delays will be considered unless made in strict compliance with the requirements of this Article and other provisions of the Contract Documents.

7.2.1.1 For excessive inclement weather, the Contract time will not be extended due to reasonably anticipated inclement weather or for delays in the aftermath of inclement weather, reasonably anticipated or excessive. The time for performance of this Contract, as stated in the Contract Documents, includes an allowance for calendar days which may not be available for construction out-of-doors; for the purposes of this Contract, the Contractor agrees that the number of calendar days per month based on a five-year average shall be considered reasonably anticipated inclement weather and planned for in the construction schedule per the Contract. Unless the Contractor can substantiate to the satisfaction of the Owner that there was greater than the reasonably anticipated inclement weather considering the time from the Notice to Proceed until the date established for substantial completion using data from the national weather service station noted in the Supplemental General Conditions or a weather station acceptable to the Owner and that such alleged greater than reasonably anticipated inclement weather actually delayed the Work or portions thereof which had an effect upon the Contract time, the Contractor shall not be entitled to an extension of time.

Also, the Contractor agrees that the calculation of the number of excessive inclement weather days shall be the number of days in excess of the five-year average for each month, in which precipitation exceeded one tenth (.10) inch, or in which the highest temperature was 32 degrees For less as recorded at the approved weather station. Rain days from hurricanes and tropical storms not causing damage in the county where the Project is located shall be deemed inclement weather days.

If the total accumulated number of calendar days lost to excessive inclement weather, from the Notice to Proceed until the date established for substantial completion, exceeds the total accumulated number to be reasonably anticipated for the same period from the table above, time for completion will be extended by the number of calendar days needed to include the excess number of calendar days lost. No extension of time will be made for days due to excessive inclement weather occurring after the date established for substantial completion. No change in Contract sum will be authorized because of adjustment of Contract time due to excessive inclement weather.

7.2.2 Should a time extension be granted for Substantial Completion the date for Final Completion shall be appropriately adjusted unless specifically stated otherwise.

7.2.3 Neither the Owner nor the Design Consultant shall be obligated or liable to the Contractor or its Subcontractors for, and the Contractor hereby expressly waives any claims against the Owner and the Design Consultant on account of any indirect or direct damages, costs or expenses of any nature which the Contractor, its Subcontractors, or Sub-subcontractors or any other person may incur as a result of any delays, interferences, changes in sequence or the like, which are reasonable, foreseeable, contemplated, or avoidable by Contractor, and it is understood and agreed that the Contractor's sole and exclusive remedy in any such events shall be an extension of the Contract Time in accordance with the Contract Documents, unless the delays, interferences, changes in sequence or the like arise solely from or out of any act or omission of the Owner or the Design Consultant, or their agents, employees, consultants or independent. The Contractor shall not be entitled to any damages pursuant to this section if there are any concurrent delays for which the Owner and/or the Design Consultant are not solely responsible.

7.2.4 Subject to other provisions of the Contract, the Contractor may be entitled to an extension of the Contract Time (but no increase in the Contract Sum) for delays arising from unforeseeable causes beyond the control and without the fault or negligence of the Contractor, his Subcontractors or suppliers, unless caused solely by the

Owner or Design Consultant.

7.2.5 The Contractor and its subcontractors shall not be entitled to and hereby expressly waives any extension of time resulting from any condition or cause unless said claim for extensions of time is made in writing to the Owner within ten (10) days of the first instance of delay.

END OF ARTICLE 7

ARTICLE 8

PAYMENTS AND COMPLETION

8.1 SCHEDULE OF VALUES

8.1.1 Before the first Application for Payment, the Contractor shall submit to the Owner a schedule of values allocated to the various portions of the Work.

8.2 APPLICATIONS FOR PAYMENT

8.2.1 Prior to the date for each progress payment established in the Owner-Contractor Agreement, the Contractor, shall submit to the Owner an itemized Application for Payment including a completed Contractor's Sales Tax Report (attached hereto as Appendix A) for all items provided by the Contractor or any Subcontractors included in the application. The Contractor shall also certify that he has paid all due and payable amounts for which previous certificates for payment were issued and payments received from the Owner and that the work for which payment is requested has been completed.

8.2.2 The Owner will retain funds from each progress payment to the maximum extent allowed by N.C. General Statute 143-134.1 until the Work is finally completed and accepted, whether or not the Owner has occupied any or all of the Project before such time. If a reduction in retainage has been made or the Owner stops withholding retainage for any reason, the Owner may increase or commence the retainage as authorized by N.C. Gen. Stat. 143-134.1.

8.2.3 Owner will be under no obligation to make payment to the Contractor on account of materials or equipment not incorporated in the Work. Materials once paid for by the Owner become the property of the Owner and may not be removed from the work site without the Owner's written permission.

8.2.4 The Contractor warrants that title to all Work, materials and equipment covered by an Application for Payment will pass to the Owner either by incorporation in the construction or upon the receipt of payment by the Contractor, whichever occurs first, free and clear of all liens, claims, security interests or encumbrances, hereinafter referred to in this Article 8 as "liens".

8.2.5 All invoices shall show the following:

.1 Total amount of contract
.2 Amount of change orders
.3 Total value of completed work
.4 Amount retained by Owner
.5 Amount due Contractor

8.3 CERTIFICATES FOR PAYMENT

8.3.1 By signing a Certificate for Payment, the Design Consultant shall not thereby be deemed to represent that it has made exhaustive or continuous on-site inspections to check the quality or quantity of the Work or that it has reviewed the construction means, methods, techniques, sequences, or procedures, or that it has made any examination to ascertain how or for what purpose the Contractor has used the moneys previously paid on account of the Contract Sum.

8.4 PROGRESS PAYMENTS

8.4.1 The Contractor shall promptly pay each Subcontractor (including suppliers, laborers, and material-men) performing labor or furnishing material for the Work, upon receipt of payment from the Owner.

8.4.2 No Certificate for a progress payment, nor any progress payment, nor any partial or entire use or occupancy of the Project by the Owner, shall constitute an acceptance of any Work not in accordance with the Contract Documents.

8.4.3 The Contractor shall not submit more than one pay application during any 30-day period.

8.5 PAYMENTS WITHHELD

8.5.1 The Design Consultant may decline to certify payment and may withhold their Certificate in whole or in part, to the extent the Design Consultant deems necessary to reasonably protect the Owner from loss associated with unsatisfactory job progress, defective construction, disputed work, claims or any other similar issue. If the Design Consultant is unable to make representations to the Owner and to certify payment in the amount of the Application, it will notify the Contractor as provided herein. The Design Consultant may also decline to certify payment because of subsequently discovered evidence or subsequent observations that may nullify the whole or any part of any Certificate for Payment previously issued to such extent as may be necessary in its opinion to protect the Owner from loss.

8.6 FAILURE OF PAYMENT

8.6.1 Payments due and unpaid under the Contract Documents shall not bear interest.

8.7 SUBSTANTIAL COMPLETION

8.7.1 The Date of Substantial Completion of the Work or designated portion thereof is the Date certified by the Design Consultant and Owner when the Work or a designated portion thereof is sufficiently complete, in accordance with the Contract Documents, so Owner can fully occupy and utilize the Work for the use for which it is intended, with all of the Project's parts and systems operable as required by the Contract Documents. Only incidental corrective work and any final cleaning beyond that needed for Owner's full use may remain for Final Completion. The Contractor shall be solely responsible for the cost to repair or replace any work damaged or destroyed prior to the Date of Substantial Completion.

8.7.2 When the Design Consultant and the Owner on the basis of an inspection jointly determine that the Work or designated portion thereof is substantially complete, they will then prepare a Certificate of Substantial Completion which shall establish the Date of Substantial Completion, shall state the responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work, and insurance, and shall fix the time within which the Contractor shall complete the items listed therein. Warranties required by the Contract Documents shall commence on the Date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Contractor shall provide operation & maintenance manuals, and operation training to the Owner as required by the Contract Documents prior to Substantial Completion. The Owner's occupancy of incomplete work shall not alter the Contractor's responsibilities pursuant to this section.

8.7.3 The acceptance of Substantial Completion payment shall constitute a waiver of all claims by the Contractor and its Subcontractors except those previously made in writing and identified by the Contractor as unsettled at the time the Contractor submits the Application for Payment for Substantial Completion, and except for the retainage sums due at final acceptance. The Contractor shall indemnify and hold the Owner harmless against any claims by its Subcontractors that are waived because they were not made in writing and identified by the Contractor as unsettled when the Contractor submitted the Application for Payment for Substantial Completion.

8.7.4 The issuance of the Certificate of Substantial Completion does not indicate final acceptance of the project by the Owner, and the Contractor is not relieved of any responsibility for the project except as specifically stated in the Certificate of Substantial Completion.

8.7.5 There will be two inspections by the Design Consultant at Substantial Completion:

.1 To generate a list of items to be completed or corrected before Owner takes possession of the Work.
.2 To check that the list of items has been completed before issuing Final Payment.

Any additional inspections by the Design Consultant requested by Contractor to complete the Punch List shall result in money being withheld from the Final Payment to cover the cost of these additional inspections

8.8 FINAL COMPLETION AND FINAL PAYMENT

8.8.1 When the Design Consultant and the Owner find the Work acceptable under the Contract Documents and the Contract fully performed, they will approve a final Certificate of Payment stating that to the best of their knowledge, information and belief, and on the basis of their observations and inspections, the Work has been completed in accordance with the terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor, and noted in said final Certificate, is due and payable, except for an amount mutually agreed upon for any work remaining incomplete or uncorrected for which the Owner is entitled a credit under the Contract Documents. If the Design Consultant and the Owner find the Work to be incomplete or unacceptable, the costs of reinspections shall be paid by the Contractor.

8.8.2 Final Payment shall not become due until the Contractor provides to the Design Consultant and Owner: three (3) copies of any of the following required:

.1 Final Change Order
.2 Final Application for Payment
.3 Consent of Surety to Final Payment - AIA G707(if applicable)
.4 Contractor's Affidavit of Release of Liens - AIA G706A
.5 Contractor's Affidavit of Payment of Debts and Claims - AIA G706;
.6 Certificate of Occupancy (if applicable)
.7 Contractor's Warranty, notarized
.8 Warranty Summary Sheet with Original Warranties (if not included in O & M Manuals)
.9 Certification Letter from Contractor that no Asbestos-Containing Materials were used on the project
.10 Final List of Subcontractors (name, address, phone, fax nos.)
.11 Record Drawings (As-Built) - 1 set
.12 Operation and Maintenance Manuals - 3 sets
.13 Other project close-out submittals, as required by the Contract Documents.

8.8.3 Neither the final payment nor the remaining retained percentage shall become due until the Work is free and clear of any and all liens and the Contractor submits to the Owner:

.1 an affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or his property might in any way be responsible, have been paid or otherwise satisfied;

.2 if required by the Owner, other data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens arising out of the Contract, to the extent and in such form as may be designated by the Owner; and

.3 As-built drawings, and other project closeout submittals, as required by the Owner.

8.8.4 The making of final payment shall constitute a waiver of all claims by the Owner against the Contractor except those arising from:

.1 unsettled liens, and claims against the Owner or the Design Consultant, or their employees, agents, or representatives,

.2 faulty, defective or non-conforming Work discovered or appearing after Substantial or Final Completion,

.3 failure of the Work to comply with the requirements of the Contract Documents,

.4 terms of any warranties contained in or required by the Contract Documents,

.5 damages incurred by the Owner resulting from lawsuits brought against the Owner, the Design Consultant, or their agents, employees or representatives because of failures or actions on the part of the Contractor, his Subcontractors, Sub-subcontractors, or any of their employees, agents or representatives, or

.6 fraud or bad faith committed by the Contractor or any subcontractor or supplier during performance of work but discovered by Owner after Final Payment.

8.8.5 The acceptance of final payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of the final Application for Payment

8.9 LIQUIDATED DAMAGES

8.9.1 Should the Contractor fail to substantially complete the Work on or before the date stipulated for Substantial Completion (or such later date as may result from extension of time granted by Owner), he shall pay the Owner, as Substantial Completion liquidated damages the daily amount stated in the Supplementary Conditions for each consecutive calendar day that terms of the contract remain unfulfilled beyond the date allowed by the Contract, which sum is agreed upon as a reasonable and proper measure of damages which the Owner will sustain per day by failure of the Contractor to complete work within time as stipulated; it being recognized by the Owner and the Contractor that the injury to the Owner which could result from a failure of the Contractor to complete on schedule is uncertain and cannot be computed exactly. In no way shall costs for liquidated damages be construed as a penalty on the Contractor.

8.9.2 For each consecutive calendar day that the Work remains incomplete after the date established for Final Completion, the Contractor shall pay or Owner will retain the daily amount stated in the Supplementary Conditions as Final Completion Liquidated Damages from the compensation otherwise to be paid to the Contractor. This amount is the minimum measure of damages the Owner will sustain due to the delay in the completion of all remedial work, the delay in the correction of the deficient work, the disruption to the school and the learning environment, the cost of contract management time and resources, administration time, and the inability to use the facilities fully. This amount is in addition to the liquidated damages prescribed above for Substantial Completion.

8.9.3 The amount of liquidated damages set forth above and in the corresponding Supplementary Conditions shall be assessed cumulatively. The items of cost included in the assessment of liquidated damages are as defined in the General Conditions. This provision for liquidated damages does not bar Owner's right to enforce other rights and remedies against Contractor, including but not limited to, specific performance or injunctive relief.

8.10 OWNER'S RIGHT TO OCCUPY INCOMPLETE WORK

8.10.1 Should the Project, or any portion thereof, be incomplete for Substantial or Final Completion at the scheduled date or dates, the Owner shall have the right to occupy any portion of the Project. In such an event, the Contractor shall not be entitled to any extra compensation on account of said occupancy by the Owner or by the Owner's normal full use of the Project, nor shall the Contractor interfere in any way with said normal full use of the Project. Further, in such an event, the Contractor shall not be entitled to any extra compensation on account of the Owner's occupancy and use of the Project, nor shall the Contractor be relieved of any

responsibilities of the Contract including the required times of completion. Such occupancy by the Owner shall not, in itself, constitute Substantial or Final Completion.

END OF ARTICLE 8

ARTICLE 9

INSURANCE AND BONDS

9.1.1 CONTRACTOR'S INSURANCE AND BONDS

The Contractor shall purchase and maintain in companies properly licensed by the Insurance Department of the State of North Carolina and acceptable to the Owner such insurance as will protect him, the Owner, and the Owner's agents, representatives, and employees from claims which may arise out of or result from the Contractor's operations under the Contract, whether such operations be by himself or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. Such insurance shall include:

9.1.1.1 Worker's Compensation including Occupational Disease and Employer's Liability Insurance

.1 Statutory - Amount and coverage as required by State of North Carolina Worker's Compensation laws

.2 Employer's Liability
$1,000,000 Each Accident
$1,000,000 Policy Limit
$1,000,000 Each Employee

9.1.1.2 Commercial General Liability (Occurrence Form) - The Contractor shall provide during the life of this Contract such Commercial General Liability (Occurrence Form) Insurance as shall protect Contractor and any Subcontractor performing work under this Contract from claims for damages for Bodily Injury including accidental death, as well as from claims for Property Damage which may arise from operations under this Contract, whether such operations be by himself or by any Subcontractor or by anyone directly or indirectly employed by either of them. This insurance shall be on the Standard Insurance Services Office, Inc. (ISO) Commercial Liability Occurrence Form. The Contractor shall procure insurance coverage for direct operations, sublet work, elevators, contractual liability and completed operations with limits not less than those stated below:

A Combined Single Limit for Bodily Injury, Property Damage and Personal Injury of:

$2,000,000	General Aggregate (except Products - Completed Operations) Limit
$2,000,000	Products - Completed Operations Aggregate Limit
$1,000,000	Personal and Advertising Injury Limit
$1,000,000	Each Occurrence Limit
$ 5,000	Medical Expense

9.1.1.3 Property Damages, including Broad Form Property Damage and Explosion, Collapse, Underground property damage coverages, and blasting, where necessary.

9.1.1.4 Completed Operations Liability: Continuous coverage in force for one year after completion of Work.

9.1.1.5 Commercial Automobile Insurance, including coverage for owned, non-owned and hired vehicles - with limits not less than a Combined Single Limit for Bodily Injury and Property Damage of $1,000,000.

9.1.1.6 Umbrella Liability Insurance: Policy to 'pay on behalf of the Insured' with Limits of Liability: $1,000,000.

9.2 Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These Certificates shall contain a provision that coverages afforded under the policies will not be canceled until at least thirty (30) days prior written notice has been given to the Owner. Failure to provide such notice shall not limit the liability of the Insurer, its agents or representatives.

9.3 All insurance policies required in this Article, except Worker's Compensation and Commercial Automobile, shall name the Owner as additional named insured for the insurance. The Owner shall be included in the definition of "insured" in the Commercial Automobile Policy.

9.4 Contractor shall not commence work under this Contract until he has obtained all the insurance and bonds required under Article 5 of this Contract and until such insurance and bonds have been approved by the Owner, nor shall Contractor allow any subcontractor to commence work on his subcontract until all similar insurance required of the subcontractor has been so obtained and approved. Approval of the insurance by Owner shall not relieve or decrease the liability of Contractor hereunder.

9.5 The Commercial General Liability and Workers Compensation Policies provided by Contractor shall have endorsements waiving subrogation against Owner.

9.6 PROPERTY INSURANCE. Contractor shall provide the following property insurance:

9.6.1 Unless stated otherwise in the Supplemental Conditions, Contractor shall purchase and at all times maintain such insurance as will protect Contractor, Owner, Subcontractors and Sub-subcontractors from loss or damage to Work or property in the course of construction, including all machinery, materials and supplies on the premises or in transit thereto and intended to become a part of the finished work until Final Completion. This insurance shall be in the form of 'Builder's Risk Covered Cause of Loss Form' to include, but not limited to, theft, collapse, earth movement and flood. Any deductible provision in such insurance shall not exceed $5,000.00. Notwithstanding any such deductible provision, Contractor shall remain solely liable for the full amount of any item covered by such insurance.

9.6.2 If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion thereof, such occupancy or use shall not commence prior to a time mutually agreed to by Owner and Contractor, and to which the insurance company or companies providing the property insurance have consented by endorsement to the policy or policies. This insurance shall not be canceled or lapsed on account of such partial occupancy or use. Consent of Contractor and of the insurance company or companies to such occupancy or use shall not be unreasonably withheld.

9.7 Owner shall be under no obligation to review any Certificates of Insurance provided by Contractor, or to check or verify Contractor's compliance with any and all requirements regarding insurance imposed by the Contract Documents. Contractor is fully liable for the amounts and types of insurance required herein and is not excused should any policy or certificate of insurance provided by Contractor not comply with any and all requirements regarding insurance imposed by the Contract Documents.

9.8 All insurance companies providing the above insurance shall be licensed by the Insurance Department of the State of North Carolina and maintain a rating by AM Best or a similar rating company with a minimum of an "A-" rating.

9.9 PERFORMANCE AND PAYMENT BONDS

"If required by law, or in the Supplemental Conditions or the Contract Documents, Contractor must provide performance and payment bonds each in the amount of the Contract Sum. Such bonds shall be on forms acceptable to Owner and issued by surety companies licensed to do business in North Carolina and having a rating of at least AM Best "A" rating. Contractor may, at its option, make deposit in the form of certified check with Owner in lieu of the performance and payment bonds in an amount equal to the Contract Sum for each such bond, for a total of 200% of the Contract Sum."

END OF ARTICLE 9

ARTICLE 10

CHANGES IN THE WORK

10.1 CHANGE ORDERS

10.1.1 The Owner may, at any time, by written order designated or indicated to be a Change Order, make any change or modification in the Work or add to the Work within the general scope of the Contract.

10.2 OWNER DIRECTED CHANGES REQUIRING AN INCREASE IN CONTRACT SUM.

10.2.1 If the Change in the Work will result in an increase in the Contract Sum, the Owner shall have the right to require the performance thereof on a lump sum basis, a unit price basis or a time and material basis, all as hereinafter more particularly described (the right of the Owner as aforesaid shall apply with respect to each such Change in the Work).

If the Owner elects to have the Change in the Work performed on a lump sum basis, its election shall be based on a lump sum Proposal which shall be submitted by the Contractor to the Owner within seven (7) days of the Contractor's receipt of a request therefore (but the Owner's request for a lump sum Proposal shall not be deemed an election by the Owner to have the Change in the Work performed on a lump sum basis). The Contractor's Proposal shall be itemized and segregated by labor and materials for the various components of the Change in the Work (no aggregate labor total will be acceptable) and shall be accompanied by signed Proposals of any Subcontractors who will perform any portion of the Change in the Work and of any persons who will furnish materials or equipment for incorporation therein. The Proposal shall also include the Contractor's estimate of the time required to perform said changes. The Contractor shall provide any documentation that may be requested by the Owner or Architect to support the change proposal, including but not limited to payroll records, insurance rates, material quotes, and rental quotes. The Change Proposal Forms attached as Appendix B shall be used to submit change proposals on the Project.

The portion of the Proposal relating to labor, whether by the Contractor's forces or the forces of any of its Subcontractors, may include reasonably anticipated gross wages of job site labor, including foremen, who will be directly involved in the Change in the Work (for such time as they will be so involved), plus payroll costs (including premium costs of overtime time, if overtime is anticipated, Social Security, Federal or State unemployment insurance taxes and fringe benefits required by collective bargaining agreements entered into by the Contractor or any such Subcontractor in connection with such labor) and up to fifteen percent (15%) of such anticipated gross wages, but not payroll costs, as overhead and profit for the Contractor or any such Subcontractor, as applicable (said overhead and profit to include all supervision except foremen). Payroll costs are limited to 39% of the net pay of the worker.

The portion of the Proposal relating to materials may include the reasonably anticipated direct costs to the Contractor or to any of its Subcontractors of materials to be purchased for incorporation in the Change in the Work, plus transportation and applicable sales and use taxes and up to fifteen percent (15%) of said direct material costs as overhead and profit for the Contractor or any such Subcontractor (said overhead and profit to include all small tools), and may further include the Contractor's and any of its Subcontractor's reasonably anticipated rental costs in connection with the Change in the Work (either actual or discounted local published rates), plus up to eight percent (8%) thereof as overhead and profit for the Contractor or any such Subcontractors, as applicable. The Contractor shall provide an itemized breakdown of all transportation and shipping costs, including receipts documenting the expenses. Notwithstanding the above, overhead and profit shall not be applied to any sales tax paid for any purpose or to any transportation or shipping costs incurred by the Contractor or any subcontractor. If any of the items included in the lump sum Proposal are covered by unit prices contained in the Contract Documents, the Owner may, if it requires the Change in the Work to be performed on a lump sum basis, elect to use these unit prices in lieu of the similar items included in the lump sum Proposal, in which event an appropriate deduction will be made in the lump sum amount prior to the application of any allowed overhead and profit percentages. No overhead and profit shall be applied to any unit prices.

The lump sum Proposal may include up to eight percent (8%) of the amount which the Contractor will pay to any of its Subcontractors for Changes in the Work as overhead and profit for the Contractor. The Contractor shall not be reimbursed for the costs of the Subcontractors' Payment and Performance Bonds, as such bonding is not required by the Owner.

10.2.2 In the event that the Contractor fails to submit his Proposal within the designated period, the Owner may order the Contractor to proceed with the Change to the Work and the Contractor shall so proceed. The Owner shall unilaterally determine the reasonable cost and time to perform the Work in question, which determination shall be final and binding upon the Contractor. The Contractor may dispute such action in accordance with the Article 15.

10.2.3 In the event that the parties are unable to agree as to the reasonable cost and time to perform the Change in the Work based upon the Contractor's Proposal and the Owner does not elect to have the Change in the Work performed on a time and material basis, the Owner may choose to make a determination of the reasonable cost and time to perform the Change in the Work, based upon its own estimates, the Contractor's submission or a combination thereof. A Construction Change Directive shall be issued in this case for the amounts of cost and time determined by the Owner and shall become final and binding upon the Contractor, subject to Contractor's right to dispute such action in accordance with Article 10.9. Owner has the right to direct by Construction Change Directive a Change in the Work, which is the subject of such Change Order. Failure of the parties to reach agreement regarding the cost and time of the performing the Construction Change Directive, shall not relieve the Contractor from performing the Change in the Work promptly and expeditiously.

10.2.3.1 The Owner reserves the right to reject the Contractor's Proposal for a Change in the Work and to elect to perform said Work using a Separate Contractor. Under such circumstances, all provisions of Article 6 shall be in force.

10.2.4 If the Owner elects to have the Change in the Work performed on a time and material basis, the same shall be performed, whether by the Contractor's forces or the forces of any of its Subcontractors or Sub-subcontractors, at actual cost to the entity performing the Change in the Work (without any charge for administration, clerical expense, supervision or superintendence of any nature whatsoever, including foremen, or the cost, use or rental of tools or plant), plus fifteen percent (15%) thereof as the total overhead and profit (except that said fifteen percent (15%) shall not be applied against any payroll costs, as set forth in Paragraph 10.2.1.) The Contractor shall submit to the Owner daily time and material tickets, on a daily basis to include the identification number assigned to the Change in the Work, the location and description of the Change in the Work, the classification of labor employed (and names and social security numbers), the materials used, the equipment rented (not tools) and such other evidence of cost as the Owner may require. The Owner may require authentication of all time and material tickets and invoices by persons designated by the Owner for such purpose. The failure of the Contractor to secure any required authentication shall, if the Owner elects to treat it as such, constitute a waiver by the Contractor of any Claim for the cost of that portion of the Change in the Work covered by a non-authenticated ticket or invoice; provided, however, that the authentication of any such ticket or invoice by the Owner shall not constitute an acknowledgment by the Owner that the items thereon were reasonably required for the Change in the Work.

10.2.5 No overhead and profit will be paid by the Owner on account of a Change in the Work except as specifically provided in Section 10.2. Overhead and profit, as allowed under Section 10.2, shall be deemed to include all costs and expenses which the Contractor or any of its Subcontractors may incur in the performance of a Change in the Work and which are not otherwise specifically recoverable by them pursuant to Section 10.2.

10.3 CONTRACTOR NOTICE OF CHANGE

10.3.1 If the Contractor or any of its Subcontractors asserts that any event or occurrence has caused a change in or addition to the Work which change causes an increase or decrease in the Contractor's or its Subcontractors' cost or the time required for the performance of any part of the Work under the Contract, including Work not affected directly by the change, the Contractor shall, within ten (10) days of such event, give the Owner written

notice as herein required. Said notice shall include the instructions or circumstances that are the basis of the claim and the Contractor's best estimate of the cost and time involved.

10.3.2 If the Contractor intends to assert a claim under this Article, he must, within ten (10) days after receipt of a written Change Order under Subparagraph 10.2.1 above or the furnishing of a written notice under Subparagraph 10.3.1, submit to the Owner a written statement setting forth the specific nature and cost of such claim, unless this period is extended by the Owner. The statement of claim hereunder may be included in the notice under Subparagraph 10.3.1 above. The statement of claim shall include all direct, indirect and impact costs associated with the change, as well as the Contractor's estimate of the schedule impact of the change, if any. The Contractor and its subcontractors shall not be entitled to reimbursement for any claims that are not filed in strict conformance with this Article. The Contractor shall indemnify and hold the Owner harmless against any claims by Subcontractors that are waived because they are not filed in strict conformance with this Article.

10.3.3 If the parties are unable to agree to the reasonable cost and time to perform the Change, or are unable to agree as to whether a change occurred, the Owner shall make a unilateral determination as described in Article 10.2.2. The Contractor shall proceed pursuant to the provisions of that Article.

10.4 GENERAL PROVISIONS RELATED TO CHANGES

10.4.1 The Contractor shall not be entitled to any amount for indirect costs, damages or expenses of any nature, including, but not limited to, so-called "impact" costs, labor inefficiency, wage, material or other escalations beyond the prices upon which the proposal is based and to which the parties have agreed pursuant to the provisions of Article 10, and which the Contractor, its Subcontractors or Sub-subcontractors or any other person may incur as a result of delays, interferences, suspensions, changes in sequence or the like, for whatever cause, whether reasonable or unreasonable, foreseeable or unforeseeable, or avoidable or unavoidable, arising from the performance of any and all changes in the Work performed pursuant to this Article 10, unless the delay is caused solely by the Owner or its agent. It is understood and agreed that the Contractor's sole and exclusive remedy in such event shall be recovery of his direct costs as compensable hereunder and an extension of the Contract Time, but only in accordance with the provisions of the Contract Documents. The phrase “Owner or its agent” as used in this Agreement, does not include the Prime Contractors or their Subcontractors.

10.4.2 No claim by the Contractor hereunder shall be allowed if asserted after final payment under this Contract. No claim relating to or flowing from a particular change shall be allowed after execution of the Change Order relating to that change or commencement of the change by the Contractor.

10.5 CHANGES REQUIRING A DECREASE IN CONTRACT SUM.

10.5.1 If the Change in the Work will result in a decrease in the Contract Sum, the Owner may request a quotation by the Contractor of the amount of such decrease for use in preparing a Change Order. The Contractor's quotation shall be forwarded to the Owner within ten (10) days of the Owner's request and, if acceptable to the Owner, shall be incorporated in the Change Order. If not acceptable, the parties shall make every reasonable effort to agree as to the amount of such decrease, which may be based on a lump sum properly itemized, on unit prices stated in the Contract Documents and/or on such other basis as the parties may mutually determine. If the parties are unable to so agree, the amount of such decrease shall be the total of the estimated reduction in actual cost of the Work, as determined by the Owner in its reasonable judgment, plus fifteen percent (15%) thereof as overhead and profit.

10.6 DISPUTES REGARDING CHANGES.

10.6.1 If any dispute should arise between the parties with respect to an increase or decrease in the Contract Sum or an expansion or contraction in the Contract Time as a result of a Change in the Work, the Contractor shall not suspend performance of a Change in the Work or the Work itself unless otherwise so ordered by the Owner in writing. The Owner shall, however, pay to the Contractor up to the Owner's reasonable estimated value of the Change in the Work, regardless of the dispute, if said Change in the Work results in an increase in the Contract Sum; and the Owner shall have the right to decrease the Contract Sum up to the Owner's reasonable estimated

value of the Change in the Work, regardless of the dispute, if said Change in the Work results in a decrease in the Contract Sum.

10.7 MINOR CHANGES IN THE WORK

10.7.1 The Owner shall have authority to order minor changes in the Work not involving an adjustment in the Contract Sum or an extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order, and shall be binding on the Owner and the Contractor. The Contractor shall carry out such written orders promptly.

10.7.2 The Contractor shall not perform any changes in the Work unless authorized in writing by the Design Consultant or Owner.

10.8 DIFFERING SITE CONDITIONS

10.8.1 Should the Contractor encounter subsurface and/or latent conditions at the site materially differing from those shown on the drawings or indicated in the specifications or differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this contract, he shall immediately give notice to the Owner of such conditions before they are disturbed. The Owner and the Design Consultant shall thereupon promptly investigate the conditions and if they find that they materially differ from those shown on the drawings or indicated in the specifications, they shall at once make such changes in the drawings and/or specifications as they may find necessary. Any increase or decrease of cost resulting from such changes shall be adjusted in the manner provided herein for adjustments as to extra and/or additional work and changes. However, neither the Owner nor the Design Consultant shall be liable or responsible for additional work, costs or changes to the work due to material differences between actual conditions and any geotechnical, soils and other reports, surveys and analyses made available for the Contractor's review.

10.9 CLAIMS AND DISPUTE RESOLUTION

10.9.1 Definition. A Claim is a demand or assertion by the Contractor seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term “Claim” also includes other disputes and matters in question from the Contractor arising out of or relating to the Contract. Claims must be initiated by written notice. The responsibility to substantiate Claims shall rest with the Contractor.

10.9.2 Time Limits on Claims. Claims by Contractor must be initiated within 10 days occurrence of the event giving rise to such Claim or within 10 days after the Contractor first recognizes the condition giving rise to the Claim, whichever is later. Claims must be initiated by written notice to the Design Consultant (if there is one) and the other party.

10.9.3 Continuing Contract Performance. Pending final resolution of a Claim except as otherwise agreed in writing or as otherwise provided in the Contract Documents, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make undisputed payments in accordance with the Contract Documents.

10.9.4 Claims for Additional Cost. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property when the giving of such notice would increase the risk of injury or damage to persons or property.

10.9.5 Claims for Additional Time. If the Contractor wishes to make Claim for an extension of the dates set for Substantial or Final Completion, written notice as provided herein shall be given. The Contractor’s Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary. Contractor bears the burden of proving it is entitled to an extension of time. Unless Contractor meets this burden, Liquidated Damages shall be assessed automatically.

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

10.9.7 Resolution of Claims and Disputes. Claims, including those alleging an error or omission by the Design Consultant, shall be referred initially to the Design Consultant for decision, if there is a Design Consultant with Contract Administration duties which include Claims resolution; otherwise, such Claims by Contractor shall initially be referred to the Owner. An initial decision by such Design Consultant (or Owner as applicable) shall be required as a condition precedent to mediation or litigation of all Claims by the Contractor arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Design Consultant (or Owner as applicable) with no decision having been rendered. The Design Consultant (or Owner as applicable) will not decide disputes between the Contractor and persons or entitles other than the Owner.

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

10.9.9 Upon receipt of the response or supporting data, if any, the Design Consultant (or Owner as applicable) will either reject or approve the Claim in whole or in part.

10.9.10 The Design Consultant (or Owner as applicable) will approve or reject Claims by written decision, which shall state the reasons therefor and which shall notify the parties or any change in the Contract Sum or Contract Time, or both. The approval or rejection of a Claim by the Design Consultant (or Owner as applicable) shall be final and binding on the parties but subject to mediation and litigation.

10.9.11 When a written decision of the Design Consultant (or Owner as applicable) states that (1) the decision is final but subject to mediation and litigation and (2) a demand for mediation of a Claim (if required by Owner's Dispute Resolution Procedures) or the commencement of a lawsuit (if mediation is not required as a pre-condition to litigation in Owner's Dispute Resolution Procedures) covered by such decision must be made or done within 30 days after the date on which the party making the demand (or filing the lawsuit) receives the final written decision, then failure to demand mediation in writing (if required) or file the lawsuit within said 30 days' period shall result in the Design Consultant's (or Owner's as applicable) decision becoming final and binding upon the Owner and Contractor. If the Design Consultant (or Owner as applicable) renders a decision after litigation proceedings have been initiated, such decision may be entered as evidence, but shall not supersede litigation proceedings unless the decision is acceptable to all parties concerned.

10.9.12 In the event of a dispute, the Owner, Contractor, and other parties involved in the Project shall utilize the Dispute Resolution Procedures adopted by Owner pursuant to N.C.G.S. §143-128(g), if applicable. Owner's Dispute Resolution Procedures are as follows:

These Procedures are applicable to the resolution of disputes with amounts in controversy in excess of $15,000.00 arising between or among any parties involved in Owner's construction and repair Projects, including the Design Consultant and the Contractors, and the first and lower tier subcontractors, on Claims arising out of the contract or construction process. In no event shall the Owner be subject to arbitration proceedings pursuant to these Procedures. Unless otherwise specified in these Procedures, if there is any conflict between these Procedures and the other provisions of the Contract Documents, the terms of these Procedures control.

Any Claim as defined in the Contract Documents or any dispute between parties to a construction contract involving the Project, other than the Owner's claims, except those Claims which are waived shall be subject to nonbinding mediation as a condition precedent to the institution of legal proceedings by any party, except that any party may institute legal proceedings in order to meet any applicable statute of limitations or similar deadlines prior to engaging in nonbinding mediation.

The parties shall endeavor to resolve their claims by nonbinding mediation, which, unless the parties mutually agree otherwise, shall be in accordance with rules established by Owner if Owner is a party to the mediation. If Owner is not a party to the mediation, the mediation shall be conducted in accordance with rules established by the parties to the mediation. The parties to the mediation shall share the cost of mediation equally. The mediation shall be held in the place where the project is located unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

10.9.13 All suits in law or equity between the Owner and the Contractor arising out of the Contract shall be heard in the appropriate court of justice in the county where the Project is located.

END OF ARTICLE 10

ARTICLE 11

CORRECTION OF WORK

11.1 CORRECTION OF WORK

11.1.1 The Contractor shall promptly reconstruct, replace or correct all Work rejected by the Design Consultant as defective or as failing to conform to the Contract Documents or as not in accordance with the guarantees and warranties specified in the Contract Documents whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting such rejected Work, including compensation for the Design Consultant's and the Owner's additional construction management services made necessary thereby.

11.1.2 The Contractor, unless removal is waived by the Owner, shall remove from the site all portions of the Work which are defective or non-conforming, or if permitted or required, he shall correct such work in place at his own expense promptly after receipt of notice, and such rejected Work shall not thereafter be tendered for acceptance unless the former rejection or requirement for correction is disclosed.

11.1.3 If the Contractor does not proceed with the correction of such defective or non-conforming Work within a reasonable time fixed by written notice from the Owner, the Owner may either (1) by separate contract or otherwise replace or correct such Work and charge the Contractor the cost occasioned the Owner thereby and remove and store the materials or equipment at the expense of the Contractor, or (2) terminate this Contract for default as provided in Paragraph 12.3. If the Contractor does not pay the cost of such replacement or correction and the removal and storage within ten (10) days thereafter, the Owner may upon ten (10) additional days' written notice sell such Work at auction or at private sale and shall account for the net proceeds thereof, after deducting all the costs that should have been borne by the Contractor, including compensation for additional services of the Design Consultant and the Owner made necessary thereby. If such proceeds of sale do not cover all costs, which the Contractor should have borne, the difference shall be charged to the Contractor and an appropriate Change Order shall be issued. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

11.1.4 The Contractor shall bear the cost of making good all work of the Owner or separate contractors destroyed or damaged by such correction or removal.

11.1.5 Nothing contained in this Paragraph 11.1 shall be construed to establish a period of limitation with respect to any other obligation, which the Contractor might have under the Contract Documents, including Paragraph 3.5 hereof. The establishment of the time period of one year after the Date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any warranty required by the Contract Documents relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which his obligation to comply with the Contract Documents may be sought to be enforced,

nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to his obligations other than specifically to correct the Work.

END OF ARTICLE 11

ARTICLE 12

TERMINATION OF THE CONTRACT

12.1 TERMINATION BY THE CONTRACTOR

12.1.1 If the Work is stopped for a period of sixty (60) days under an order of any court or other public authority having jurisdiction, or as a result of an act of government, such as a declaration of a national emergency making materials unavailable, through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing any of the Work under a contract with the Contractor, then the Contractor may, upon seven (7) additional days' written notice to the Owner and the Design Consultant, terminate the Contract and recover from the Owner payment on a quantum merit basis, for all Work executed. The Contractor shall not be entitled to collect and hereby expressly waives, any profit on work not performed or any damages related to that portion of the Contract, which has been terminated.

12.2 TERMINATION FOR CONVENIENCE OF THE OWNER

12.2.1 The Owner may, at any time upon ten (10) days' written notice to the Contractor which notice shall specify that portion of the Work to be terminated and the date said termination is to take effect, terminate (without prejudice to any right or remedy of the Owner) the whole or any portion of the work for the convenience of the Owner. The Contractor's sole remedy, in the event of such termination, will be the allowable termination costs permitted by Article 12.4. Contractor shall include termination clauses identical to Article 12 in each of his Subcontracts.

12.3 DEFAULT TERMINATION

12.3.1 Subject to the provisions of Paragraph 2.3.1, ten (10) days after written notice is mailed to the Contractor, the Owner may terminate (without prejudice to any right or remedy of the Owner or any subsequent buyer of any portion of the Work) the employment of the Contractor and his right to proceed either as to the whole or any portion of the Work required by the Contract Documents and may take possession of the Work and complete the Work by contract or otherwise in any one of the following circumstances:

.1 if the Contractor refuses or fails to prosecute the work or any separable part thereof with such diligence as will ensure the Substantial or Final Completion of the Work within the Contract Time or fails to complete the Work or remedy a default within said period;

.2 if the Contractor is in material default in carrying out any provisions of the Contract for a cause within his control;

.3 if the Contractor fails to supply a sufficient number of properly skilled workmen or proper equipment or materials;

.4 if the Contractor fails to make prompt payment to Subcontractors or for materials or labor, unless he otherwise provides the Owner satisfactory evidence that payment is not legally due;

.5 if the Contractor disregards laws, permits, ordinances, rules, regulations or orders of any public authority having jurisdiction, or fails to follow the instructions of the Owner;

.6 if the Contractor substantially violates any provisions of the Contract Documents; or

.7 if the Contractor refuses or fails to properly schedule, plan, coordinate and execute the Work, as specified herein, so as to perform the Work within the specified Milestone and Completion dates, or to provide scheduling or related information, revisions and updates as required by the Contract Documents.

12.3.2 If, after the Contractor has been terminated for default pursuant to Paragraph 12.3, it is determined that none of the circumstances set forth in Subparagraph 12.3.1 exist, then such termination shall be considered a termination for convenience pursuant to Paragraph 12.2 In such case, the Contractor's sole remedy will be the costs permitted by Article 12.4.

12.3.3 If the Owner so terminates the employment of the Contractor, the Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the compensation is to be paid to the Contractor hereunder shall exceed the expense of so completing the Work (including compensation for additional managerial, administrative, consultant and inspection services and any damages for delay) such excess shall be paid to the Contractor.

12.3.4 If such expenses shall exceed the unpaid balance, the Contractor shall be liable to the Owner for such excess. If the right of the Contractor to proceed with the Work is partially or fully terminated, the Owner may take possession of and utilize in completing the Work such materials, appliances, supplies, plant and equipment as may be on the site of the terminated portion of the Work and necessary for the completion of the Work. If the Owner does not fully terminate the right of the Contractor to proceed, the Contractor shall continue to perform the part of the work that is not terminated.

12.4 ALLOWABLE TERMINATION COSTS

12.4.1 If the Owner terminates the whole or any portion of the Work pursuant to Paragraph 12.2, then the Owner shall only be liable to the Contractor for those costs reimbursable to the Contractor in accordance with Subparagraph 12.4.2, plus a markup of ten percent for profit and overhead on the actual fully accounted costs recovered under 12.4.2; provided however, that if there is evidence that the Contractor would have sustained a loss on the entire Contract had it been completed, no profit shall be included or allowed hereunder and an appropriate adjustment shall be made reducing the amount of the settlement to reflect the indicated rate of loss.

12.4.1.1 After receipt of a Notice of Termination, the Contractor shall submit to the Owner his termination claim, in the form and with certification prescribed by the Owner. Such claim shall be submitted promptly but in no event later than three (3) months from the effective date of termination, unless one or more extensions in writing are granted by the Owner upon request of the Contractor made in writing within such three (3) month period or authorized extension thereof. However, if the Owner determines that the facts justify such action, he may receive and evaluate any such termination claim at any time after such three (3) month period or any extension thereof. Upon failure of the Contractor to submit his termination claim within the time allowed, the Owner may determine, on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination.

12.4.2 If the Owner terminates the whole or any portion of the Work pursuant to Paragraph 12.2, the Owner shall pay the Contractor the amounts determined by the Owner as follows:

.1 an amount for supplies, services, or property accepted by the Owner pursuant to Clause 12.5.1.6 or sold or acquired pursuant to Clause 12.5.1.7 and not heretofore paid for, and to the extent provided in the Contract such amount shall be equivalent to the aggregate price for such supplies or services computed in accordance with the price or prices specified in the Contract, appropriately adjusted for any saving of freight or other charges; and

.2 the total of:

(1) the cost incurred in the performance of the Work terminated, including initial costs and preparatory expense allocable thereto, but exclusive of any costs attributable to supplies or services paid or to be paid for under Clauses 12.4.2.1 or 12.4.2.2.(2);

(2) the cost of settling and paying claims arising out of the termination of Work under Subcontracts or orders, pursuant to Clause 12.5.1.5, which are properly chargeable to the terminated portion of the Work (exclusive of amounts paid or payable on account of completed items of equipment delivered or services furnished by Subcontractors or vendors prior to the effective date of the notice of termination), which amounts shall be included in the costs payable under (1) above; and

(3) the reasonable costs of settlement, including accounting, legal, clerical and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the Work and for the termination and settlement of Subcontracts thereunder, together with reasonable storage, transportation and other costs incurred in connection with the protection or disposition of property allocable to the Contract.

.3 Provided, however, that neither the Owner nor the Design Consultant will be liable for payments to subcontractors pursuant to Article 12.4.2.2 unless each subcontract contains termination provisions identical to those set forth in Article 12. The Owner and the Design Consultant will not be liable to the Contractor or any of his subcontractors for any costs associated with termination if the subcontract of the party involved does not include the proper termination clauses.

12.4.3 In arriving at any amount due the Contractor pursuant to Paragraph 12.4, there shall be deducted the following:

.1 all unliquidated advance or other payments on account theretofore made to the Contractor applicable to the terminated portion of the Contract;

.2 any claim which the Owner may have against the Contractor;

.3 such amount as the Owner determines to be necessary to protect the Owner against loss because of outstanding or potential liens or claims; and

.4 the agreed price for, or the proceeds of sale of, any materials, supplies or other things acquired by the Contractor or sold, pursuant to the provisions of Clause 12.5.1.7, and not otherwise recovered by or credited to the Owner.

12.4.4 The total sum to be paid to the Contractor under Paragraph 12.4 shall not exceed the Contract Sum as reduced by the amount of payments otherwise made or to be made for Work not terminated and as otherwise permitted by the Contract. Except for normal spoilage, and except to the extent that the Owner shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to the Contractor, as provided in Subparagraph 12.4.2, the fair value, as determined by the Owner, of property which is destroyed, lost, stolen or damaged so as to become undeliverable to the Owner, or to a buyer pursuant to Clause 12.5.1.7.

12.4.5 If the Owner terminates the whole or any part of the Work pursuant to Paragraph 12.3, the Owner may procure, upon such terms and in such manner as the Owner may deem appropriate, supplies or services similar to those so terminated, and the Contractor shall be liable to the Owner for any excess costs for such similar supplies or services. The Contractor shall continue the performance of the Contract to the extent not terminated hereunder.

12.5 GENERAL TERMINATION PROVISIONS

12.5.1 After receipt of a notice of termination from the Owner, pursuant to Paragraph 12.2 or 12.3, and except as otherwise directed by the Owner, the Contractor shall:

.1 stop Work under the Contract on the date and to the extent specified in the notice of termination;

.2 place no further orders or subcontracts for materials, services or facilities, except as may be necessary for completion of such portion of the work under the Contract as is not terminated;

.3 terminate all orders and subcontracts to the extent that they relate to the performance of Work terminated by the notice of termination;

.4 at the option of the Owner, assign to the Owner in the manner, at the times and to the extent directed by the Owner, all of the rights in the contracts so terminated, in which case the Owner shall have the right, at his discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts;

.5 settle all outstanding liabilities and all claims arising out of such termination or orders and subcontracts, with the approval or ratification of the Owner, to the extent he may require, which approval or ratification shall be final for all the purposes of this Article;

.6 transfer title and deliver to the entity or entities designated by the Owner, in the manner, at the times and to the extent directed by the Owner to the extent specifically produced or specifically acquired by the Contractor for the performance of such portion of the Work as had been terminated, the following:

(1) the fabricated or unfabricated parts, Work in process, partially completed supplies and equipment, materials, parts, tools, dies, jigs and other fixtures, completed Work, supplies and other material produced as part of, or acquired in connection with the performance of, the Work terminated by the notice of termination; and

(2) the completed or partially completed plans, drawings, information, releases, manuals and other property related to the Work and which, if the Contract had been completed, would have been required to be furnished to the Owner;

.7 use his best efforts to sell, in the manner, at the times, to the extent and at the price or prices directed or authorized by the Owner, any property of the types referred to in Clause 12.5.1.6; provided, however, that the Contractor:

(1) shall not be required to extend credit to any buyer, and

(2) may acquire any such property under the conditions prescribed by and at a price or prices approved by the Owner; and provided further that the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the Owner to the Contractor under the Contract or shall otherwise be credited to the Contract Sum covered by the Contract or paid in such other manner as the Owner may direct;

.8 complete performance of such part of the Work as shall not have been terminated by the notice of termination; and

.9 take such action as may be necessary, or as the Owner may direct, for the protection and preservation of the property related to the Contract, which is in the possession of the Contractor, and in which the Owner has or may acquire an interest.

12.5.2 The Contractor shall, from the effective date of termination until the expiration of three (3) years after final settlement under the Contract, preserve and make available to the Owner, at all reasonable times at the office of the Contractor, but without direct charge to the Owner, all his books, records, documents and other evidence bearing on the costs and expenses of the Contractor under the Contract and relating to the Work terminated hereunder, or, to the extent approved by the Owner, photographs, micro-photographs or other authentic reproductions thereof.

12.5.3 If the termination, pursuant to Paragraph 12.2, be partial, the Contractor may file with the Owner a claim for an equitable adjustment of the price or prices specified in the Contract relating to the continued portion of the Contract (the portion not terminated by the notice of termination), and such equitable adjustment as may be agreed upon shall be made in such price or prices. Any claim by the Contractor for an equitable adjustment under this Subparagraph must be asserted within six (6) months from the effective date of the notice of termination.

12.5.4 The Contractor shall refund to the Owner any amounts paid by the Owner to the Contractor in excess of costs reimbursable under Paragraph 12.4.

12.5.5 The Contractor shall be entitled to only those damages and that relief from termination by the Owner as specifically provided in Article 12.

END OF ARTICLE 12
END OF GENERAL CONDITIONS

CONTRACTOR'S SALES TAX REPORT
N.C. STATE & LOCAL SALES TAXES PAID

OWNER: _____ **PROJECT:** _____
CONTRACTOR: _____ **FOR PERIOD FROM:** _____
ADDRESS: _____ **TO:** _____

VENDOR TAX WAS PAID TO	MATERIAL PURCHASED	ADDRESS	INVOICE NUMBER	DATE	INVOICE AMOUNT	TAXABLE AMOUNT	N.C. TAX	COUNTY TAX	NAME OF COUNTY
				TOTAL					

I hereby certify that, during the period stated above, all North Carolina sales and use taxes have been paid for the materials, supplies, fixtures, and equipment purchased during that period which have become a part of, or annexed to, a building or structure erected, altered or repaired for the Owner. I further certify that the vendors from whom the property was purchased, the dates and numbers of the invoices covering the purchases, the total amount of the invoices of each vendor, the North Carolina sales and use taxes paid thereon, and the cost of property withdrawn from warehouse stock and North Carolina sales or use taxes paid thereon are as set forth above during the time period noted above.

Sworn to and subscribed before me,

This the ____ day of _____, 20____

Signed: _____

Print Name: _____

___ _____ Seal
Notary Public

Title: _____

My Commission Expires: _____

CHANGE PROPOSAL FORM
Time and Material / Unit Price Estimate

Project: _____ **Proposal #:** _____
Contract: _____ **Project #:** _____
Contractor: _____ **Contractor #:** _____

Description of change:

	SUBTOTALS
Materials & Labor Estimated cost of labor & materials including shipping, overtime, payroll taxes and insurance, and overhead and profit. Maintain accurate records for billing purposes.	
Unit Price Work Estimated quantity of units required less allowance units not used, times the established unit cost. Maintain accurate records for billing purposes. Third party records may be required.	
Equipment Rental Estimated cost of equipment rental including shipping, taxes and overhead and profit. Maintain accurate records for billing purposes.	
Subcontractors Estimated cost of subcontracts including all subcontractor expenses. Maintain accurate records for billing purposes.	
Subtotal of Proposal	

*** TOTAL NOT TO EXCEED CHANGE PROPOSAL ESTIMATE** _____

Time Extension Requests: ____day(s) Schedule Activity # Affected: _____

The Contractor agrees to perform the work outlined in this change proposal for an amount that shall not exceed the amount stated above and in accordance with the Contract documents if the work is authorized by the Owner. If the price to perform the work is expected to exceed the above stated amount, a new change proposal form for the additional work is required.

* Actual amount paid will be based on actual documented expenses.

Contractor's Signature: _____ **Date: _____**

Approval Recommended by Design Consultant: _____ **Date: _____**

Owner's Representative Approval: _____ **Date: _____**

CHANGE PROPOSAL FORM

Project: _____ **Proposal #:** _____

Contract: _____ **Project #:** _____

Contractor: _____ **Contractor #:** _____

Description of change:

		SUBTOTALS
Materials (Attach list with Qty, Item, Unit $, Unit mh, Total mh, OT mh, Total $)		
1 Total Direct Cost of Materials	_____	
2 Overhead & Profit on Item 1. (15% maximum, includes small tools & consumables)	_____	
3 Sales Tax	_____	
4 Shipping & Transportation	_____	
Labor		
5 Total Manhours: ____ MH @ ___ /hr.	_____	
6 Overhead & Profit on Item 5. (15% maximum on straight labor cost, not premium portion) (O & P includes supervisor's time)	_____	
7 Payroll Taxes & Insurance ___ %	_____	
Equipment Rental (Include quotes)		
8 Equipment Rental	_____	
9 Overhead & Profit on Item 8 (6% maximum).	_____	
Subcontractors (Include quotes with material & equipment backup)		
10 Subcontractors	_____	
11 Overhead & Profit on Item 10 (6% maximum).	_____	_____
Subtotal of Proposal		_____

TOTAL OF CHANGE PROPOSAL _____

Time Extension Requests: ____ day(s) Schedule Activity # Affected: _____

The Contractor agrees to perform the work outlined in this change proposal for the amount specified above and in accordance with the Contract documents if the work is authorized by the Owner.

Contractor's Signature: _____ **Date: _____**

Approval Recommended by Design Consultant: _____ **Date: _____**

Owner's Representative Approval: _____ **Date: _____**

SECTION 00 73 00

SUPPLEMENTAL CONDITIONS

GENERAL CONDITIONS

Document GC, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, constitutes the General Conditions of this Contract, and is hereinafter called "General Conditions." The General Conditions are further revised and supplemented by the provisions of these Supplemental Conditions. The General Conditions and the Supplemental Conditions are applicable to all of the Work under this contract and shall apply to the Contractor and all Subcontractors and Sub-subcontractors.

SUPPLEMENTS:

The following supplements modify, change, delete, or add to the General Conditions. Where any article of the General Conditions is modified or any paragraph deleted, subparagraph or clause thereof is modified, or deleted by these supplements, the unaltered provisions of such article, paragraph, subparagraph or clause shall remain in effect. If there is a discrepancy between the General Conditions and these Supplemental Conditions, the Supplemental Conditions shall control.

ARTICLE 1 - CONTRACT DOCUMENTS

ADD THE FOLLOWING TO 1.3.1:

1.3.1.1 The Contractor will be furnished with one set drawings and specifications for free.

ARTICLE 2 - ARCHITECT

ADD THE FOLLOWING TO PARAGRAPH 2.1:

Design Consultant: REI Engineers, Inc.

ARTICLE 8 - TIME

ADD THE FOLLOWING TO PARAGRAPH 8.2:

8.2.4 The schedule below contains certain specific dates in addition to date of Notice to Proceed and Time for Completion. These dates shall be adhered to and are the last acceptable dates unless modified by mutual agreement between the Contractor and the Owner. All dates indicate midnight unless otherwise stipulated. The only exceptions to this schedule are defined in the General Conditions and Supplemental Conditions under Paragraph 8.3 DELAYS AND EXTENSIONS OF TIME.

Notice of Intent to Award – [_]
Notice to Proceed – [_]
Substantial Completion – [_]
Final Completion – [_]

8.2.4.1 The Owner reserves the right to withhold the issuance of Notice to Proceed by up to forty-five (45) days. For each day that Notice to Proceed is withheld pursuant to this Subparagraph, the dates established for Substantial Completion and Final Completion shall be adjusted. The contractor shall not be entitled to additional compensation if the owner withholds the issuance of Notice to Proceed pursuant to this Subparagraph.

ADD THE FOLLOWING TO THE END OF THE FIRST PARAGRAPH IN 8.3.4.2.3:

The Parties agree that the weather station applicable to this Project shall be the one located at [_].

ADD THE FOLLOWING TO PARAGRAPH 8.5.1:

8.5.1.1 Substantial Completion Liquidated Damages shall be the sum of one thousand dollars ($1000) per calendar day, and this amount shall be assessed in accordance with Subparagraph 8.5.1 of the General Conditions.

8.5.1.2 Final Completion Liquidated Damages shall be the sum of one thousand dollars ($1000) per calendar day, and this amount shall be assessed in accordance with Subparagraph 8.5.1 of the General Conditions.

ARTICLE 9 - PAYMENTS AND COMPLETION

ADD THE FOLLOWING TO PARAGRAPH 9.6:

9.6.3 Additional services and dispute resolution services by the Design Consultant shall be paid by the Contractor at the rate of two hundred ninety-five dollars ($295) per hour.

ARTICLE 15 – DISPUTE RESOLUTION

ADD THE FOLLOWING NEW PARAGRAPH 15.6:

15.6 The Owner’s Dispute Resolution Policy required by N.C.G.S. § 143-128(f1) is contained in the bid and contract documents.

END OF SUPPLEMENTAL CONDITIONS

SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Name: Belville Elementary School Roof Replacement

B. Project Address: 575 River Road SE, Leland, North Carolina 28451

C. Owner: Brunswick County Schools

D. Engineer: The Contract Documents, dated June 17, 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. Roof Area C:

    a. Remove and dispose of the roof system including flashings and sheet metal down to the steel deck.
    b. Secure the steel deck to structural framing members as specified in Section 05 01 30 "Steel Roof Deck Repair and Securement".
    c. Provide Gypsum Substrate and Roof Insulation system as specified in Section 07 22 16 "Roof Insulation".
    d. Fully adhere felt-back thermoplastic single ply membrane along with flashings and accessories as specified in Section 07 54 00 "Thermoplastic Single Ply Roofing".
    e. Replace sheet metal flashings and trim as specified in Section 07 62 00 "Sheet Metal Flashing and Trim".
    f. Provide a complete, watertight, 20-year warrantable roof assembly.

2. Roof Areas A & E:

    a. Remove and dispose of the roof system including flashings and sheet metal down to the existing steel deck .

        1) Remove and dispose of existing weather resistive barrier.
        2) Store existing gypsum substrate to reinstalled.
        3) Store existing 3" roof insulation to be reinstalled. Remove and dispose of tape from seams and self-adhered underlayment at valleys, ridges and eaves.

    b. Secure the steel deck to structural framing members.
    c. Replace deteriorated gypsum substrate in accordance with Unit Prices and Quantity Allowances. Reinstall existing gypsum substrate stored from removal.

d. Provide weather resistive barrier as specified in Section 07 25 00 "Weather Resistive Barriers".
e. Replace deteriorated 3" roof insulation in accordance with Unit Prices and Quantity Allowances. Reinstall existing 3" roof insulation stored from removal.
f. Provide Cover Board as specified in Section 07 22 16 "Roof Insulation".
g. Fully adhere metal roof panel underlayment.
h. Provide standing seam metal roof panel system along with flashings, trim and accessories as specified in Section 07 41 13 "Metal Roof Panels".
i. Provide snow guard system along eave edge and upslope side of roof penetrations as specified in Section 07 72 53 "Snow Guards".
j. Provide a complete, weathertight, 20-year warrantable roof assembly with 30-year finish warranty.

F. Asbestos Containing Roofing Materials (ACRM):

1. Sample Testing Results:

a. No suspect Asbestos Containing Roofing Materials (ACRM) have been identified in the areas included in Contract.

2. 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.

G. 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.

H. 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.

I. The contractor is responsible for labor and materials needed for backfilling and fine grading necessary to comply with the requirements of these documents and conform to the requirements of the current Building Code approved in the State of the project location.

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 CONTRACT

A. Project constructed under a single prime general construction contract.

1.4 WORK UNDER OTHER CONTRACTS

A. Separate Contract: Owner may award a separate contract for performance of certain construction operations at Project site.

B. Cooperate with separate contractors so work on those contracts are carried out smoothly without interfering with or delaying Work under this Contract.

1.5 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 49-division format and CSI/CSC's "MasterFormat" numbering system.

1. Section Identification: The Specifications use section numbers and titles to cross-reference Contract Documents. Sections in the Project Manual are in numeric sequence.; however, the sequence is incomplete. Consult the Table of Contents at the beginning of the Project Manual.

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. Refer to Section 01 33 00 "Submittal Procedures".

1.4 WORK SEQUENCE

A. Conduct work in the following sequences unless construction phases are otherwise specified.

1. Construct Work in phases to accommodate the Owner's use; if applicable, of the premises during the construction period; coordinate the construction schedule and operations with the Owner and Engineer.
2. 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.
3. 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.
4. Keep areas at the facility, except areas under construction, safely accessible to vehicles.
5. Perform Work in a way that does not restrict parking lots or other locations outside the work area from the facility.

1.5 WORK RESTRICTIONS

A. School Work Restrictions:

1. Work may begin May 1, 2025. Work performed while school is in session shall take place over the Cafeteria/Gymnasium roof areas, or after 12:00 PM on school days, or after school hours which includes non-school days, holidays, semester breaks, Saturdays, Sundays or after student dismissal on school days.

2. There are no work hour restrictions provided work is completed within the school system summer duration (May 29, 2025 through August 24, 2025) when students are not in school. If work extends beyond the summer duration (August 24, 2025), all work shall be performed after school hours which includes non-school days, holidays, semester breaks, Saturdays, and Sundays.
3. All work extending past the Substantial Completion date (August 24, 2025) shall be performed after school hours which includes non-school days, holidays, semester breaks, Saturdays, Sundays or after student dismissal on school days (3:30 PM), these imposed work restrictions are in addition to the specified liquidated damages.
4. Contractor shall coordinate work schedule with School's testing and special events schedule and may not be allowed to be on-site prior to 1:00 PM during certain testing days/events.

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.

1.8 USE OF PREMISES

A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.

1. Limits: Confine constructions operations to areas of work being renovated as approved by Engineer and Owner.
2. Driveways and Entrances: 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.
    c. Schedule deliveries to avoid student pick up and drop off times.

3. Move stored materials and equipment that interfere with operations of the Owner.
4. Protect surface improvements including pavements, curbs, sidewalks, lawn and landscaped areas, utilities, etc.

5. 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 surface improvements resulting from, or attributable to, the work operation.

    a. Repair damaged concrete by replacing full sections of concrete between control/expansion joints.
    b. Fill ruts in grass areas and grade to original conditions. Provide grass seed and straw.
    c. Replace disturbed landscaping in mulched or natural areas.

B. Use of Building

1. Maintain building in a weathertight condition throughout construction period.
2. Take precaution against injuries to persons or damage to property.
3. Protect building, its contents, and its occupants during construction period.
4. Do not overload or permit the structure to be loaded with such weights that endanger its safety or to cause excessive deflection. Equally distribute materials placed on the roof.
5. Properly secure materials or equipment placed on roof to prevent blow off during wind events. Ensure materials or equipment on roof does not interfere with roof drainage.
6. 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.
7. Indoor Air Quality:

    a. 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.
    b. 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.
    c. 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.
    d. Provide box carriage fans on rooftop during roof application to move and circulate air away from intakes and units.
    e. 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.
    f. 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.

C. 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 OWNER POLICIES

A. Tobacco Policy

1. The Owner has adopted a Tobacco Free Policy which applies to school property. This is a total ban on tobacco products including cigarettes, cigars, pipes, chewing tobacco, snuff, etc. Contractor is responsible for employee's actions while they are on school property. Failure to follow this policy constitutes a breach of contract and said contract may be terminated without penalty to the school system.

B. Weapons and Explosives Policy

1. Excluding law enforcement, persons are prohibited from possessing, carrying, using or threatening to use, or encouraging another person to possess, carry, use or threaten to use, weapons or explosives on school property or while attending curricular or extracurricular activities sponsored by the school. This policy applies to weapons or explosives carried openly or concealed. For purposes of this policy, a weapon includes, but is not limited to gun, rifle, pistol or other firearm; or BB gun, stun gun, air rifle, air pistol, bowie knife, dirk, dagger, slingshot, leaded cane, switchblade knife, blackjack, metallic knuckles, razors and razor blades (except solely for personal shaving), fireworks, or sharp-pointed or edged instrument except instructional supplies, unaltered nail files and clips and tools used solely for preparation of food, instruction and/or maintenance on educational property. For purposes of this policy, an explosive includes, but is not limited to and dynamite cartridge, bomb, mine or powerful explosive as defined in N.C. G.S. 14-284.1. For purposes of this policy, school property is school building or bus, school campus, grounds, recreational area, athletic field, or other property owned, used or operated by The Board of Education. This policy does not apply to: 1) a weapon or explosive used solely for educational or school sanctioned ceremonial purposes, or used in a school approved program conducted under the supervision of an adult whose supervision has been approved by the school authority, or 2) firefighters, emergency personnel, North Carolina Forest Service personnel, and private police employed by the School Board, when acting in the discharge or their official duties.

C. Criminal Record Investigation - Contractor Agreement

1. When requested by Owner, obtain a county, state and national criminal history covering the past ten years on contractor applicant or contractor employee, hereafter called prospective worker, providing services to Owner. As a minimum, criminal information sources include State and National access to the SBI/DCI Criminal History Record Information for the prospective worker's residence(s), past ten years and fingerprints forwarded to the Federal Bureau of Investigation for the search. Previously conducted criminal histories more than one year old are required to be updated. Provide a Criminal Histories Report two weeks prior to arriving "on-site" and update report monthly for new hires. Prospective workers who refuse to provide fingerprints and/or consent to the Criminal Background checks or who have been convicted of sexual deviance, sexual crime, domestic violence, violence against another human being, larceny, alcohol/drug trafficking, alcohol/drug abuse or other disqualifying offense as determined by the Owner, are not be allowed on the property.

D. Conduct Policy

1. The conduct of contractor employees to be exemplary; profanity, drinking, lewd or suggestive comments or gestures or other acts of this nature are not tolerated.

E. Drug Free Policy

1. Owner conforms to a drug free policy. Contractor employee must be tested upon request of Owner and results provided to Owner. If the employee is found to have been under the influence or using drugs, it constitutes a breach of contract and said contract may be terminated without penalty to the school system.

F. Dress Code Policy

1. Shirts and shoes are required, as well as long pants. Identification of employees, vehicles, uniforms, etc. is required when indicated.

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 05 01 30 "Steel Roof Deck Repair and Securement"
2. Section 06 10 00 "Rough Carpentry"
3. Section 07 01 50 "Preparation for Reroofing"
4. Section 07 22 16 "Roof Insulation"

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 CONTINGENCY ALLOWANCE

A. Include the specified contingency allowance in the base bid.

B. Credit unused portion remaining at the completion of the contract back to the Owner.

C. The Owner reserves the right to modify the contingency allowance prior to award of Contract.

1.5 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. Contingency Allowance:

1. Include a $25,000.00 contingency allowance in the base bid.

B. Quantity Allowances:

1. Repair 1,000 SF of Corroded Steel Deck (Corrosion Degree 1) with Coating. Refer to Section 05 01 30 "Steel Roof Deck Repair and Securement".
2. Repair 500 SF of Steel Deck (Corrosion Degree 2) with Steel Plates. Refer to Section 05 01 30 "Steel Roof Deck Repair and Securement".
3. Replace 5,000 SF of Wet or Deteriorated Existing Gypsum Substrate. Refer to Section 07 22 16 "Roof Insulation".
4. Replace 5,000 SF of Wet or Deteriorated Existing 3" Insulation. Refer to Section 07 22 16 "Roof Insulation".
5. Replace 200 BF of Deteriorated Wood Blocking. Refer to Section 06 10 00 "Rough Carpentry".
6. Replace 160 SF of Deteriorated Plywood. Refer to Section 06 10 00 "Rough Carpentry".

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 05 01 30 "Steel Roof Deck Repair and Securement"
2. Section 06 10 00 "Rough Carpentry"
3. Section 07 01 50 "Preparation for Reroofing"
4. Section 07 22 16 "Roof Insulation"

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, 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. Repair Corroded Steel Deck (Corrosion Degree 1) with Coating. Unit of Measurement: Square Foot (SF). Refer to Section 05 01 30 "Steel Roof Deck Repair and Securement".
2. Repair Steel Deck (Corrosion Degree 2) with Steel Plates. Unit of Measurement: Square Foot (SF). Refer to Section 05 01 30 "Steel Roof Deck Repair and Securement".
3. Replace Wet or Deteriorated Existing Gypsum Substrate. Unit of Measure: Square Foot (SF). Refer to Section 07 22 16 "Roof Insulation".
4. Replace Wet or Deteriorated Existing Insulation. Unit of Measurement: Square Foot (SF). Refer to Section 07 22 16 "Roof Insulation".
5. Replace Deteriorated Wood Blocking. Unit of Measurement: Board Foot (BF). Refer to Section 06 10 00 "Rough Carpentry".
6. Replace Deteriorated Plywood. Unit of Measurement: Square Foot (SF). Refer to Section 06 10 00 "Rough Carpentry".

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 roof replacement at Roof Area B.

1. Remove and dispose of the existing roof system including flashings and sheet metal down to the existing steel deck.
2. Secure the steel deck to structural framing members.
3. Provide weather resistive barrier over existing steel deck. Refer to Section 07 25 00 "Weather Resistive Barriers".
4. Provide 2 layers of 1.5" Roof Insulation and Cover Board mechanically attached.
5. Fully adhere metal roof panel underlayment. Refer to Section 07 22 16 "Roof Insulation".
6. Provide standing seam metal roof panel system along with flashings, trim, gutter, downspouts and accessories as specified in Section 07 41 13 "Metal Roof Panels".
7. Provide snow guard system along with eave edge and upslope side of roof penetrations as specified in Section 07 72 53 "Snow Guards".
8. Provide a complete, weathertight, 20-year warrantable roof assembly with 30-year finish warranty.

B. Alternate No. 2: Provide roof replacement at Roof Area D.

1. Remove and dispose of the existing roof system including flashings and sheet metal down to the existing steel deck.
2. Secure the steel deck to structural framing members.
3. Provide 1.5" Roof Insulation mechanically attached.
4. Provide 1.5" Roof Insulation adhered in foam adhesive.
5. Provide Cover Board adhered in foam adhesive.
6. Fully adhere felt-back thermoplastic single ply membrane along with flashings and accessories as specified in Section 07 54 00 "Thermoplastic Single Ply Roofing".
7. Replace sheet metal flashings and trim as specified in Section 07 62 00 "Sheet Metal Flashings and Trim".
8. Provide a complete, watertight, 20-year warrantable roof assembly.

C. Alternate No. 3: Provide roof replacement at Roof Area F.

1. Remove and dispose of the existing roof system including flashings and sheet metal down to the existing plywood deck.
2. Secure the plywood deck to structural framing members.
3. Fully adhere metal roof panel underlayment.
4. Provide standing seam metal roof panel system along with flashings, trim, gutter, downspouts and accessories as specified in Section 07 41 13 "Metal Roof Panels".
5. Provide snow guard system along with eave edge and upslope side of roof penetrations as specified in Section 07 72 53 "Snow Guards".
6. Provide a complete, weathertight, 20-year warrantable roof assembly with 30-year finish warranty.

D. Alternate No. 4: Provide metal wall panels where indicated in Contracted Drawings and as specified in Section 07 42 13 "Metal Wall Panels".

END OF SECTION

SECTION 01 25 00

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. This Section specifies administrative and procedural requirements for handling requests for substitutions after award of Contract.

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. Substitutions: Requests for changes in products, materials, and equipment, of construction required by Contract Documents proposed by the Contractor are considered requests for "substitutions". The following are not considered substitutions:

1. Revisions to Contract Documents requested by the Owner or Engineer.
2. Specified options of products and construction methods included in Contract Documents.
3. Determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

A. Submit requests for acceptance of equivalent items in writing to the Engineer during the submittal process. No substitutions considered after acceptance of project submittals. Refer to Section 01 33 00 "Submittal Requirements".

B. Substitutions after award are considered solely for convenience and approved by Change Order in form of credit to the Owner. Bear additional costs related to making the substituted material or system work including additional engineering, material or system modifications, and time considerations relating to material or system installation requirements.

C. Provide information sufficient for the Engineer to make a determination of equivalent items. Engineer's determination of the equivalency of a product is final. The Engineer reserves the right to request information or documentation for evaluation including but not limited to the following:

1. Provide a letter describing in detail proposed changes, substitutions, or deviations from the project or manufacturer's specifications.
2. A written explanation of why substitutions should be considered is required.
3. Statement indicating why specified product cannot be provided.

4. Coordination of information, including a list of modifications needed to other parts of the work necessary to accommodate proposed substitution.
5. Product data including drawings, descriptions, and fabrication/installation procedures.
6. Samples where applicable.
7. Material test reports from a qualified testing agency indicating the interpreting test results for compliance with requirements.
8. Contractor's certification that proposed substitution complies with requirements in the contract documents and is appropriate for applications indicated.
9. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
10. If requesting product substitution after bid award, provide cost information including proposal of change in the contract sum.

END OF SECTION

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements for handling and processing Contract modifications.

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 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: A detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time will be issued by the Engineer along with supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by Engineer are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
2. Within 5 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits. If requested, furnish survey data to substantiate quantities.
b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
c. Include costs of labor and supervision directly attributable to the change.
d. Include an updated Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Engineer.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits. If requested, furnish survey data to substantiate quantities.

3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Division 1 if the proposed change requires substitution of one product or system for product or system specified.

C. Proposal Request Approval:

1. If sufficient contingency allowance funds remain, written approval will be provided by the Engineer in the form of an Allowance Authorization signed by the Engineer, Contractor and Owner.
2. If contingency allowance funds are not available; upon Owner's approval, written approval will be provided by the Engineer in the form of a Change Order as provided in the Conditions of the Contract.

    a. Form of Change Order: Owner or Engineer Standard Form submitted by the Engineer signed by the Contractor and Owner.
    b. Do not commence work or purchase materials for such change orders until written approval is received from the Owner in the form of an executed Allowance Authorization or Change Order.
    c. An executed Change Order is the only legal document which can change the Contract Sum or Time.

1.4 SUPPLEMENTAL INSTRUCTIONS

A. Supplemental instructions authorizing minor changes in the Work, not involving an adjustment to the Contract Sum or Contract Time, will be issued by the Engineer on Engineer's Supplemental Instructions form.

1.5 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: When the Owner and Contractor are not in total agreement on the terms of a Proposal Request; the Engineer may issue a Construction Change Directive on Engineer's Standard Form, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. The Construction Change Directive will contain a description of the change in the Work and designate the method followed to determine the change in the Contract Sum or Contract Time.
2. Submit unit costs, equipment rates and labor rates as requested by the Engineer and agree upon submitted rates before the work progresses unless the Contractor is directed to proceed in the absences of an agreement or in an emergency.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive. Provide a copy of those records the Engineer.

1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

END OF SECTION

SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements necessary to prepare and process Applications for Payment.

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. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

B. Application for Payment Cover on AIA G702.

C. Schedule of Values: A schedule of values on AIA G703 Continuation Sheet consisting of a detailed breakdown of the Contract amount showing separate figures for labor and materials. The work listed under the various sections and subsections of the Specifications serve as the format for preparation.

1.5 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Submittals.

1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

   a. Application for Payment Forms with Continuation Sheets
   b. Submittals Schedule
   c. Contractor's Construction Schedule

2. Submit the Schedule of Values to Engineer along with Submittals.
3. Sub schedules: Where the Work is separated into phases requiring separately phased payments, provide sub schedules showing values correlated with each phase of payment.

B. Format and Content: Provide one line item for labor and one line item for material for each Specification Section.

1. Identification: Include the following Project identification on the Schedule of Values:

   a. Application for Payment Number.
   b. Application for Payment Date.
   c. Engineer's project number.
   d. Period to for Schedule of Values.

2. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents.
3. Provide several line items for principal subcontract amounts, where appropriate.
4. Round amounts to nearest whole dollar; total to equal the Contract Sum.
5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
6. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
9. Complete each item in the Schedule of Values and Applications for Payment. Include total cost and proportionate share of general overhead and profit for each item.
10. Show temporary facilities and other major cost items that are not direct cost of work in place either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
11. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.6 APPLICATION FOR PAYMENT

A. Submit one electronic pdf of the application for payment on AIA Document G702 and G703, current editions.

1. Indicate the date for each progress payment. The period of Work covered by each application is the period indicated in the Agreement
2. Provide on original AIA forms.
3. Complete, notarize and execute each Application for Payment by a person authorized to legally sign documents.
4. Show breakdown of the work with separate labor and material amounts on Document G703 in accordance with the accepted Schedule of Values.
5. Make each application consistent with previous applications and payments as certified by Engineer and paid for by Owner.
6. Engineer will return incomplete applications without action.

B. Payment Terms:

1. Within 45 days of receipt of engineer-approved request, Owner shall make a progress payment to the Contractor on the basis of a duly certified and approved estimate of the work performed during the preceding calendar month under this Contract.

C. Retainage:

1. If the total contract amount exceeds $100,000.00; to ensure the proper performance of this Contract the Owner shall retain 5% of the amount of periodic payment due to a Contractor.

    a. When the project is 50% complete, the Owner, with written consent of the surety, shall not retain further retainage from periodic payments due the contractor if the contractor continues to perform satisfactorily and nonconforming work identified in writing prior to that time by the Engineer, engineer or owner has been corrected by the contractor and accepted by the Engineer, engineer or owner.
    b. If the owner determines the contractor's performance is unsatisfactory, the owner may reinstate retainage for each subsequent periodic payment application as authorized in this subsection up to the maximum amount of 5%.
    c. The project shall be deemed 50% complete when the contractor's gross project invoices, excluding the value of materials stored off-site, equal or exceed 50% of the value of the contract, except the value of materials stored on-site shall not exceed 20% of the contractor's gross project invoices for the purpose of determining whether the project is 50% complete.
    d. Within 60 days after the submission of a pay request and one of the following occurs, as specified in the contract documents, the owner with written consent of the surety shall release to the contractor retainage on payments held by the owner:

        1) The owner receives a certificate of Substantial Completion from the Engineer in charge of the project.
        2) The owner receives beneficial occupancy or use of the project. However, the owner may retain sufficient funds to secure completion of the project or corrections on work. If the owner retains funds, the amount retained shall not exceed two and one-half times the estimated value of the work to be completed or corrected. Reduction in the amount of the retainage on payments with the consent of the contractor's surety.

D. Match data of entries on the schedule of values and construction schedule. Include amounts of change orders issued before last day of construction period covered by the application.

E. The Engineer reserves the right to contact material manufacturers directly, without contractor consent, to verify material invoices. Make material invoices available to the Engineer upon his request from the contractor or material manufacturer.

F. When requesting payment for materials stored on site, submit with request an invoice for the materials and a certificate of insurance showing proof of coverage for the materials stored on site. Payment will be made only for stored materials. No payment will be made for anticipated overhead and/or profit.

G. Prior to initial application for payment, include the following items with submittals:

1. List of subcontractors
2. Schedule of values

H. With each application for payment, also submit the following:

1. Unit Price Daily Logs: Submit copies of unit price daily logs and appropriate change order forms with each application for payment unless no unit price work was accomplished during the period covered by the application.
2. Owner's M/W/SBE Program Forms. Refer to "Minority Business Enterprise" Section.
3. Contractor's Affidavit of Payment of Debts and Claims
4. Contractor's Affidavit of Release of Liens

I. At substantial completion, submit an application for payment showing 100% completion for portion of the work claimed as substantially complete. Include documentation supporting claim that the work is substantially complete.

J. At final completion, submit final application for payment with releases and supporting documentation not previously submitted and accepted, including but not limited to the following. Final payment not due until required documents have been submitted.

1. Project Closeout Submittals
2. Owner's M/W/SBE Program Forms. Refer to "Minority Business Enterprise" Section.
3. Contractor's Affidavit of Payment of Debts and Claims
4. Contractor's Affidavit of Release of Liens
5. Consent of Surety to Final Payment

END OF SECTION

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

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. General project coordination procedures.
   c. Coordination.
   d. Administrative and supervisory personnel
   e. Project meetings
   f. Weekly Reports

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. Refer to Section 01 33 00 "Submittal Procedures".

B. Emergency contact list: Key personnel including home, office and mobile numbers, for the following:

1. Owner
2. Contractor
3. Subcontractor(s)
4. Engineer

C. Work schedule:

1. Indicate start date, crew size, production rate, completion date, etc.

1.4 COORDINATION

A. Coordinate construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Coordinate its operations with those included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Contact Progress Reporting: Coordinate the scheduling and sequence of operations with the Owner and Engineer.

C. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-Construction conference.
7. Pre-installation conferences.
8. Project closeout activities.

1.5 PROJECT MEETINGS

A. Pre-Construction Meeting

1. A Pre-Construction Meeting will be scheduled as soon as possible after the award of the contract. The Engineer's Representative will compile minutes of the meeting and will furnish a copy of the minutes to each person present.
2. Attendance: Project Manager, Job Superintendent and Job Foreman, Owner, Engineer's Representative, manufacturer's representatives, installers of related work and other persons concerned with the installation and performance.

a. Provide 3 telephone numbers to contact the Contractor or his authorized representative in the event of an emergency after normal business hours.

3. Minimum Agenda: Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, materials suppliers, and the Project Manager; channels and procedures for communication; construction schedule, including sequence of critical work; contract documents, including distribution of required copies of Drawings and revisions; processing of Shop Drawings and other data submitted to the Project Manager for review; rules and regulations governing performance of the work and procedures for safety, first aid, security, quality control, housekeeping and related matters.

B. Progress Meetings:

1. Attend monthly progress meetings for the purpose of informing the Owner and the Engineer regarding the status of the project. The Engineer will compile minutes of the meeting and will furnish a copy of the minutes to each person present.
2. Attendance: Owner, Engineer, Contractor, Job Superintendent, material Supplier, and Subcontractors, as appropriate. Provide an updated job progress schedule at each weekly meeting. Be thoroughly familiar with the status of the project and be prepared to discuss and act upon situations that arise. The time, date and location of these meetings will be established during pre-construction conference.
3. Minimum Agenda: Review of work progress; field observations, problems, and decisions; identification of problems which impede planned progress; maintenance of progress schedule; corrective measures to regain projected schedules; planned progress during succeeding work period; coordination of projected progress; maintenance of quality and work standards; processing of field decisions and Change Orders; effect of proposed changes on progress, schedule, and coordination; other business relating to work.

C. Substantial Completion Inspection Meeting

1. Scheduled by Owner and Engineer upon written notification of substantial completion of work from the Contractor.
2. Attendance: Owner, Engineer, Contractor, material manufacturer.
3. Minimum Agenda: Walkover inspection, verification of substantial completion, identification of punch list items and identification of problems potentially impeding issuance of warranties.
4. Refer to Section 01 77 00 "Closeout Procedures" for other requirements.

D. Final Inspection Meeting

1. Scheduled by Owner and Engineer upon written notification of final completion of work from the Contractor.
2. Attendance: Owner, Engineer, Contractor.
3. Minimum Agenda: Verification of final completion including the completion of the punch list items.
4. Refer to Section 01 77 00 "Closeout Procedures" for other requirements.

1.6 REPORTS

A. Weekly Construction Reports: Prepare a weekly construction report recording the following information concerning events at Project site and Fax or email a copy to the Engineer by noon on the following Monday:

1. Approximate daily count of personnel at Project Site.
2. Daily material deliveries.
3. Daily High and low temperatures and general weather conditions.
4. Accidents.
5. Unusual events.
6. Stoppages, delays, shortages, and losses.
7. Orders and requests of authorities having jurisdiction.
8. Change Orders received and implemented.
9. Change Directives received and implemented.
10. Daily Allowance and Unit Cost usage.

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 Engineer's 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 manufacturer's 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 Contractor's 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. Owner/Contractor Agreement:

    a. Copy of Executed Owner/Contractor Agreement
    b. Copy of Contractor's Certificate of Insurance
    c. Copy of Performance and Payment Bonds

        1) Section 00 61 13.13 "Performance Bond Form"
        2) Section 00 61 13.16 "Payment Bond Form"

2. Section 01 25 00 "Substitution Procedures"
3. Section 01 29 00 "Payment Procedures"
4. Section 01 31 00 "Project Management and Coordination"
5. Section 01 40 00 "Quality Requirements"
6. Section 01 73 00 "Execution Requirements"
7. Section 01 77 00 "Closeout Procedures"
8. Section 05 01 30 "Steel Roof Deck Repair and Securement"
9. Section 06 10 00 "Rough Carpentry"
10. Section 07 01 50 "Preparation for Reroofing"
11. Section 07 22 16 "Roof Insulation"
12. Section 07 24 00 "Exterior Insulation Finish System (EIFS) Repairs"
13. Section 07 25 00 "Weather Resistive Barriers"
14. Section 07 41 13 "Metal Roof Panels"
15. Section 07 42 13 "Metal Wall Panels"
16. Section 07 54 00 "Thermoplastic Single Ply Roofing"
17. Section 07 72 53 "Snow Guards"
18. Section 22 14 26 "Roof Drains"
19. Shop Drawings: Shop drawings or letter stating installation of materials as detailed in the Contract Drawings unless properly authorized by the Engineer.
20. 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.
21. 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. Manufacturer's written recommendations.
    b. Manufacturer's product specifications.
    c. Manufacturer's installation instructions.
    d. Manufacturer's catalog cuts.
    e. Wiring diagrams showing factory-installed wiring.
    f. Printed performance curves.
    g. Operational range diagrams.
    h. Compliance with recognized trade association standards.
    i. Compliance with recognized testing agency standards.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Include the following information, as applicable:

    a. Dimensions.
    b. Identification of products.
    c. Fabrication and installation drawings.
    d. Roughing-in and setting diagrams.
    e. Shopwork manufacturing instructions.
    f. Templates and patterns.
    g. Schedules.
    h. Notation of coordination requirements.
    i. Notation of dimensions established by field measurement.

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 Engineer's 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 manufacturer's letterhead certifying that product complies with requirements.

G. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.

H. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

I. Material Certificates: Prepare written statements on manufacturer's 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 manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.

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 CONTRACTOR'S 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 ENGINEER'S 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.

C. Authority Having Jurisdiction: AHJ

1.4 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

B. Permit: Provide copy of construction permits along with required licenses or certifications required by the AHJ.

C. Manufacturer Report Release: Provide copy of request from Contractor to Manufacturer requesting REI Engineers be added to the manufacturer's report distribution list.

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. Cooperate in the execution of work and plan work in such manners as to avoid conflicting schedules or delay of work. If the work depends upon the work of another Contractor, report defects affecting the work to the Engineer. Commencement of work where such condition exists constitute acceptance of the other Contractor's work as being satisfactory to receive the work commenced. Coordinate work of trades under this contract in such a manner to obtain the best possible workmanship for the project. Install components of the work in accordance with the best practices of the particular trade. Notify the Owner sufficiently in advance of operations to allow for assignment of personnel.

E. Solely responsible for health and safety precautions and programs for workers and others in connection with the Work. No inspection by, knowledge on the part of, or acquiescence by the Engineer, the Owner, the Owner's employees and agents, or other entity whatever relieves the Contractor from its sole responsibility for compliance with the requirements of the Contract or its sole responsibility for health and safety programs and precautions.

F. 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.

G. Provide new materials unless otherwise indicated.

H. Provide workmanship in accordance with the best modern practice.

I. 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.

J. Verify dimensions and conditions at the site prior to starting work and notify the Engineer immediately of any errors or inconsistencies.

K. Maintain one set of the contract documents and accepted submittals at the job site.

L. 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.

M. 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.

N. 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.

O. 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. Be certified in writing for a minimum of two years by the roofing materials manufacturer to install the primary roofing products.
2. Have a minimum of five (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.
3. Principals of the firm to have a minimum of ten (10) years' experience in the estimating, supervision, management and administration of a contracting firm engaged in work similar to work as specified.
4. Licensed by state work is occurring in for the type and dollar amount of work contemplated by these Contract Documents.
5. Never filed bankruptcy or filed for protection from creditors.
6. 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.

7. Superintendent: During the performance of work by the Contractor or subcontractors, provide a full-time onsite 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.

      1) 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 (i.e. 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.

8. 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.

P. Specialists: Certain sections of the Specifications require that specific construction activities sbe performed by entities who are recognized experts in those operations. Specialists satisfy qualification requirements indicated and be engaged for the activities indicated.

Q. 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.

R. 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. Contractor's 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.

C. Manufacturer's Field Services: During construction and until substantial completion, 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.

    a. If required by manufacturer, Contractor shall request REI Engineers be added to the report distribution list.

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. General: 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

REFERENCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements relating to Referenced Standards.
2. Building Code

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. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Engineer's action on Contractor's submittals, applications, and requests, "approved" is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Engineer. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, finished and ready for the intended use.

I. "Installer": Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Using the term "carpentry" does not imply that certain construction activities are required to be performed by accredited or unionized individuals of a corresponding generic name like "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.

J. "Experienced": When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

K. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

C. Conflicting Requirements: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Engineer for a decision before proceeding.

1. Minimum Quantity or Quality Levels: Meet minimum quantity or quality level shown or specified. Comply with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.5 REFERENCED CODES

A. Building Code in effect at time of project design unless otherwise indicated in project manual.

1. 2018 North Carolina Building Code

B. Energy Conservation Code and ASHRAE 90.1 Energy Standard for Buildings in effect at time of project design unless otherwise indicated in project manual.

1. 2018 North Carolina Energy Conservation Code
2. ASHRAE 90.1, edition referenced by Building Code referenced above in effect at time of project design.

1.6 ABBREVIATIONS AND ACRONYMS

A. Where abbreviations and acronyms are used in Specifications or other Contract Documents, they mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed accurate and up to date as of the date of the Contract Documents.

B. Federal Governmental Agencies and Standards:

1. ADA, Accessibility Guidelines for Buildings and Facilities, www.access-board.gov
2. CFR, Code of Federal Regulations, www.ecfr.gov
3. CPSC, Consumer Product Safety Commission, www.cpsc.gov
4. EPA, Environmental Protection Agency, www.epa.gov
5. FS, Federal Specification, www.gsa.gov
6. NIBS, National Institute of Building Sciences, www.nibs.org
7. OSHA, Occupational Safety & Health Administration, www.osha.gov
8. USDA, US Department of Agriculture

C. Local Governmental Agencies and Standards:

1. State Department of Transportation

D. Code Agencies:

1. IAPMO, International Association of Plumbing and Mechanical Officials
2. ICC, International Code Council, www.iccsafe.org

E. Industry Organizations:

1. AA, The Aluminum Association, Inc., www.aluminum.org
2. AAMA, American Architectural Manufacturer's Association
3. AASHTO, American Association of State Highway and Transportation Officials
4. AATCC, American Association of Textile Chemists and Colorists
5. ACI, American Concrete Institute/ACI International, www.concrete.org
6. AGC, The Associated General Contractors of America, www.agc.org
7. AI, Asphalt Institute, www.asphaltinstitute.org
8. AIA, The American Institute of Architects, www.aia.org
9. AISC, American Institute of Steel Construction, www.aisc.org
10. AISI, American Iron and Steel Institute, www.steel.org
11. AITC, American Institute of Timber Construction, www.aitc-glulam.org
12. ALSC, American Lumber Standard Committee, www.alsc.org
13. ANLA, American Nursery & Landscape Association, www.anla.org
14. ANSI, American National Standards Institute, www.ansi.org
15. APA, The Engineered Wood Association, www.apawood.org
16. APA, Architectural Precast Association, www.archprecast.org
17. ARMA, Asphalt Roofing Manufacturers Association
18. ASCE, American Society of Civil Engineers, www.asce.org
19. ASHRAE, American Society of Heating, Refrigerating & Air-Conditioning Engineers, www.ashrae.org
20. ASMA, Asphalt Sealcoat Manufacturers Association
21. ASME International, The American Society of Mechanical Engineers International, www.asme.org

22. ASTM, ASTM International, www.astm.org
23. AWPA, American Wood-Preservers' Association, www.awpa.com
24. AWS, American Welding Society, www.aws.org
25. BHMA, Builders Hardware Manufacturers Association, www.buildershardware.com
26. BIA, Brick Industry Association, www.bia.org
27. CCFSS, Center for Cold-Formed Steel Structures, www.umr.edu/~ccfss
28. CDA, Copper Development Association Inc., www.copper.org
29. CISPI, Cast Iron Soil Pipe Institute, www.cispi.org
30. CLFMI, Chain Link Fence Manufacturers Institute, www.chainlinkinfo.org
31. CPA, Composite Panel Association, www.pbmdf.com
32. CPPA, Corrugated Polyethylene Pipe Association, www.cppa-info.org
33. CRSI, Concrete Reinforcing Steel Institute, www.crsi.org
34. CSI, Construction Specifications Institute, www.csinet.org
35. DHI, Door and Hardware Institute, www.dhi.org
36. EIMA, EIFS Industry Members Association, www.eifsfacts.com
37. EJMA, Expansion Joint Manufacturers Association, Inc., www.ejma.org
38. FM, FM Global, www.fmglobal.com
39. FRSSA/TRI
40. GA, Gypsum Association, www.gypsum.org
41. GANA, Glass Association of North America, www.glasswebsite.com/gana
42. HPVA, Hardwood Plywood & Veneer Association, www.hpva.org
43. IGCC, Insulating Glass Certification Council, www.igcc.org
44. IMI, International Masonry Institute
45. LGSI, Light Gage Structural Institute, www.loseke.com
46. MBMA, Metal Building Manufacturers Association, www.mbma.com
47. MCA, Metal Construction Association, www.metalconstruction.org
48. MFMA, Metal Framing Manufacturers Association
49. MIA, Marble Institute of America, www.marble-institute.com
50. MSS, Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.
51. NCMA, National Concrete Masonry Association, www.ncma.org
52. NCPI, National Clay Pipe Institute, www.ncpi.org
53. NECA, National Electrical Contractors Association, www.necanet.org
54. NEMA, National Electrical Manufacturers Association, www.nema.org
55. NETA, International Electrical Testing Association, www.netaworld.org
56. NFPA, National Fire Protection Association, www.nfpa.org
57. NFRC, National Fenestration Rating Council, www.nfrc.org
58. NHLA, National Hardwood Lumber Association, www.natlhardwood.org
59. NLGA, National Lumber Grades Authority, www.nlga.org
60. NRCA, National Roofing Contractors Association, www.nrca.net
61. NRDCA, National Roof Deck Construction Association, www.nrdca.org
62. NRMCA, National Ready Mixed Concrete Association, www.nrmca.org
63. NSA, National Stone Association, www.aggregates.org
64. NTMA, National Terrazzo and Mosaic Association, Inc., www.ntma.com
65. PCI, Precast/Prestressed Concrete Institute, www.pci.org
66. PIMA, Polyisocyanurate Manufacturer's Association
67. PDI, Plumbing & Drainage Institute, www.pdionline.org
68. RCSC, Research Council on Structural Connections, www.boltcouncil.org
69. RMA, Rubber Manufacturers Association, www.rma.org
70. SDI, Steel Deck Institute, www.sdi.org
71. SDI, Steel Door Institute, www.steeldoor.org
72. SGCC, Safety Glazing Certification Council, www.sgcc.org
73. SJI, Steel Joist Institute, www.steeljoist.org

74. SMACNA, Sheet Metal and Air Conditioning Contractors' National Association, www.smacna.org
75. SPFA, Spray Polyurethane Foam Alliance, www.sprayfoam.org
76. SPI, The Society of the Plastics Industry, www.plasticsindustry.org
77. SPIB, Southern Pine Inspection Bureau, www.spib.org
78. SPRI, Single Ply Roofing Institute. www.spri.org
79. SSMA, Steel Stud Manufacturers Association, www.ssma.com
80. SSPC, The Society for Protective Coatings, www.sspc.org
81. SWI, Steel Window Institute, www.steelwindows.com
82. SWRI Institute - Sealant, Waterproofing and Restoration Institute
83. TAPPI, The American Pulp and Paper Association, www.tappi.org
84. UL, Underwriters Laboratories, Inc., www.ul.com
85. WDMA, Window & Door Manufacturers Association, www.wdma.com
86. WWPA, Western Wood Products Association, www.wwpa.org

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 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.

1.4 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. Portable Chain-Link Fencing: Minimum 2-inch 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide non-permanent bases for support.

    a. Provide green privacy mesh.

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. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110 to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.

G. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.

1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure and the requirements of the local Governing agency.

H. 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. Water Service:

1. Water for construction purposes is available from the Owner at no charge.

    a. Operate exterior hose bids only with properly fitted handles. Remove at the end of each workday. Repair damage to hose bids or hose bib stems. Do not operate hose bibs with pliers.

B. Electrical Power Service: Provide portable generators for electrical power requirements.

C. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths do reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

3.2 CONSTRUCTION FACILITIES

A. Temporary construction facilities include the following:

1. 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.

2. 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.
    b. Comply with Section 01 74 00 "Cleaning and Waste Management" for progress cleaning requirements.

3.3 TEMPORARY BARRIERS AND ENCLOSURES

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. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.

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.

3.5 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. 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.

3.6 TEMPORARY CONTROLS

A. Provide security controls to protect work and materials at the project site.

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 73 00

EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General procedural requirements governing execution of the Work.

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. Refer to Section 01 33 00 "Submittal Procedures".

B. Safety Data Sheets (SDS):

1. List of Materials including manufacturer name and product name.
2. Safety Data Sheets (SDS) for materials/products anticipated for use and stored or brought to the site for completion of this project.
3. Maintain on site with the Superintendent a set of SDS for products/materials on site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Material storage area designated by the Owner at the Pre-Bid and Pre-Construction Meetings and/or indicated in Contract Drawings.

1. Store materials as required by the manufacturer and indicated in their installation instructions.
2. Store materials as required by their respective specification section.
3. Properly secure materials to resist wind events.

B. Deliver and transport materials to project in accordance with the Owner's requirements and coordinate material deliveries with Owner.

C. Hazardous Materials:

1. Use products, cleaners, and installation materials that are not considered hazardous.
2. Store chemicals in a fireproof cabinet. Store only like materials together in a cabinet. Ensure labels are intact or to place labels on chemicals prior to delivery to site.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions:

1. The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of construction affecting the Work.

B. Existing Utilities:

1. The existence and location of utilities and construction indicated as existing are not guaranteed.
2. Before construction, verify the location and points of connection of utility services.
3. Before beginning work, investigate and verify the existence and location of utilities and other construction affecting the Work.

C. Acceptance of Conditions:

1. Examine areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance.
2. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

    a. Description of the Work.
    b. List of detrimental conditions.
    c. List of unacceptable installation tolerances.
    d. Recommended corrections.

3. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each material. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Upon discovery of the need for clarification of the Contract Documents, submit a request for information to Engineer. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 INSTALLATION

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

B. Install products at the time and under conditions that ensure the best possible results. Maintain conditions required for product performance until Final Acceptance.

C. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

D. Tools and Equipment:

1. Do not use tools or equipment that produces harmful noise levels.
2. Restrict use of noisemaking tools and equipment to hours that minimize complaints from persons or firms near Project Site.

3.4 STARTING AND ADJUSTING

A. Test equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion and Final Acceptance.

3.6 CORRECTION OF THE WORK

A. Restore permanent facilities used during construction to their specified condition.

B. Replace components that are not up to specification standards.

END OF SECTION

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. This Section includes procedural requirements for cutting and patching.

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. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 QUALITY ASSURANCE

A. Engineer's Acceptance: Obtain acceptance of cutting and patching before cutting and patching. Acceptance does not waive right to later require replacement of unsatisfactory work.

B. Structural Elements: Do not cut and patch structural elements in a manner that changes their load-carrying capacity or load-deflection ratio. Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations sealed by a licensed Engineer in the state of the project showing integration of reinforcement with original structure.

C. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that result in increased maintenance or decreased operational life or safety.

D. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that change their load-carrying capacity that results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety.

E. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that, in the Engineer's opinion, reduces the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

F. Cutting and Patching Conference: If extensive cutting and patching is required, before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, match the visual and functional performance of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces and conditions under which cutting and patching are performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Services: Where existing services are removed, relocated, or abandoned, bypass such services before cutting to minimize interruption of services to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete or Masonry: Cut using an abrasive saw or a diamond-core drill.
4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
5. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that eliminate evidence of patching and refinishing.
3. Floors and Walls: Where walls or partitions that are removed extend from one finished area into another, patch and repair floor and wall surfaces. Provide an even surface of uniform finish, color, texture, and appearance. Replace floor and wall coverings, if necessary, to achieve uniform color and appearance.

    a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over unbroken surface containing the patch to the nearest joint or delineation between materials. Provide additional coats until patch blends with adjacent surfaces.

4. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.
5. Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

D. Renovation Project Procedures

1. Materials: As specified in technical sections, match existing products and Work.
2. Employ skilled and experienced installer to perform cutting and patching.
3. Remove, cut and patch materials in a manner to minimize damage and to provide a means of restoring products and finishes to original condition.
4. Refinish existing visible surfaces to remain in renovated rooms and spaces, to renewed condition for each material, with a neat transition to adjacent finishes.
5. Where work abuts or aligns with existing construction, provide a smooth and even transition. Patch work to match existing adjacent work in texture and appearance.
6. When a smooth transition with Work is not possible, submit recommendation to Engineer for review. Terminate existing surface along a straight line at a natural line of division when possible.
7. Patch or replace portions of surfaces, which are damaged, lifted, discolored or showing other imperfections.
8. Finish surfaces as specified in individual Product sessions.
9. Cutting and patching completed in a manner such that the patched surfaces are compatible with the surfaces in which the repairs were made, both structurally and aesthetically as deemed appropriate by the Project Engineer.

E. Restoration: Restore existing work, including concealed work not indicated or specified to be modified, and which is damaged or otherwise affected by construction operations, to a condition which existed before the work was commenced. Use workers skilled in reconstruction and alteration work where construction adjoins, connects to, or abuts existing work. Join Work in such a manner as to make the joining as inconspicuous as possible. Obvious patching of damaged Work is not acceptable. At the completion, ensure that the buildings and grounds are in first-class condition within the intent of these specifications, with parts well joined as required, connections completed, and facilities in working condition.

3.4 CLEANING

A. Clean areas and spaces where cutting and patching is performed where required for construction or used as access.

B. Remove paint, mortar, oils, putty and similar materials.

C. Leave work in an acceptable completed condition.

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.
2. Proactive measures for waste management have been established by the Owner.

    a. The purpose of this program is to ensure that during the course of the Project, diligent means are employed to pursue practical and economically feasible waste management and recycling options.
    b. Upon award, furnish documentation regarding waste management and recycling options for those products and procedures furnished.
    c. Minimize waste disposal to landfills.

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. 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.

G. Waste Management Plan: A Project-related plan for the collection, transportation, and disposal of the waste generated at the construction site.

1.4 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

B. Waste Management Plan. Include the following:

1. Solid Waste Disposal and Diversion document.
2. Identification of materials recycled.
3. Identification of materials landfill.
4. Identification of hazardous wastes and disposal.
5. Locations of sorting and waste storage facilities on Site Plan of project.

1.5 CLOSEOUT SUBMITTALS

A. Refer to Section 01 77 00 "Closeout Procedures".

B. Landfill charge tickets

C. Summary of Construction Waste/Recycling

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 CONSTRUCTION WASTE MANAGEMENT

A. Construction Waste Management Plan Implementation:

1. Complete and submit a Summary of Construction Waste/Recycling as part of project closeout
2. Report materials identified in the Summary by weight.
3. Where weight is not applicable, report materials by units applicable to material recipient.
4. Procure receipts or other validation of waste management procedures and include them as part of the submittal.

B. Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse and return methods used at appropriate stages of the Work.

C. Separation facilities:

1. Define specific areas to facilitate separation of materials for recycling, salvage, re-use or return.
2. Maintain recycle and waste bin areas in an orderly manner and clearly mark to avoid contamination of materials.
3. Do not mix recyclable materials.
4. Store hazardous wastes in secure areas.

D. Program profits: Profits from recycling of construction waste granted to the Contractor.

3.3 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.

3.4 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of 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 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

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

1.4 SUBSTANTIAL COMPLETION

A. Submit written certification to the Engineer that the Project is substantially complete along with the following:

1. Prepare a list of items to be completed and corrected (Contractor's punch list), the value of items on the list, and reasons why the Work is not complete.
2. Notify Owner of pending insurance changeover requirements.
3. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
4. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
5. Notify Owner of changeover in heat and other utilities.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
7. Complete final cleaning requirements, including touchup painting.
8. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Substantial Completion Inspection: On receipt of written substantial completion certification, the Engineer will make a substantial completion inspection within seven (7) days after receipt of certification.

1. Should the Engineer consider the Work not substantially complete, he will notify the Contractor, in writing, stating the reasons. Complete the Work and send a second written notice to the Engineer, certifying the Project is substantially complete, at which time the Engineer will re-inspect the work.
2. Should the Engineer consider the Work substantially complete, he will prepare and issue a Certificate of Substantial Completion (AIA G704) accompanied by the list of items to be completed or corrected (Punch List).
3. A punch list of items will be prepared for correction and completion before the Final Inspection. Complete the punch list items within fifteen (15) days of the punch list inspection. If the Contractor fails to complete the punch list within this period, the Owner has the right to impose liquidated damages in the amount of five hundred ($500.00) dollars for each consecutive day until the items are completed.

1.5 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 01.
2. Submit signed copy of Engineer's inspection list of items to be completed or corrected (punch list) certifying each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Final Inspection: The submission of the signed punch list constitutes as written request for final inspection for acceptance. On receipt of request, Engineer along with the Owner's Representative will conduct a final inspection within seven (7) days of receipt of certification.

1. Should the Engineer consider that the Work is finally complete in accordance with requirements of the Contract Documents, Project Closeout Submittals will be requested.
2. Should the Engineer consider that the Work is not finally complete, notification to the Contractor, in writing, stating the reasons will be made.
3. Take steps to remedy the stated deficiencies and send a second written notice to the Engineer certifying that the Work is complete, at which time the Engineer will re-inspect the Work.

1.6 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 thirty (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 five hundred ($500.00) dollars 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

1.7 WARRANTIES

A. Warranties to commence on the date of Substantial Completion of the project.

B. Metal Roof Panel System weathertight and finish warranty as outlined in Section 07 41 13 "Metal Roof Panels".

C. Metal Wall Panel finish warranty as outlined in Section 07 42 13 "Metal Wall Panels".

D. Thermoplastic Single Ply Roofing System warranty as outlined in Section 07 54 00 "Thermoplastic Single Ply Roofing".

E. Pre-finished Sheet Metal finish warranty as outlined in Section 07 62 00 "Sheet Metal Flashing and Trim".

F. Section 00 65 36 "Contractor's Warranty"

1. 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.

G. Section 00 65 37 "Asbestos Free Warranty"

END OF SECTION

SECTION 05 01 30

STEEL ROOF DECK REPAIR AND SECUREMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Steel Deck Repair: Inspect, evaluate and remediate steel roof deck as follows:

   a. Repair of surface rust in steel decking.
   b. Repair of through holes in steel decking.

2. Steel Deck Securement: Provide mechanical fasteners to secure steel decking to steel framing and to secure deck side and end laps.

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 06 10 00 "Rough Carpentry"
2. Section 07 01 50 "Preparation for Reroofing"
3. Section 07 22 16 "Roof Insulation"
4. Section 07 41 13 "Metal Roof Panels"
5. Section 07 54 00 "Thermoplastic Single Ply Roofing"
6. Section 22 14 26 "Roof Drains"

1.3 REFERENCES

A. American Iron and Steel Institute (AISI) Standard- North American Specification for the Design of Cold-Formed Steel Structural Members, 2001 Edition with Supplement 2004.

B. Steel Deck Institute, Inc. (SDI) Design Manual for Composite Decks, Form Decks, and Roof Decks (No. 31, 2007).

C. American Institute of Steel Construction (AISC) Steel Construction Manual.

D. FM Global:

1. Data Sheet 1-28 Wind Design.
2. Data Sheet 1-29 Roof Deck Securement and Above Roof Deck Components.

E. American Welding Society (ANSI/AWS) D1.3 Structural Welding Code/Sheet Steel - 98 Structural Welding Code - Sheet Steel.

F. ASTM International

1. A653/A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy - Coated (Galvannealed) by the Hot-Dip Process.

2. A924/A924M Standard Specification for General Requirements for Steel Sheet, Metallic Coated by the Hot-Dip Process.
3. A108 Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.

1.4 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

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

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

1.5 QUALITY ASSURANCE

A. Provide meticulous attention to the detail of installation and workmanship to ensure the assemblage of products in the highest grade of excellence by skilled craftsmen of the trade.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel Deck Repair:

1. Deck Repair Plates: 16 gauge, galvanized steel plates sized to extend a min. 8" beyond the through hole in existing decking with plate edges resting on a rib.
2. Deck Repair Coating: High solids, low VOC, self-priming epoxy coating for use on steel structures.

    a. PPG Amerlock 400
    b. Devoe Bar-Rust 231
    c. Kryon Industrial High Build Epoxy Mastic 100
    d. Benjamin Moore & Co. Surface Tolerant Epoxy Mastic Coating V160

B. Steel Deck Securement:

1. Deck-to-structural steel fasteners: FM Approved, self-drilling deck fasteners of length and type as required by fastener manufacturer for thickness of structural steel.

    a. ITW Buildex Corp. 12-24 Tek 5
    b. SFS Intec Impax 12-24 SD5
    c. Blazer 1/4-20 DP5

2. Deck-to-deck side lap fasteners: FM Approved self-drilling deck side lap fasteners of length and type as required by fastener manufacturer for thickness of steel deck.

    a. ITW Buildex Corp. 10-16 Tek 3
    b. SFS Intec #10-16 SD3
    c. Blazer #10-16 DP3

3. Washers: 3/4 inch diameter of same material as fastener or integral 1/2 inch diameter washer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect roof deck in work areas noted on roof plan. Notify engineer of additional damaged decking, or damaged structural elements.

B. Before removing decking, cutting decking or fastening decking, inspect interior conditions under the deck to prevent cutting or damaging the joists, electrical conduit, sprinkler piping, fixtures and utilities. Ensure conditions are satisfactory before proceeding with the work, and continuously monitor interior and exterior work conditions during demolition and construction operations.

C. Commencement of work signifies acceptance of conditions. Correct defects in work resulting from accepted substrates at no additional expense to the Owner.

D. The following descriptions indicate roof deck corrosion levels by degree. Inspect roof deck areas and assess corrosion level of 1 through 5. Following the assessment, conduct the appropriate Remediation Method in accordance with the deck corrosion level descriptions. Refer to Section 01 22 00 "Unit Prices"

1. Corrosion Degree 1

    a. Red rust or dark brown rust scaling on top flange only.
    b. Dark brown rust scale removed by scraping/wire brushing to indicate minor pitting of the metal surface.
    c. Deck flutes discolored.

2. Corrosion Degree 2

    a. Red rust or dark brown rust scale present on the deck surface.
    b. Deck sections (flanges and flutes) have been or can be readily removed during examination or areas of decking are missing, up to 13" in any one direction.

3.2 PREPARATION

A. Remove and vacuum debris from deck surface and ribs to allow for inspection of deck, and to fasten decking.

B. Remove and properly dispose of damaged decking (Corrosion Degree Level 4) and remove deck fasteners in the repair area.

C. Take necessary precautions to prevent debris from entering building space, and coordinate operations with Engineer and Owner.

D. Provide temporary protection of building interior and contents to prevent damage.

3.3 STEEL DECK REMEDIATION

A. General:

1. Remove loose dirt, rust, moisture, grease or other contaminants from the surface with a power wire brush.
2. Vacuum the roof deck surface clean.

B. Corrosion Degree 1:

1. Properly mix deck repair coating according to manufacturer's recommendations.
2. Do not mix more material than can be used in the materials expected pot life.
3. Apply material at temperatures from 50˚ F to 90˚ F for optimum application.
4. Brush or roller apply deck repair coating as recommended by manufacturer.
5. Allow coating to dry a minimum of 30 minutes. Do not install roof insulation until coating is dry.

C. Corrosion Degree 2:

1. Properly mix deck repair coating according to manufacturer's recommendations.
2. Do not mix more material than can be used in the materials expected pot life.
3. Apply material at temperatures from 50˚ F to 90˚ F for optimum application.
4. Brush or roller apply deck repair coating as recommended by manufacturer.
5. Allow coating to dry a minimum of 30 minutes. Do not install roof insulation until coating is dry.
6. Mechanically attach deck repair plate to deck ribs with deck to side lap fasteners 6 inches on center maximum or a minimum of 2 screws per side.

3.4 STEEL DECK SECUREMENT

A. Fasten steel deck panels to steel framing and steel deck side laps as indicated in the contract drawings.

B. Fastener position/location:

1. Drive deck fasteners in the center of the bottom of the deck rib. Drive the fasteners within +/-1/4 inch of the center of the structural steel bearing surface. Drive fasteners along the center of the structural steel member, not near the edge of the structural steel.
2. Drive deck side lap fasteners into the deck rib such that both panels are penetrated. Locate the side lap fasteners along the center of the bottom of the rib.

C. Utilize fastener with integral washer or provide washer for fasteners in Zone 2 (perimeter) and Zone 3 (corner).

D. Apply weight over the area being fastened to prevent deck deflection and ensure contact between fasteners, deck and/or structural steel.

3.5 FIELD QUALITY CONTROL

A. Monitor the inside of the building during removal and replacement of damaged steel decking to prevent damage to building, equipment and occupancy.

B. Monitor hot work operations in strict accordance with the Owners requirements and local Code. These operations include, but are not limited to, cutting, welding, soldering, brazing, grinding, etc. and other spark or flame producing operations.

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 wood nailers/blocking and plywood sheathing.
    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 and Specification Sections apply to this Section, including but not limited to:

1. Section 05 01 30 "Steel Roof Deck Repair and Securement"
2. Section 07 01 50 "Preparation for Reroofing"
3. Section 07 22 16 "Roof Insulation"
4. Section 07 41 13 "Metal Roof Panels"
5. Section 07 54 00 "Thermoplastic Single Ply Roofing"

1.3 REFERENCES

A. Refer to Section 01 42 00 "References" for referenced standards and applicable building code.

B. Refer to the following references, current edition for specification compliance:

1. American Society for Testing and Materials (ASTM)
2. American Wood-Protection Association (AWPA)

    a. AWPA E12 - Standard Method of Determining the Corrosion of Metal in Contact with Wood.
    b. AWPA M4 - Standard for the Care of Preservative Treated Wood Products.
    c. AWPA P5 - Standard for Waterborne Preservatives.
    d. AWPA P23 - Standard for Chromated Copper Arsenate Type C (CCA-C).
    e. AWPA P25 - Standard for Inorganic Boron (SBX).
    f. AWPA P26 - Standard for Alkaline Copper Quat Type A (ACQ-A).
    g. AWPA P27 - Standard for Alkaline Copper Quat Type B (ACQ-B).
    h. AWPA P28 - Standard for Alkaline Copper Quat Type C (ACQ-C).
    i. AWPA P29 - Standard for Alkaline Copper Quat Type D (ACQ-D).

j. AWPA P47 - Standard for DCOI/Imidacloprid/Stabilizer, Waterborne (EL2).
k. AWPA P48 - Standard for Copper Azole Type C (CA-C).
l. AWPA T1 - Use Category System: Processing and Treatment Standard.
m. AWPA U1 - Use Category System: User Specification for Treated Wood.

3. American Plywood Association (APA)
4. American National Standard

a. ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems

5. Underwriters Laboratories, Inc. (UL)
6. FM Global (FM)

a. Data Sheet 1-49 Perimeter Flashing

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. Refer to Section 01 33 00 "Submittal Procedures".

B. 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. Treated 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. Lumber Standards: Comply with PS 20 and applicable rules of respective grading and inspecting agencies for species and products indicated.

G. Plywood Product Standards: Comply with PS 1 (ANSI A 199.1) or, for products not manufactured under PS 1 provisions, with applicable APA Performance Standard for type of panel indicated.

H. Installation of rough carpentry for roofing and flashing terminations to ensure plumb, uniform and level metal flashings.

I. Install rough carpentry to ensure roof membrane flashing transitions are smooth for positive roof drainage and appearance.

J. 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 or Blocking:

1. No. 2 or better spruce or southern yellow pine lumber.
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.
4. Preservative Treatment:

    a. ACQ as manufactured for Viance in accordance with AWPA U1 and P5, P26, P27, P28, P29 as appropriate. Use 0.15 lb/cu ft (2.4 kg/m3) of ACQ in accordance with AWPA U1: (UC3B) as appropriate.

b. Ecolife or EL2 as manufactured by Viance. Use 0.019 lb/cu ft (0.3 kg/m3) of Ecolife or EL2 (+ 0.2 lb/cu ft MCS) in accordance with AWPA U1 as appropriate.
c. Engineers accepted equivalent.

B. Plywood:

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

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:

1. For steel deck and light gauge steel framing (16-ga. or less): #14-13 DP1, pancake or panhead, corrosion resistant, ASTM A153, 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.

a. ITW Buildex Teks
b. Triangle Fasteners
c. SFS Intec
d. Engineers accepted equivalent.

2. 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.

    a. ITW Buildex Teks
    b. SFS Intec
    c. Blazer
    d. Engineers accepted equivalent

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.

1. Refer to Section 01 22 00 "Unit Prices".

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.
2. Coat steel decking with a uniform, heavy application of asphalt primer, or separate by membrane or other acceptable means to prevent contact between steel and treated wood products.
3. Do not allow treated lumber to make direct contact with steel decking.

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 wiht 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 the current FM Loss Prevention Data Sheet 1-49, Perimeter Flashing, 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.

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.

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 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. Areas A & E - Removal of existing roof assemblies down to the steel deck. Store Gypsum Substrate and Roof Insulation for reinstallation.
b. Area C - Removal of existing roof assemblies down to the steel deck.
c. Raising of mechanical units and/or HVAC units to meet the required minimum flashing height.
d. Installation and/or modification of through edge overflow scuppers.
e. Under Roof Deck Survey

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 05 01 30 "Steel Roof Deck Repair and Securement"
2. Section 06 10 00 "Rough Carpentry"
3. Section 07 22 16 "Roof Insulation"
4. Section 07 41 13 "Metal Roof Panels"
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 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

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

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

1.5 QUALITY ASSURANCE

A. Qualifications: Previous experience removing roof systems.

B. Requirements: Comply with governing EPA regulations and hauling/disposal regulations of authorities having jurisdiction.

1.6 SCHEDULING

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

1.7 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, 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.

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. Provide finished openings as indicated.

D. 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 22 16

ROOF INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Roof Areas A & E:

   a. Reinstall Gypsum Substrate loose laid. Replace deteriorated substrate in accordance with Unit Prices and Quantity Allowances.
   b. Reinstall 3" Roof Insulation loose laid. Replace deteriorated roof insulation in accordance with Unit Prices and Quantity Allowances.
   c. Provide Cover Board mechanically attached.

2. Roof Area C:

   a. Provide 1.5" Roof Insulation mechanically attached.
   b. Provide Tapered Insulation System adhered in foam adhesive.
   c. Provide Cover Board adhered in foam adhesive.

3. Roof Area B:

   a. Reinstall two layers of 2" Roof Insulation.
   b. Provide Cover Board mechanically attached.

4. Roof Area D:

   a. Provide 1.5" Roof Insulation mechanically attached.
   b. Provide 1.5" Roof Insulation adhered in foam adhesive.
   c. Provide Cover Board adhered in foam adhesive.

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 05 01 30 "Steel Roof Deck Repair and Securement"
2. Section 06 10 00 "Rough Carpentry"
3. Section 07 01 50 "Preparation for Reroofing"
4. Section 07 41 13 "Metal Roof Panels"
5. Section 07 54 00 "Thermoplastic Single Ply Roofing"
6. Section 22 14 26 "Roof Drains"

1.3 REFERENCES

A. Refer to Section 01 42 00 "References" for referenced standards and applicable building code.

B. Refer to the following references for specification compliance:

1. National Roofing Contractors Association (NRCA)
2. FM Global
3. Underwriters Laboratories, Inc. (UL)

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: 15
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 ASTM C177, C236, C518 or C976.

B. Wind Design: Install insulation system to meet the required wind uplift pressures as specified in Section 07 54 00 "Thermoplastic Single Ply Roofing".

1.5 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

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

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

D. 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. Gypsum Substrate:

a. Fiberglass Mat Faced: Nonstructural, glass mat faced gypsum panel with 500 psi moisture resistant treated core, non-asphaltic primer surfacing, and tested in accordance with ASTM E 84 and ASTM E 136. Board Size: 4 feet by 8 feet. Thickness: 5/8 inch. Acceptable manufacturers include:

1) GP Gypsum DensDeck
2) DEXcell Glass Mat Roof Board
3) Engineers accepted equivalent.

2. Roof Insulation:

a. Rigid polyisocyanurate roof insulation board with factory applied glass fiber reinforced cellulosic felt facers on the top and bottom complying with ASTM C1289 Type II, Class 1, Grade 2 and meeting the following requirements:

1) 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.
2) Dimensional Stability: 2 percent maximum linear change when conditioned at 158 degrees F and 97 percent relative humidity for seven days.
3) 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.
4) Thickness:

a) 3" (Areas A & E).
b) 2" (Area B)
c) 1.5" (Areas C and D).

3. Tapered Insulation System:

a. Rigid polyisocyanurate roof insulation board with factory applied glass fiber reinforced cellulosic felt facers on the top and bottom complying with ASTM C1289 Type II, Class 1, Grade 2 and meeting the following requirements:

1) 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.
2) Dimensional stability: 2 percent maximum linear change when conditioned at 158 degrees F and 97 percent relative humidity for seven days.
3) Board size: 4 feet by 4 feet.
4) Slope: 1/4 inch per foot
5) Minimum thickness: 1.5".
6) Fill Insulation: Rigid polyisocyanurate meeting the above requirements with board size of 4 feet by 4 feet and thickness of 2 inches.

4. Cover Board:

a. Lightweight, high-density polyisocyanurate roof board with coated fiberglass facers, minimum compressive strength of 90 psi, R-value of 2.5 and 1/2 inch thick.

B. Insulation Accessories:

1. Tapered Edge Strip:

a. Wood Fiber: Asphalt impregnated wood fiber tapered edge strips with 1 inch per foot slope of sizes indicated in Contract Drawings or required by field conditions meeting ASTM C 208.

1) Install at edges to make transitions as detailed in Contract Drawings.
2) Provide slope transition at the outside of drainage sumps.

C. Insulation Attachment Materials:

1. Steel Deck Mechanical Fasteners and Stress Plates: Corrosion resistant 3-inch galvalume stress plate and corrosion resistant screw type fasteners for use with steel decks; approved by the insulation manufacturer for the insulation type, thickness and board size specified; fastener length as required by the fastener manufacturer for the insulation thickness specified, and to penetrate the deck a minimum of 3/4 inch and a maximum of 1 inch.

2. Foam Adhesive: One or two part, VOC compliant, moisture-cured polyurethane foamable adhesive designed as roof insulation adhesive and approved by insulation manufacturer.

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. On steel decks, apply insulation boards with long dimension of units across deck ribs. Bear ends of insulation boards on top flange of steel deck.
8. For torch application, continue coverboard over combustible substrates.
9. Install crickets, saddles and tapered edge strips before the cover board.
10. Adhere tapered edge strips at transitions, terminations and/or penetrations as detailed or required in ribbons of foam adhesive to ensure smooth transitions are provided for the roof membrane and flashings.
11. 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.
12. 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.
13. Provide necessary modifications to prevent standing water which is defined as 1/4 inch of water in a 4-square foot or larger area 24 hours or more after precipitation.

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. Ponding Water: 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. 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. Provide modifications to roof system to ensure proper drainage including but not limited to reinstallation of roof system or installation of additional tapered insulation.

E. 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.
4. Fasteners to engage the top flange of steel decks only.

F. 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 24 00

EXTERIOR INSULATION FINISH SYSTEM (EIFS) REPAIRS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Modifications to the exterior insulation and finish system (EIFS) consisting of insulation board, reinforcing fabric, base coat, and finish coat, along with adhesives and/or mechanical fasteners as applicable with color and finish to match existing. System components compatible with each other and with the substrate as recommended or approved by, and the products of, a single manufacturer regularly engaged in furnishing Exterior Insulation and Finish Systems.

1.2 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

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

C. Manufacturer's Instructions: Manufacturer's standard printed instructions for the installation of, and repairs to, the EIFS. Include requirements for condition and preparation of existing EIFS substrate, installation of EIFS, and requirements for sealants and sealing.

1.3 QUALITY ASSURANCE

A. Qualifications of EIFS Manufacturer: Manufacturer who has been in the practice of manufacturing and designing EIFS for a period of not less than 3 years, and has been involved in at least five projects similar to this project in size, scope, and complexity, in the same or a similar climate as this project.

B. Qualification of EIFS Installer: Trained by EIFS manufacturer to perform the installation of the System and has installed at least five projects at or near the size and complexity of this project. Employ qualified workers trained and experienced in installing the manufacturer's EIFS.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to job site in original unopened packages, marked with manufacturer's name, brand name, and description of contents.

B. Store materials off the ground and in accordance with the manufacturer's recommendations in a clean, dry, well-ventilated area.

C. Protect stored materials from rain, sunlight, and excessive heat. Keep coating materials at a temperature not less than 40 degrees F. Do not expose insulation board to flame or other ignition sources.

1.5 PROJECT CONDITIONS

A. Do not prepare materials or apply EIFS during inclement weather unless appropriate protection is provided. Protect installed materials from inclement weather until they are dry.

B. Apply sealants and wet materials only at ambient temperatures of 40 degrees F or above and rising, unless supplemental heat is provided. Protect system from inclement weather and to maintain this temperature for a minimum of 24 hours after installation.

C. Do not leave insulation board exposed to sunlight after installation.

PART 2 - PRODUCTS

2.1 COMPATIBILITY

A. Provide materials compatible with each other and with the substrate, and as recommended by EIFS manufacturer.

2.2 MATERIALS

A. Adhesive: Manufacturer's standard product, including primer as required, and compatible with substrate and insulation board to which the system is applied.

B. Mechanical Fasteners: Corrosion resistant and as approved by EIFS manufacturer. Select fastener type and pattern based on applicable wind loads and substrate into which fastener is attached, to provide the necessary pull-out, tensile, and shear strengths.

C. Insulation Board:

1. Standard product of manufacturer and compatible with other systems components.
2. Factory marked individually with the manufacturer's name or trademark, the material specification number, the R-value at 75-degree F, and thickness.
3. Thickness to match existing.
4. ASTM C 578 Type I as recommended by the EIFS manufacturer and treated to be compatible with other EIFS components.
5. Age insulation by air drying a minimum of 6 weeks prior to cutting and shipping.

D. Base Coat: Manufacturer's standard product and compatible with other systems components.

E. Portland Cement: Conform to ASTM C 150, Type I or II as required, fresh and free of lumps, and approved by the systems manufacturer.

F. Reinforcing Fabric: Alkali-resistant, balanced, open weave, glass fiber fabric made from twisted multi-end strands specifically treated for compatibility with the other system materials and comply with ASTM E 2098 and as recommended by EIFS manufacturer.

G. Finish Coat: Manufacturer's standard product. For color consistency, use materials from the same batch or lot number.

H. Accessories: Conform to recommendations of EIFS manufacturer, including trim, edging, anchors, expansion joints. Provide corrosion resistant fasteners and metal items.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrate and conditions to determine that the EIFS can be installed as required by the EIFS manufacturer and that work related to the EIFS is properly coordinated.

B. Verify surface is sound and free of oil, loose materials or protrusions which interfere with the system installation. If deficiencies are found, notify Engineer and do not proceed with installation until the deficiencies are corrected.

C. Verify substrate in plane, with no deviation greater than 1/4 inch when tested with a 10 foot straightedge. Determine flatness, plumbness and other conditions for conformance to manufacturer's instructions.

3.2 PREPARATION

A. Cut and Remove EIFS cladding as indicated on drawings.

B. Prepare surfaces for application of the EIFS to meet flatness tolerances and surface preparation according to manufacturer's installation instructions.

C. At cracks and along cut edge of EIFS grind off finish coat to expose base coat. Do not remove base coat or reinforcing fabric.

D. Provide clean surfaces free of oil and loose material without protrusions adversely affecting the installation of the insulation board. For adhesively attached EIFS, remove deteriorated paint. Due to substrate conditions or as recommended by the system manufacturer, a primer may be required. Apply the primer to surfaces as recommended by the manufacturer. Use masking tape to protect areas adjacent to the EIFS to prevent base or finish coat from being applied to areas not intended to be covered with the EIFS. Do not proceed with the installation until noted deficiencies of the substrate are corrected.

3.3 INSTALLATION

A. Install EIFS as indicated, comply with manufacturer's instructions except as otherwise specified, and in accordance with the shop drawings. EIFS installed only by an applicator trained by the EIFS manufacturer. Specifically, include manufacturer recommended provisions regarding flashing and treatment of wall penetrations.

B. Insulation Board: Unless otherwise specified by the system manufacturer butt joints tightly. Provide flush surfaces at joints. Offset insulation board joints from joints in sheathing by at least 8 inches. Use L-shaped insulation board pieces at corners of openings. Butt joints of insulation tightly. Surfaces of adjacent insulation boards flush at joints. Fill gaps greater than 1/16 inch between the insulation boards with slivers of insulation. Rasp uneven board surfaces with irregularities projecting more than 1/16 inch in accordance with the manufacturer's instructions to produce an even surface. Attach insulation board as recommended by manufacturer. Allow the adhered insulation board to remain undisturbed for 24 hours prior to proceeding with the installation of the base coat/reinforcing mesh, or longer if necessary for the adhesive to dry however, do not leave insulation board exposed longer than recommended by insulation manufacturer.

C. Adhesively Fastened Insulation Boards: Apply insulation board using adhesive spread with a notched trowel to the back of the insulation boards in accordance with the manufacturer's instructions.

D. Base Coat and Reinforcing Fabric Mesh: Allow the adhered insulation board to dry for 24 hours, or longer if necessary, prior to proceeding with the installation of the base coat/reinforcing fabric mesh. Install reinforcing fabric in accordance with manufacturer's instructions. Mix base coat in accordance with the manufacturer's instructions and apply to insulated wall surfaces to the thickness specified by the system manufacturer and provide other reinforcement recommended by EIFS manufacturer. Trowel the reinforcing fabric mesh into the wet base coat material. Embed the mesh in the base coat. When properly worked-in, the pattern of the reinforcing fabric mesh is not visible. Provide diagonal reinforcement at opening corners. Back-wrap or edge wrap terminations of the EIFS. Overlap the reinforcing fabric mesh a minimum of 2.5 inches on previously installed mesh, or butted, in accordance with the manufacturer's instructions.

E. Finish Coat: Allow the base coat/reinforcing mesh to dry a minimum of 24 hours prior to application of the finish coat. Correct surface irregularities, trowel marks, board lines, reinforcing mesh laps, etc. in the base coat prior to the application of the finish coat. Apply and level finish coat in one operation. Obtain final texture by trowels, floats, or by spray application as necessary to achieve the required finish matching approved mock-up installation. Apply the finish coat to the dry base coat maintaining a wet edge to obtain a uniform appearance. Thickness of the finish coat in accordance with the system manufacturer's current published instructions. Apply finish coat so that it does not cover surfaces to which joint sealants are to be applied.

3.4 SURFACE CRACK REPAIR

A. Provide preparation as indicated above.

B. Utilizing a stiff bristle brush, provide base coat into the crack. Utilize a wet brush to remove base coat that gets on the face of the adjacent finish coat.

C. Fill crack with color/texture match finish coat.

3.5 CRACK REPAIR

A. Mark the crack location in preparation for removal of the EIFS finish.

B. Apply a water-based gel type paint remover in the marked area to soften the finish and use a scraper to remove the finish after it has softened. Exercise care with the paint remover to avoid getting it onto surfaces that are not being repaired. Use coarse sand paper to remove the top layer of base coat to the mesh surface. Alternatively, a handheld grinder can be used to remove the finish, taking care not to grind or deteriorate the mesh layer.

C. If the cause of the crack is a gap between EPS boards, remove base coat from within the gap and fill the gap with EPS slivers or a low expanding urethane spray foam. Allow spray foam to cure. Shave or rasp flush with the surface. Then embed reinforcing fabric in base coat with the fabric centered over the crack and minimum 2.5-inch overlap on each side of the crack. Feather the edges of the base coat.

D. If the cause of the cracks is fabric that is abutted or has insufficient overlap, embed reinforcing fabric in base coat with the fabric centered over the crack and minimum 2.5-inch overlap on each side of the crack. Feather the edges of the base coat.

E. Apply masking tape around the area to be refinished. Then apply matching finish coat. Scrape aggregate from the masking tape with a margin trowel. Then scrape the finish tight against the wall surface. Float with a plastic float to match the adjacent texture. Remove the masking tape and use a brush to "stipple" the wet edge of the finish into the adjacent finish. Alternate between brush and float to blend the texture.

3.6 PUNCTURE REPAIR

A. Clean the area around the damage. Apply a water-based gel type paint remover with a stiff brush to the finish in the area surrounding the damage. Exercise care with the paint remover to avoid getting it onto surfaces that are not being repaired. Alternatively, a handheld grinder can be used to remove the finish, taking care not to grind or deteriorate the mesh layer. Use a scraper to remove at least 5 inches around the puncture damage and to leave a sharp finished edge. Use coarse sandpaper to remove the top layer of base coat to the mesh surface.

B. Cut the mesh at the damaged area so at least 2.5 inch of intact base coat and reinforcing mesh exist between the puncture damage and the finished edge. Cut EPS slightly larger than the damaged EPS and temporarily "pin" it in place with a nail. Use a sharp knife to cut through the EPS. Cut at least 1 inch away from the mesh cut. Cut with a slight angle so that the EPS is slightly larger than the hole to be plugged with it.

C. Make a clean cut to the substrate and remove the old EPS. Dry fit the EPS to check for fit. Adjust size or re-cut EPS if fit is not snug. "Butter" the sheathing side of EPS with base coat along the perimeter and in the middle, then press into place. Make sure the EPS is flush with or higher than the surface of the adjacent EPS. Allow the adhesive to dry, then rasp or sand the surface flush with the adjacent EPS and brush clean. Cut mesh to overlap existing mesh at least 1 inch. Apply masking tape up to the finished edge surrounding the repair area. Apply base coat and embed the mesh patch in the wet base coat and level the base coat to match the surface profile of the original base coat. Allow the base coat to dry and check the surface profile to make sure it matches the original. Apply additional base coat if necessary and allow to dry.

D. Apply primer if recommended by manufacturer and allow to dry.

E. Apply finish (matched to existing texture and color) with a stainless steel trowel and remove the aggregate in the finish from the masking tape. Scrape the finish tight against the wall to match the adjacent finished surface. Repeat if necessary. Then float the finish with a plastic float to match the adjacent texture.

F. Remove masking tape and use a brush to "stipple" the wet edge into the adjacent finish. Alternate between brush and float to achieve the texture match.

3.7 FIELD QUALITY CONTROL

A. Throughout the installation, establish and maintain an inspection procedure to assure compliance of the installed EIFS with contract requirements. Replace work not in compliance in an approved manner.

3.8 CLEANUP

A. Upon completion, remove scaffolding, equipment, materials and debris from site. Remove temporary protection installed to facilitate installation of EIFS.

END OF SECTION

SECTION 07 25 00

WEATHER RESISTIVE BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Provide a weather resistive barrier (WRB) assembly to provide moisture resistance while maintaining moisture-vapor permeability.

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 06 10 00 "Rough Carpentry"
2. Section 07 42 13 "Metal Wall Panels"

1.3 DESCRIPTION

A. The weather resistive barrier assembly generally consists of the following components:

1. Weather resistive barrier membrane
2. Seam tape
3. Flashing components
4. Fasteners

1.4 REFERENCES

A. ASTM International

1. ASTM C920; Standard Specification for Elastomeric Joint Sealants
2. ASTM C1193; Standard Guide for Use of Joint Sealants
3. ASTM D779; Standard Test Method for Determining the Water Vapor Resistance of Sheet Materials in Contact with Liquid Water by the Dry Indicator Method.
4. ASTM D882; Test Method for Tensile Properties of Thin Plastic Sheeting
5. ASTM D1117; Standard Guide for Evaluating Non-woven Fabrics
6. ASTM E84; Test Method for Surface Burning Characteristics of Building Materials
7. ASTM E96; Test Method for Water Vapor Transmission of Materials
8. ASTM E1677; Specification for Air Retarder Material or System for Framed Building Walls
9. ASTM E2178; Test Method for Air Permeance of Building Materials
10. ASTM E2357; Standard Test Method for Determining Air Leakage of Air Barrier Assemblies

B. AATCC - American Association of Textile Chemists and Colorists

1. Test Method 127 Water Resistance: Hydrostatic Pressure Test

C. TAPPI

1. Test Method T-410; Grams of Paper and Paperboard (Weight per Unit Area)
2. Test Method T-460; Air Resistance (Gurley Hill Method)

D. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.

E. Underwriters Laboratories (UL) - Building Materials Directory.

1.5 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

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

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

D. Shop Drawings: Show details, penetrations, transitions and closures necessary to form a continuous weather resistive barrier assembly.

1.6 QUALITY ASSURANCE

A. Provide weather resistive barrier and accessory materials produced by single manufacturer.

B. Manufacturer Qualifications: Minimum of 10 years' experience supplying products to the region where the work is performed.

C. Installer Qualifications:

1. Acceptable to, licensed or certified by manufacturer.
2. Not less than 3 years' experience with specified systems.

D. Regulatory Requirements: Comply with local Building Code requirements if more restrictive than those specified.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver weather resistive barrier materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Store weather resistive barrier materials as recommended by weather resistive barrier manufacturer.

C. Store and dispose of solvent-based materials, and materials used with solvent-based materials in accordance with requirements of local authorities having jurisdiction.

1.8 WARRANTY

A. Provide the manufacturer's ten (10) year warranty from date of final weather resistive barrier installation.

PART 2 - PRODUCTS

2.1 PRODUCTS

A. Weather Resistive Barrier (WRB): A non-perforated, nonwoven, non-absorbing, breathable, spunbonded, polyolefin membrane that resists air flow, bulk water and wind driven rain and channels water and moisture to the outside of the building envelope. It has microscopic pores that allow moisture vapor to escape from inside walls.

1. Performance Characteristics:

   a. Air Penetration of 0.001 cfm/ft² at 75 Pa, when tested in accordance with ASTM E2178. Type I per ASTM E1677. ≤0.04 cfm/ft² at 75 Pa, when tested in accordance with ASTM E2357
   b. Water Vapor Transmission of 28 perms, when tested in accordance with ASTM E96, Method B.
   c. Water Penetration Resistance of 280 cm when tested in accordance with AATCC Test Method 127.
   d. Basis Weight of 2.7 oz/yd², when tested in accordance with TAPPI Test Method T-410.
   e. Air infiltration at >1500 seconds, when tested in accordance with TAPPI Test Method T-460.
   f. Tensile Strength of 38/35 lbs/in., when tested in accordance with ASTM D882, Method A.
   g. Tear Resistance of 12/10 lbs., when tested in accordance with ASTM D1117.

2. Surface Burning Characteristics - Class A, when tested in accordance with ASTM E 84. Flame Spread: 10, Smoke Developed: 10.
3. Manufacturers:

   a. Dupont - Tyvek CommercialWrap® (Basis of Design)
   b. Barricade Building Products - R-Wrap
   c. Kingspan - GreenGuard

2.2 RELATED MATERIALS

A. Seam Tape: UV resistant, polypropylene film coated, permanent acrylic adhesive, pressure sensitive tape supplied by the WRB manufacturer.

B. Butyl Backed Flashing Membrane: Self-adhered, non-perforated, nonwoven, non-absorbing, breathable, spunbonded, polyethylene laminated membrane with butyl rubber adhesive backing as supplied by the weather resistive barrier manufacturer with minimum thickness of 30 mils.

C. Double Sided Butyl Backed Flashing Membrane: A Self-adhered, non-perforated, nonwoven, non-absorbing, breathable, spunbonded, polyethylene laminated membrane with butyl rubber adhesive backing on two sides as supplied by the weather resistive barrier manufacturer with minimum thickness of 30 mils.

D. Butyl Backed Flexible Flashing Membrane: Self-adhered, non-perforated, nonwoven, non-absorbing, breathable, spunbonded, polyethylene laminated membrane with butyl rubber adhesive backing as supplied by the weather resistive barrier manufacturer with minimum thickness of 64 mils.

E. Accessories:

1. Provide the weather resistive barrier manufacturer's standard accessories and other items required to provide a continuous weather resistive barrier assembly including closures, flashing, sealants and liquid applied components.

F. Fasteners:

1. Steel Framed Construction:

a. Stainless steel screw with 2-inch diameter plastic cap or manufacturer approved 1-1/4-inch metal gasketed washers or 2-inch metal gasketed washer. Fastener length sufficient to penetrate steel framing minimum 3 thread lengths.

G. Adhesives:

1. Provide adhesive as provided or recommended by weather resistive barrier manufacturer.

H. Primers:

1. Provide primer as provided or recommended by the weather resistive barrier manufacturer to assist in adhesion between substrate and flashing membrane.

I. Through Wall Flashing Membrane Materials: For flashing at changes in direction or elevation (shelf angles, foundations, etc.) and at transitions between different assembly materials.

1. Preformed Inside and Outside Corners and End Dams: Preformed three-dimensional shapes to complete the flashing system used in conjunction with Through Wall Flashing.

J. Sealant: One component, moisture curing, non-sag, gun-grade elastomeric polymer for use as a sealant or liquid applied flashing.

1. Referenced Standards: Must meet AAMA 808.3 and ASTM C920.
2. Movement Capability: ±25%; ASTM C719.
3. Max VOC: 9 g/L; ASTM D3960.
4. Compatibility: Chemically compatible with flexible flashing; AAMA 713.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Substrate:

1. Examine substrate to ensure properly secured and prepared to receive weather resistive barrier assembly.
2. Ensure items that pass through WRB are properly and rigidly installed.
3. Ensure substrate is installed flat, free from objectionable warp, wave, and buckle.
4. Ensure substrate is free of moisture, frost, and other contaminants before installing weather resistive barrier assembly.
5. Verify substrate and surface conditions are in accordance with weather resistive barrier manufacturer recommended tolerances prior to installation of weather resistive barrier and accessories.

3.2 INSTALLATION

A. Install weather resistive barrier over exterior face of exterior wall substrate in accordance with manufacturer recommendations.

1. Install weather resistive barrier prior to installation of windows and doors.
2. Start weather resistive barrier installation at a building corner, leaving 6-12 inches of weather resistive barrier extended beyond corner to overlap.
3. Install weather resistive barrier in a horizontal manner starting at the lower portion of the wall surface with subsequent layers installed in a shingling manner to overlap lower layers. Maintain weather resistive barrier plumb and level.
4. Sill Plate Interface: Extend lower edge of weather resistive barrier over sill plate interface 3 to 6 inches. Secure to foundation with elastomeric sealant as recommended by weather resistive barrier manufacturer.
5. Window and Door Openings: Extend weather resistive barrier over openings.
6. Overlap weather resistive barrier

    a. Outside and Inside Corners: minimum 12 inches.
    b. Seams: minimum 6 inches.

B. Weather Resistive Barrier Attachment:

1. Wood and Metal Frame Construction:

    a. Attach weather resistive barrier to studs through exterior sheathing. Secure using weather resistive barrier manufacturer recommend fasteners, space 12 to18 inches vertically on center along stud line, and 24 inch on center, maximum horizontally.

C. Seaming:

1. Before installing seam tape, ensure surfaces are dry and free of contaminants.
2. Seal seams of weather resistive barrier with seam tape at vertical and horizontal overlapping seams.
3. During installation of seam tape, apply firm pressure with "J" roller.

4. Seal tears or cuts in accordance with the weather resistive barrier manufacturer's printed instructions.

D. Opening preparation and flashing for use with non-flanged windows or penetrations:

1. Flush cut weather resistive barrier at edge of sheathing around perimeter of opening.
2. Cut a head flap at 45-degree angle in the weather resistive barrier at window head to expose 8 inches of sheathing. Temporarily secure weather resistive barrier flap away from sheathing with tape.
3. Cut flexible flashing a minimum of 12 inches longer than width of sill rough opening.
4. Cover horizontal sill by aligning flexible flashing edge with inside edge of sill. Adhere to rough opening across sill and up jambs a minimum of 6 inches. Secure flashing tightly into corners by working in along the sill before adhering up the jambs.
5. Fan flexible flashing at bottom corners onto face of wall. Firmly press in place with a "J" roller. Mechanically fasten fanned edges.
6. Apply 9 inch wide strips of flashing at jambs. Align flashing with interior edge of jamb framing. Start flashing at head of opening and lap sill flashing minimum 6-inches.
7. Spray-apply primer to top 6 inches of jambs and exposed sheathing.
8. Install flexible flashing at opening head using same installation procedures used at sill. Overlap jamb flashing a minimum of 2 inches.
9. Coordinate flashing with window installation.
10. On exterior, install backer-rod in joint between window frame and flashed rough opening. Apply sealant at jambs and head, leaving sill unsealed. Apply sealants in accordance with sealant manufacturer's instructions and ASTM C1193.
11. Position weather resistive barrier head flap across head flashing. Adhere using butyl backed flashing membrane. Seal 45-degree seams with seam tape.
12. Flash top of window in accordance with Contract Drawings and manufacturer recommendations.
13. On interior, install backer rod in joint between frame of window and flashed rough framing. Apply sealant around window to create air seal in accordance with sealant manufacturer's instructions and ASTM C1193.

E. Opening preparation and flashing for use with flanged windows or penetrations:

1. Flush cut weather resistive barrier at edge of sheathing around perimeter of opening.
2. Cut a head flap at 45 degree angle in the weather resistive barrier at window/penetration head to expose 8 inches of sheathing. Temporarily secure weather resistive barrier flap away from sheathing with tape.
3. Cut flexible flashing a minimum of 12 inches longer than width of sill rough opening.
4. Cover horizontal sill by aligning flexible flashing edge with inside edge of sill. Adhere to rough opening across sill and up jambs a minimum of 6 inches. Secure flashing tightly into corners by working in along the sill before adhering up the jambs.
5. Fan flexible flashing at bottom corners onto face of wall. Firmly press in place with a "J" roller. Mechanically fasten fanned edges if necessary.
6. Apply 9-inch wide strips of flashing at jambs. Align flashing with interior edge of jamb framing. Start flashing at head of opening and lap sill flashing minimum 6- inches.

7. On exterior, apply continuous bead of sealant to backside of window/penetration mounting flange across jambs and head. Do not apply sealant across sill.
8. Install window/penetration according to manufacturer's instructions.
9. Apply strips of flashing at jambs overlapping mounting flange. Extend jamb flashing 1-inch above top of rough opening and below bottom edge of sill flashing.
10. Apply strip of flashing as head flashing overlapping the mounting flange. Extend head flashing a minimum of 6-inches beyond outside edges of both jamb flashings.
11. Position weather resistive barrier head flap across head flashing. Adhere flashing over the 45-degree seams.
12. Tape head flap in accordance with manufacturer recommendations.
13. On interior, install backer rod in joint between frame of window/penetration and flashed rough framing. Apply sealant around window/penetration to create air seal in accordance with sealant manufacturer's instructions and ASTM C 1193.

F. Through Wall Flashing Installation:

1. Overlap through wall flashing with weather resistive barrier by 6 inches.
2. Mechanically fasten bottom of weather resistive barrier through top of thru-wall flashing.
3. Seal vertical and horizontal seams with tape or butyl backed flashing membrane.
4. Through wall flashing/weather resistive barrier interface at shelf angle

    a. Seal weather resistive barrier to bottom of shelf angle with butyl backed flashing membrane.
    b. Apply through wall flashing to top of shelf angle. Overlap thru-wall flashing with weather resistive barrier by 6-inches.
    c. Seal bottom of weather resistive barrier to through wall flashing with tape or butyl backed flashing membrane.

5. Through wall flashing/weather resistive barrier interface at window head

    a. Cut flap in weather resistive barrier at window head.
    b. Prime exposed sheathing.
    c. Install lintel as required. Verify end dams extend 4 inches minimum beyond opening.
    d. Install end dams bedded in sealant.
    e. Adhere 2 inches minimum through wall flashing to wall sheathing. Overlap lintel with through wall flashing and extend ¼ inch minimum beyond outside edge of lintel to form drip edge.
    f. Apply sealant along through wall flashing edges.
    g. Fold weather resistive barrier flap back into place and tape bottom edge to thru-wall flashing.
    h. Tape diagonal cuts of weather resistive barrier.
    i. Secure weather resistive barrier flap with fasteners.

3.3 FIELD QUALITY CONTROL

A. Notify manufacturer's designated representative to obtain required periodic observations of weather resistive barrier assembly installation.

3.4 PROTECTION

A. Protect work as required to ensure WRB is without damage at time of final completion.

END OF SECTION

SECTION 07 27 36 - SPRAYED FOAM AIR BARRIER

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Spray-applied urethane foam insulation and air barrier system.

1.2 DEFINITIONS

A. Air-Barrier Material: A primary element that provides a continuous barrier to the movement of air.

B. Air-Barrier Accessory: A transitional component of the air barrier that provides continuity.

C. Air Barrier Assembly: The collection of air barrier materials and auxiliary materials applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

1.3 PERFORMANCE REQUIREMENTS

A. General: Insulating air barrier shall be capable of performing as a continuous thermally insulating air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Insulating air barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

B. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E 783.

C. Fire Performance: Provide spray-applied insulating air barriers and accessory materials that are tested for compliance with NFPA 285 when used as part of an exterior wall assembly identical to that required for Project.

1. When testing of identical wall assembly is not available, provide engineering judgment by qualified third party testing agency acceptable to authorities having jurisdiction demonstrating compliance with requirements.

1.4 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

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

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

D. Shop Drawings: Show locations and extent of insulating air barrier. Include details for substrate joints and cracks, counterflashing strip, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.

1. Include details of interfaces with other materials that form part of air barrier.
2. Include details of mockups.

E. Coordination Drawings: Prepare and submit Project-specific Coordination Drawings, drawn to scale, on which the following items are shown and coordinated with each other, using input from Installers of the items involved. Include the following information, as applicable:

1. Refer to individual sections for specific Shop Drawing requirements for building enclosure products and equipment. Show interfaces and relationship of components shown on separate Shop Drawings.
2. Include details of treatment of penetrations in building envelope by work of other Sections.
3. Show dimensions and clearances of interrelated building enclosure work.
4. Indicate required installation sequences of interrelated building enclosure work.
5. Include information necessary for interface with other building components.

F. Qualification Data: For Manufacturer, Installer, and Testing Agency.

G. Evaluation Reports: From ICC-ES, for spray-applied insulating air barriers and thermal barrier indicating compliance with performance requirements.

H. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for air barriers.

I. Compatibility Reports: Provide documentation from manufacturers for products in contact with air barrier and accessories.

J. Inspection Reports: Daily reports of testing agency and reports of manufacturer's technical representative. Include weather conditions, description of work performed, tests performed, defective work observed, and corrective actions taken to correct defective work.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A listed primary manufacturer of air barrier materials of type specified in this Section and meeting descriptive and performance requirements, that employs technical representatives who are trained and approved to perform field quality control inspections.

1. Manufacturer must have qualified NFPA 285 testing meeting performance requirements of this section at time of bidding.

B. Source Limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single approved manufacturer.

C. Applicator Qualifications: A firm experienced in applying insulating air barrier materials similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

D. Installer Qualifications: A firm experienced in applying insulating air barrier materials similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, that employs experienced installers and supervisors who are trained and approved by manufacturer, with a record of successful installations on projects of similar scope.

1. Installer shall be approved by manufacturer for application of manufacturer's materials for this Project.
2. Installer's full-time on-site supervisor shall have a minimum of five years' experience installing similar work, able to communicate verbally with Contractor, Architect, testing agency, and employees.

E. Testing Agency Qualifications: Testing laboratory accredited by International Accreditation Service, Inc. or American Association for Laboratory Accreditation.

1. Testing agencies personnel shall be experienced in the installation of specified air barrier system and qualified to perform observation and inspection specified in Field Quality Control Article to determine Installer's compliance with the requirements of this Project, and certified as a Registered Exterior Wall Consultant by the Roof Consultants Institute (RCI) or similar qualification acceptable to Architect.

F. Source Limitations: Obtain insulating air barrier materials through one source, from or approved by the spray-applied insulation manufacturer.

1.6 MOCKUP

A. Provide air barrier application within mockups required in other sections identical to specified products and installation methods, to establish quality standards for finished work.

1.7 PREINSTALLATION CONFERENCE

A. Conduct conference at Project site.

1. Meet with Owner, Architect, testing and inspecting agency representative, air barrier Installer, air barrier manufacturer's representative, air barrier substrate Installers, and other installers whose work interfaces with or affects air barrier installation, including installers of windows, doors, storefront assemblies, curtain walls, and louvers.
2. Review mockup construction and testing requirements.
3. Review methods and procedures related to air barrier installation, including manufacturer's written instructions.
4. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to interface with cladding installation, make progress, and avoid delays.
5. Review substrate requirements for conditions and finishes, including flatness and fastening.
6. Review flashings, special opening and penetration details, and condition of other construction that will affect air barriers.
7. Review temporary protection requirements for air barriers during and after installation.

8. Review air barrier observation, inspection, testing, and repair procedures after installation.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by air barrier manufacturer.

B. Remove and replace liquid materials that cannot be applied within their stated shelf life.

C. Store rolls according to manufacturer's written instructions.

D. Protect stored materials from direct sunlight.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Apply insulating air barrier within the range of ambient and substrate temperatures recommended by insulating air barrier manufacturer. Protect substrates from environmental conditions that affect performance of air barrier. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

1.10 COORDINATION

A. Coordinate application of spray-applied insulating air barriers and building cladding to ensure that finished installation is not exposed to weather for longer period of time than recommended in writing by insulating air barrier manufacturer.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Source Limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single manufacturer.

2.2 SPRAYED INSULATION/AIR BARRIER

A. Spray Foam Insulation: Two-component, closed-cell spray-applied rigid polyurethane foam, suitable for intended application and compatible with cavity wall substrates, with zero ozone depletion potential blowing agents, formulated from rapidly-renewable resource base material, with the following characteristics:

1. Thermal Resistance, ASTM C 518: Not less than 6.7 sq. ft/hr x deg. F/BTU in., at 2 days at 73.4 deg F.
2. Membrane Air Permeance: ASTM E 2178: Not to exceed 0.004 cfm x sq. ft. of surface area at 1.57-lbf/sq. ft.pressure difference.
3. Membrane Vapor Permeance: ASTM E 96: Not to exceed 0.1 perm.
4. Surface Burning Characteristics, ASTM E 84: Flame Spread: Less than 25; Smoke Developed: Less than 450.
5. Density, ASTM D 1622: 2.0 lb/sq. ft, at core, minimum.
6. Water Absorption, ASTM D 2842: 1.0 percent by volume, maximum.
7. Fungi Resistance: ASTM C 1338: No fungal growth.
8. Manufacturer/Product: Provide one of the following:

a. Demilec USA, Heatloc Soy.
b. BASF Polyurethane Foam Enterprises, LLC., Walltite.
c. Henry Co., Permax.
d. NCFI Polyurethane, InsulStar.

2.3 AUXILIARY MATERIALS

A. General: Auxiliary materials recommended by air barrier manufacturer for intended use and compatible with air barrier membrane. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

1. Provide compatible auxiliary materials in contact with spray-applied insulating air barriers, including transition materials and cavity closure flashing indicated on drawings and as additionally required to provide complete airtight construction.

B. Primer: Liquid waterborne primer recommended for substrate by manufacturer of air barrier material.

C. Thermal Barrier: Where required for compliance with fire performance requirements: Manufacturer's tested topcoat consisting of intumescent coating suitable for application, applied in thickness required to meet requirements, at spray-applied insulation thickness specified for Project.

D. Transition Membrane: Silicone rubber extrusion sheet and premolded corners extruded with lock-in dart fitted to extruded aluminum adapter configured for attachment or capture to window, storefront, curtainwall, and louver framing, providing permanent flexible seal between aluminum framed openings and adjacent field of air barrier wall installation. Provide with assembly and air barrier manufacturer's recommended sealant tapes and liquid sealants compatible with adjacent materials.

E. Modified Bituminous Strip: Modified bituminous, 40-mil-thick, self-adhering sheet consisting of 32 mils of rubberized asphalt laminated to an 8-mil-thick, cross-laminated polyethylene film with release liner backing.

F. Joint Reinforcing Strip: Air barrier manufacturer's glass-fiber-mesh tape.

G. Substrate Patching Membrane: Manufacturer's standard trowel-grade substrate filler.

H. Adhesive and Tape: Air barrier manufacturer's standard adhesive and pressure-sensitive adhesive tape.

I. Sprayed Polyurethane Foam Sealant: 1- or 2-component, foamed-in-place, polyurethane foam sealant, 1.8 to 2.0 lb/cu. ft density; flame spread index of 25 or less according to ASTM E 162; with primer and noncorrosive substrate cleaner recommended by foam sealant manufacturer.

J. Modified Bituminous Transition Membrane: Vapor-retarding, 40-mil-thick, smooth-surfaced, self-adhering; consisting of 36 mils of rubberized asphalt laminated to a 4-mil-thick polyethylene film with release liner backing.

K. Elastomeric Flashing Sheet: ASTM D 2000, 2BC415 to 3BC620, minimum 50- to 65-mil-thick, cured sheet neoprene with manufacturer's recommended contact adhesives and lap sealant with aluminum termination bars and stainless-steel fasteners.

L. Preformed Silicone-Sealant Extrusion: Manufacturer's standard system consisting of cured low-modulus silicone extrusion, sized to fit opening widths, with a single-component, neutral-curing, Class 100/50 (low-modulus) silicone sealant for bonding extrusions to substrates.

M. Compressible Filler: Preformed foam insulation, 2 inches thick unless otherwise indicated, compressible to 50 percent of thickness, and compatible with air barrier system components, for application at building movement joints.

N. Spray Stop: Extruded plastic angles, minimum 0.060-inch thick by depth of applied foam insulation, of profile indicated on Drawings.

1. Basis of design product: Exo-Tec Manufacturing, Inc., Jam-Ex.

O. Joint Sealant: Refer to Section 07 92 00 "Elastomeric Joint Sealants"

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.

1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
2. Verify that concrete has cured and aged for minimum time period recommended by air barrier manufacturer.
3. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
4. Verify that wood nailers and blocking to receive application of self-adhering transition material meet transition material manufacturer's requirements for dryness.
5. Verify that masonry joints are flush and completely filled with mortar.
6. Verify that veneer anchors are in place.
7. Verify that penetrating items are in place.
8. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

A. Clean, prepare, treat, and seal substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate meeting manufacturer's requirements for application of insulating air barrier.

B. Mask off adjoining surfaces not covered by insulating air barrier to prevent spillage and overspray affecting other construction.

C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate patching membrane.

E. Remove excess mortar from masonry ties, shelf angles, and other obstructions.

F. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.

G. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing and covered with self-adhering transition material to provide continuous support for air barrier.

3.3 JOINT TREATMENT

A. Concrete and Masonry: Prepare and fill joints and cracks in substrate according to ASTM C 1193 and air barrier manufacturer's written instructions. Remove dust and dirt from joints and cracks complying with ASTM D 4258 before coating surfaces.

1. Prime substrate and apply a single thickness of preparation coat strip extending along each side of joints and cracks. Apply a double thickness of air barrier membrane and embed a joint reinforcing strip in preparation coat.
2. Place compressible joint filler at building movement joints and adhere with recommended adhesive.

B. Gypsum Sheathing: Fill joints with sealant according to ASTM C 1193 and with air barrier manufacturer's written instructions. Apply first layer of fluid air barrier membrane at joints. Tape joints with joint reinforcing strip after first layer is dry. Apply a second layer of fluid air barrier membrane over joint reinforcing strip.

3.4 TRANSITION STRIP INSTALLATION

A. Install strips, transition strips, flashing strips, spray stops, and other auxiliary materials according to insulating air barrier manufacturer's written instructions to form a seal with adjacent construction and maintain a continuous air barrier.

1. Coordinate the installation of insulating air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.

B. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by insulating air barrier in same day. Reprime areas exposed for more than 24 hours.

1. Prime glass-fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.

C. Connect and seal exterior wall insulating air barrier membrane continuously to roofing membrane air barrier, concrete below-grade structures, floor-to floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.

D. At end of each working day, seal top edge of strips and transition strips to substrate with termination mastic.

E. Apply joint sealants forming part of insulating air barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

F. Wall Openings: Prime concealed perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply adhesive-coated transition strip so that a minimum of 3 inches of coverage is achieved over both substrates. Maintain 3 inches of full contact over firm bearing to perimeter frames with not less than 1 inch of full contact.

1. Adhesive-Coated Transition Strip: Roll firmly to enhance adhesion.
2. Elastomeric Flashing Sheet: Apply adhesive to wall, frame, and flashing sheet. Install flashing sheet and termination bars, fastened at 6 inches o.c. Apply lap sealant over exposed edges and on cavity side of flashing sheet.
3. Preformed Silicone-Sealant Extrusion: Set in full bed of silicone sealant applied to walls, frame, and membrane.
4. Opening Transition Assembly: Prime concealed perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply opening transition assembly so that a minimum of 3 inchesof coverage is achieved over insulation substrate. Maintain not less than 1 inch of full contact to perimeter frames through adhesion or clamping.

G. Spray Stops: Apply spray stops in accordance with details on Architectural Drawings.

H. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air barrier membrane with foam sealant.

I. Seal strips and transition strips around masonry reinforcing or ties and penetrations with termination mastic.

J. Seal top of through-wall flashings to air barrier with an additional 6-inch-wide, modified bituminous strip.

K. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.

L. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending 6 inches beyond repaired areas in strip direction.

3.5 SPRAY-APPLIED INSULATING AIR BARRIER MEMBRANE INSTALLATION

A. Apply insulating air barrier membrane to form a seal with strips and transition strips and to achieve a continuous air barrier according to air barrier manufacturer's written instructions.

B. Apply air barrier membrane within manufacturer's recommended application temperature ranges.

C. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by air barrier sheet in same day. Reprime areas exposed for more than 24 hours.

1. Prime glass-fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.

D. Apply the sprayed insulation to average thickness and minimum thickness indicated on Drawings, or if not indicated, to average thickness of 3-1/2 inches and minimum thickness of 3 inches. Apply the average full thickness less not more than 1/4 inch per inch of average thickness as in table below.

E. Apply 6-inch width of sprayed insulation around perimeter of flashed openings and at perimeter of application and allow to form initial set prior to applying sprayed insulation in field of wall, for purpose of preventing insulation shrinkage stress to deform edge flashing materials or result in open shrinkage cracks. Presence of shrinkage cracks will be considered evidence of defective application.

F. Apply strip and transition strip over cured air membrane overlapping 3 inches onto each surface according to air barrier manufacturer's written instructions.

G. Do not cover air barrier until it has been tested and inspected by Owner's testing agency.

H. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air barrier components.

I. Where required, apply thermal barrier coating to spray-applied insulating air barrier in thickness required by approved tests.

3.6 FIELD QUALITY CONTROL

A. Inspections: Insulating air barrier materials and installation are subject to inspection for compliance with requirements. Inspections may include the following:

1. Continuity of air barrier system has been achieved throughout the building envelope with no gaps or holes.
2. Continuous structural support of air barrier system has been provided.
3. Masonry and concrete surfaces are smooth, clean and free of cavities, protrusions, and mortar droppings.
4. Site conditions for application temperature and dryness of substrates have been maintained.
5. Maximum exposure time of materials to UV deterioration has not been exceeded.
6. Surfaces have been primed, if applicable.
7. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.
8. Termination mastic has been applied on cut edges.
9. Strips and transition strips have been firmly adhered to substrate.
10. Compatible materials have been used.

11. Transitions at changes in direction and structural support at gaps have been provided.
12. Connections between assemblies (membrane and sealants) have complied with requirements for cleanliness, preparation and priming of surfaces, structural support, integrity, and continuity of seal.
13. All penetrations have been sealed.

B. Manufacturer's Technical Representative: Engage a qualified manufacturer's technical representative to participate in Quality Assurance and Quality Control activities, including Preinstallation Meeting, startup, interim inspections, and completion inspections, and to prepare reports.

C. Air barriers will be considered defective if they do not pass tests and inspections.

1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
2. Remove and replace deficient air-barrier components for retesting as specified above.

D. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.

3.7 CLEANING AND PROTECTION

A. Protect insulating air barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.

1. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer.
2. Protect air barrier from contact with creosote, uncured coal-tar products, TPO, EPDM, flexible PVC membranes, and sealants not approved by insulating air barrier manufacturer.

B. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.

C. Remove masking materials after installation.

END OF SECTION

SECTION 07 41 13

METAL ROOF PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Provide standing seam metal roof panel system.

1.2 RELATED SECTIONS

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 05 01 30 "Steel Roof Deck Repair and Securement"
2. Section 06 10 00 "Rough Carpentry"
3. Section 07 01 50 "Preparation for Reroofing"
4. Section 07 22 16 "Roof Insulation"
5. Section 07 42 13 "Metal Wall Panels"

1.3 REFERENCES

A. Refer to Section 01 42 00 "References" for referenced standards and applicable building code.

B. Refer to the following references for specification compliance:

1. ASCE 7 Minimum Design Loads for Buildings and Other Structures
2. ASTM International

a. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
b. ASTM A 755 - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
c. ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
d. ASTM E 1592: "Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference".
e. ASTM E 1680: "Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
f. ASTM E 1646: "Standard Test Method for Water Penetration Through Exterior Metal Roof Panel Systems.
g. ASTM A 792-AZ50 (Painted) & ASTM A792-83-AZ55 (unpainted Galvalume): "Specifications for Steel Sheet, Aluminum-Zinc Alloy Coated by the Hot Dip Process, General Requirements (Galvalume)".
h. ASTM E 1514-03: "Standard Specification for Structural Standing Seam Steel Roof Panel Systems".

i. ASTM E 408: Standard Test Method for Total Normal Remittance of Surfaces Using Inspection Meter Techniques.
j. ASTM E 903 Standard Test Method for Solar Absorptions, Using Integrating Spheres.

3. Underwriters Laboratory:

a. UL580: "Tests for Uplift Resistance of Roof Assembles", Underwriters Laboratories, Inc.
b. UL2218: Class 4 Impact Resistance Rating

4. SMACNA: "Architectural Sheet Metal Manual", Sheet Metal and Air Conditioning Contractors National Association, Inc.
5. AISC: "Steel Construction Manual", American Institute of Steel Construction.
6. National Roofing Contractors Association, NRCA "Roofing and Waterproofing Manual," current edition.
7. AAMA: American Architectural Manufacturer's Association

1.4 DEFINITIONS

A. Metal Roofing Panel System: Consists of metal roofing panels, fascia, clips, fasteners, trim, flashings and associated accessories which when assembled result in a watertight, wind resistant assembly meeting requirements specified herein, including the requirements to meet the specified Manufacturer's Guarantee.

1.5 PERFORMANCE REQUIREMENTS

A. General: Provide metal roof panel assemblies that comply with performance requirements specified as determined by testing manufacturers' standard assemblies similar to those indicated for this Project, by a qualified testing and inspecting agency.

B. Submit Manufacturer's sealed engineering calculations, test reports and/or other applicable data certifying the proposed standing seam roofing system meets or exceeds the design criteria listed below.

1. Water Penetration: Meet or exceed ASTM E 1646 when tested with a 6.24 psf pressure differential with no uncontrollable water leakage when five gallons per hour of water is sprayed per square foot of roof area.

2. Wind Design: Provide an approved, tested roof assembly to resist the design wind uplift pressures specified in the Contract Drawings.
3. Thermal Movements: Provide metal roof panel assemblies that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

a. Temperature Change (Range): 120 deg F, ambient; 180 deg F (100 deg C), material surfaces.

4. Structural Panel Deflection: Space framing members and clips supporting the standing seam roofing system to ensure a maximum deflection under applied live load of 20 psf not to exceed L/240 of the span.

5. Fire Testing: Meet ASTM E 108 and Class 1A-UL 90

1.6 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

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

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

D. Product Test Reports: Submit testing reports for ASTM E 1646 and ASTM E 1592-01 to meet the test results shown in this specification section. Submit the appropriate documentation to prove State Building Code design compliance. Test reports for ASTM E 108, ASTM D 5894, ASTM D 968, ASTM G23 and G153.

E. Shop Drawings:

1. Submit shop drawings and erection details, approved by the Standing Seam Metal Roofing Manufacturer, and sealed by a structural engineer licensed in the State of the project. Do not proceed with work until Manufacturer Approved drawings have been submitted for review and acceptance.
2. Show methods of erection, framing details, roof and wall panel layout, sections and details, anticipated loads, clip spacing for each wind area or zone of the roofs, flashings, sealants, interfaces with materials not supplied and proposed identification of component parts and their finishes.

F. Engineering Calculations: Provide sealed manufacturer's engineering calculations demonstrating compliance with the performance requirements of this specification and applicable Codes.

1. Provide manufacturer's calculations demonstrating holding strength of fasteners, to structural framing, in accordance with submitted test data, provided by fastener manufacturer, based on length of embedment and properties of materials.

G. Standard Colors: Submit the manufacturers' standard colors for selection by the Owner.

H. Manufacturer's Qualifications: Requirements for certification noted in Manufacturer's Qualifications under Quality Assurance and AISC standards.

1.7 QUALITY ASSURANCE

A. Source Limitations: Obtain metals panel through once source from a single manufacturer.

B. Manufacturer's Qualifications: Meet and provide written certification stating:

1. Regularly engaged in the fabrication of metal standing seam roof systems for at least ten (10) years, regardless of name change.
2. Maintains a certified installer program for its products and maintains up-to-date authorized roofing contractor list.
3. Written warranty covering durability, color and weathertightness of its roof system and include the insulation curbs and flashings from the roofing manufacturer.

4. Reviewed the project's environmental exposure for proximity to coastal environments, has provided the interpretation that the proximity to the salt and/or brackish water environments is acceptable, and will not make exclusions to the specified Guarantee based solely on the proximity to these exposures.
5. Provide the technical data, shop drawings and calculations specified herein.
6. Provide in-house inspection services .
7. Installer training program including the following:

    a. Experienced instructors with experience in the application of the Metal Roofing System.
    b. A formal syllabus for the classroom and hands-on training.
    c. Classroom instruction with review and thorough understanding of the specific product's technical manual.
    d. Hands-on mock-up instruction with a review and thorough understanding of the specific product's details.
    e. Required to take written and/or oral examinations to pass certification.
    f. Requirement for re-certification of training at a minimum of every five (5) years.

8. Certified the Contractor's personnel and has approved the Installer for the specified Metal Roofing System for the specified Guarantee.
9. Manufacturer's Inspection: The manufacturer's on-site technical representative employed by the manufacturer as a Technical Representative. Provide a minimum of one (1) on-site visit per month; attend the project start-up meeting, on-site for first two (2) start-up days, including observation of seaming of the first three (3) metal roof panels, and at pre-final or final inspection of the metal roofing system installation. Notify Engineer a minimum of forty-eight (48) hours prior to manufacturer's inspections. Copy Engineer on inspection report noting deficiencies within seven (7) days after each site visit.
10. Upon completion of the work and prior to final payment, conduct a final inspection in presence of the Contractor and Engineer. Record deficiencies in the work and document completed repairs. Final payment will not be certified until the manufacturer has given his certification/approval of the work and the required Guarantee has been reviewed by the Engineer.

C. Contractor's Qualifications:

1. Approved installer, certified by the Manufacturer before the beginning of the installation of the standing seam metal roof system.
2. On-site Foreman (provide name and date of training) is the person having received certification and training by the Manufacturer and has received specific training in the proper installation of the selected standing seam metal roof system.
3. The Manufacturer trained and certified Foreman present to supervise work during installation of standing seam roofing and associated materials.
4. No viable claims pending regarding negligent acts or defective workmanship on previously performed or current roofing projects involving the specified standing seam metal roofing system.
5. Provide a list of five projects listing the architect/engineers and/or building owners including individuals' names and telephone numbers for five standing seam metal roofing projects that have been in service for a minimum of two years.

6. Ensure the manufacturer provides the specified on-site technical visits and agrees to compensate the manufacturer as necessary for additional on-site visits required or deemed necessary by the Engineer to resolve deficiencies in the Contractor's workmanship.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Delivery:

1. Coordinate delivery with Engineer/Owner and occupants on site.
2. Deliver material in the manufacturer's original sealed and labeled shrouds and in quantities to allow continuity application.
3. Ensure metal roof system is delivered to the job site properly packaged to provide protection against transportation damage.
4. Inspect materials delivered to the project site. Reject materials damaged during shipping and do not install on the project.

B. Handling:

1. Exercise extreme care in unloading, storing and erecting metal roof system to prevent bending, warping, twisting and surface damage.
2. Handle materials to prevent scratches, dents, bending, twisting, warping and other damages.
3. Remove significantly scratched materials, and materials scratched through to the base steel from the project and replaced.
4. Remove dented, bent or damaged materials resulting in improper fit and detraction from intended aesthetics from the project and replaced.

C. Storage:

1. Store materials out of direct exposure to the elements or pallets or dunnage at least 4 inches above ground level. Place non-sweating tarpaulins to prevent moisture contamination. Factory shrouds and visqueen are not acceptable.
2. Prevent rain from entering bundle by covering with tarpaulin, making provision for air circulation between draped edges of tarpaulin and the ground. Prolonged Storage of sheets in a bundle is not recommended.
3. Protect materials from staining, dirt, dust or water marks. Clean stained materials before installation or replace.
4. Comply with fire prevention requirements for the storage of materials. Locate combustible storage sufficiently away from buildings and non-building structures to eliminate fire exposures. Protect storage of combustible insulation materials from open flame and fire exposures. Control project related ignition sources.

1.9 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when current and forecasted weather conditions permit assembly of metal roof panels according to manufacturers' written instructions and warranty requirements.

B. Field Measurements: Verify locations of roof framing and roof opening dimensions by field measurements before metal roof panel fabrication and indicate measurements on Shop Drawings. Where field measurements cannot be made without delaying the Work, either establish framing and opening dimensions and proceed with fabricating metal roof panels without field measurements or allow for field-trimming of panels. Coordinate roof construction to ensure building dimensions, locations of structural members, and openings correspond to established dimensions.

1.10 WARRANTY

A. Proivde Manufacturer's Warranty to the Owner upon completion of the project.

1. Weathertight Warranty: Submit a written warranty executed by Manufacturer agreeing to repair or replace metal roof panel assembly that fails to remain weathertight within the specified warranty period.

    a. Warranty Period: 20 years from date of Substantial Completion.
    b. Prorated Conditions: None.
    c. Limitations of liability: No Dollar Limit (NDL)
    d. Include weather tight performance of curbs, equipment supports, pipe portals and provided as part of this work.
    e. Do not include "hold harmless" clause, nor limit liability of Contractor.
    f. Warranty is subject to laws of North Carolina.
    g. Venue to settle disputes is county of the project location.
    h. Coating systems are not an approved warranty repair.
    i. The following exclusions are not acceptable in the warranty terms, conditions and/or limitations:
        1) If a Manufacturer Certified Installer was not present continuously during the installation of the Manufacturer's roof system.
        2) Failure by the Roofing Contractor to correct deficiencies listed in the Manufacturer inspection reports.
        3) If roof leaks are due to ventilators or light transmitting panels.
        4) Failure to use long-life fasteners in exposed applications.
    j. Include insulation, sub-framing, purlins, clips, fasteners provided as part of this work.

2. Finish Warranty: Provide manufacturer's written panel finish warranty against deterioration of factory applied finishes.

    a. Warranty Period: Minimum period of thirty (30) years from date of Substantial Completion.
    b. Prorated Conditions: None.
    c. Limitations of liability: Not less than value of material and labor to replace.
    d. Include weather tight performance of curbs, equipment supports, pipe portals and provided as part of this work.
    e. Do not include "hold harmless" clause, nor limit liability of Contractor.
    f. Warranty is subject to laws of North Carolina.
    g. Venue to settle disputes is county of the project location.
    h. Coating systems are not an approved warranty repair.

3. Contractor's Warranty:

a. 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. Manufacturers:

1. Construction Metal Products (CMP) Series 2500
2. MBCI BattenLok HS
3. McElroy Metal Maxima 2"
4. Metal Roofing Systems (MRS) System 2500
5. Engineer's Accepted Equivalent

2.2 MATERIALS

A. Standing Seam Metal Roof Panels:

1. Factory formed, no job formed panels allowed.
2. 16 inch wide, striated panel, nominal 2 inch high standing seam rib utilizing male and female rib configurations with factory applied hot-melt mastic or butyl sealant in female rib. Standing seam formed with the Manufacturer's electric seaming tool to produce a 180 degree rolled seam.Roof Panel Clip:

    a. Standard Clip: UL Rated, sliding 22-gauge galvanized steel hook in combination with a double fastened 16 gauge galvanized steel base, both at Fy (min) = 33 ksi. Shop installed hot-melt butyl sealant on clip hook for continuity of seal at clip locations. Secure with fasteners in accordance with manufacturer's requirements for substrate being secured to.

3. Bearing Plate: 4 inch by 6 inch by 16 gauge galvanized steel plate.

B. Base Material:

1. Galvalume Panels: AZ50 Galvalume coated steel, meeting ASTM A792-83-AZ50, minimum 24 ga., maximum 22 ga. where required for specified wind uplift resistance.

C. Metal Finish:

1. 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 in accordance with AAMA 2605 and ASTM D1005.
2. Color of finish for panels and associated trim selected by Owner from Manufacturer's standard color chart.

3. Meet or exceed the following:

a. Abrasion Resistance: Pass 67 liters of falling sand per mil thickness per ASTM D968.
b. Salt Spray Resistance: Samples diagonally scored and subjected to 5% at 95 degrees F, neutral salt spray per ASTM B117, then taped with Scotch #610 cellophane tape: 1000 hours coated steel, no blistering and no loss of adhesion greater than 1/8 from score line.
c. Chemical Resistance: No effect after 24 hour exposure of a 10% solution of hydrochloric acid, and 18-hour exposure to 20% sulfuric acid, per ASTM D1308, including exposure to 10% muriatic acid and nitric acid fumes.
d. Humidity Resistance: No blistering, cracking, peeling, loss of gloss or softening of the finish after 3000 hours aluminum 1000 hours coated steel, of exposure at 100% humidity at 95 degrees F, per Federal Test Method Standard 141, Method 6201 or ASTM D2247.
e. Chalking Resistance: No chalking greater than #8 rating, per ASTM D659 test procedure after a 3000-hour weatherometer test.
f. Color Change: Do not exceed 5 NBS units for finish coat color change per ASTM D-822, ASTM G-23, and ASTM D2244 (South Florida 10-years) test procedure after 3000-hour weatherometer test.
g. Specular Gloss: As determined per ASTM D523 at a glossmeter angle of 60 degrees. 35 percent +/-5 specular reflectance.

D. Fasteners:

1. Fasteners associated with the roofing installation supplied by, and approved by, the metal roofing manufacturer.

a. Fastener length and threads and drill point as required for the metal and substrates being joined. Refer to fastener manufacturer and/or roofing manufacturer published literature. Indicate type of fastener on shop drawings.
b. Corrosion resistant, self-tapping/self-drilling fasteners, bolts, nuts, self-locking rivets and other suitable designed to withstand specified design loads.
c. Provide factory applied coating on the exposed fastener head and washer to match metal roof system color.
d. Provide neoprene-backed washers for exposed fasteners.
e. Position and space exposed fasteners in a true vertical and horizontal alignment. Use proper torque settings to obtain controlled uniform compression for a positive seal without rupturing the neoprene washer.

2. Exposed Fasteners:

a. Metal to wood: #12 stainless steel long life fastener, 5/16 inch HWH with bonded EPDM washer, factory painted head and washer to match metal color and length to penetrate substrate a minimum of 1-1/2 inches.
b. Metal to sheet metal: 1/4-14 x 7/8 inch long life fastener, corrosion resistant, self-drilling point, self-tapping, stainless steel 5/16" HWH with EPDM sealing washer; factory painted head and washer to match adjacent metal color.

c. Metal to light gauge steel: #12-14 x 1-1/4 inch long life fastener, corrosion resistant, self-drilling point, self-tapping, stainless steel 5/16" HWH with EPDM sealing washer; factory painted head and washer to match adjacent metal color.

3. Concealed Fasteners:

a. Metal to wood: #10-13 GP, 302 stainless steel, low profile pancake head with length to penetrate substrate a minimum of 1 inch.
b. Metal to light gauge steel: #12-14 x 1-1/4 inch DP3 corrosion resistant low-profile pancake head of length as required for three threads to penetrate steel substrate.

4. Light Gauge Framing Fasteners:

a. Slotted Rake Angle to Light Gauge Framing: 1/4-14 x 1-1/4 inch Shoulder Screw
b. Light Gauge Framing to Light Gauge Framing: #12-14 x 1 inch DP3, 5/16 inch HWH, self-drilling, carbon steel with corrosion resistant coating.

1) Blazer Self-Drilling Fastener
2) ITW Buildex #12-14 Tek 3
3) SFS #12-14 Impax SD3

c. Light Gauge Framing to Wood: #14-13 DP1, pancake head, self-drilling, carbon steel with epoxy coating, length to penetration wood a minimum of 1 inch.

1) Sentry Plus Five Roofing Screw
2) Concealor Pancake Head Screws

E. Underlayment Materials:

1. Self-Adhering 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:

a. Mid-States Asphalt Quik-Stick HT
b. Grace Ice and Water Shield HT
c. Carlisle WIP 300 HT
d. Petersen PAC-CLAD HT

F. Accessories: Manufactured, supplied and/or otherwise approved by the standing seam roofing Manufacturer.

G. Sheet Metal Flashings, Closures and Trim:

1. Provide sheet metal flashings, closures and trim fabricated from the specified pre-finished metal of the same gauge, finish and color as the roof panels.

a. Zee Closure
b. Headwall Flashing
c. Expansion Joint Cover

d. Expansion Joint Cleat
e. Fascia Cover
f. Rake Flashing
g. Gutter
h. Downspouts
i. Ridge Cap
j. Hip Cap
k. Valley Flashing

H. Sealants:

1. Polyurethane Sealant: One-component elastomeric gun grade polyurethane sealant conforming to ASTM C 920, Type S, Grade NS, Class 25, and use NT, M, A, G, or O as required by substrate conditions. Color to match adjacent materials.
2. Silicone Sealant: One-component, non-sag, neutral cure, low-modulus, UV resistant, high performance silicone sealant. Meet ASTM C 920, Type S, Grade NS, Class 100, Use M, G, A or O. Color to match adjacent materials. Utilize where exposed.
3. Sealant Tape: 3/16-inch x 7/8-inch tri-bead, non-skinning butyl sealant tape. Utilize 2-1/2-inch wide by 3/16-inch thick triple-bead, non-skinning butyl sealant tape where indicated in Contract Drawings or required by metal roof panel manufacturer.
4. Butyl Sealant: Gun grade, non-skinning, non-hardening, flexible blend of butyl rubber and polyisobutylene sealant. Utilized where concealed between sheet metal sections, laps, etc.

I. Roof Curbs:

1. Manufacturers:

a. LM Curbs
b. KCC Manufacturing
c. Approved/Recommended by Standing Seam Roofing Manufacturer, compatible with standing seam roof and seam profile, and accepted by Engineer.

2. Fabrication:

a. Continuous welded connections to conform to standing seams for watertight fit, meeting specified requirements herein.
b. Fabricated of structural quality aluminum, minimum 0.080-inch-thick for mechanical equipment up to 1000 lbs., and 0.125-inch-thick for mechanical equipment between 1000 lbs. and 2000 lbs.
c. Factory primed and factory finished painted to match roof panels or clad with sheet metal to match the color of the metal roof panels.
d. Integral base plates and water diverter crickets. The upper flange of the curb minimum of 18 inches above the water diverter to allow for 6 inches of free area after the panel is lapped over the flange on the high side.
e. Designed to install under metal roof system on the high side, over metal roof system on the low side and seamed into roof panels along sides.
f. Minimum height of prefabricated curb 8 inches above the finished metal roof system.

g. Constructed to match the slope of the roof and provide a level top surface for mounting equipment.
h. Curb flanges constructed to match the configuration of the metal roof panels and seams.
i. Provide structural support necessary for the equipment and curb and allow for thermal movement of the curb with the roofing system.
j. Submit roof curb manufacturer's shop drawings including curb and framing to metal roof system manufacturer for review prior to fabrication.
k. Ensure standing seam metal roof system Manufacturer reviews and approves roof curb manufacturer's shop drawings for compatibility with metal roof system.

J. Prefabricated Roof Jacks:

1. Acceptable Manufacturers:

a. SFS - Intech
b. ITW Buildex
c. Approved/Recommended by Standing Seam Roofing Manufacturer, compatible with standing seam metal roofing system, and accepted by Engineer to meet specified requirements herein.

2. One-piece EPDM molded rubber boot having a serviceable temperature range of -65°F to 212°F for standard penetrations, and silicone molded rubber boot having a serviceable temperature range of -100°F to 437°F for high temperature applications
3. Pipe flashings resistant to ozone and ultraviolet rays.
4. Sealed aluminum flanged base ring.

2.3 FABRICATION

A. Roof panels and associated metal roofing components fabricated by, or provided by, a single-source manufacturer to fit together as a completed roofing assembly meeting the requirements specified herein.

B. Shop and field fabricate trim components meeting the roofing Manufacturers requirements for watertight fit.

C. Factory form roof panels by the specified Manufacturer, not job formed or formed on portable equipment in the Contractor's shop. In-line leveled prior to roll forming panel profile with fixed base equipment assuring highest level of quality control.

D. Roll formed in continuous lengths. No panel end laps between ridge and eave.

E. Fabricate trim, sheet metal flashing and accessories to fit secure and watertight at transitions and details. Replace items with improper fit.

F. Fabricate roof trim and sheet metal flashing from same specified finish same as roof panel.

G. Replace panels and components that result in completed installation being loose, bent or warped for proper fit.

H. Surface-applied sealants are not acceptable to finish poorly fabricated and poorly fitting components. Where components do not fit tight with overlapping metal joints and seams, replace materials to fit properly for overlapping, tight and secure fit.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect substrates and Work to verify the conditions are acceptable and complete.

B. Replace or repair unsatisfactory, wet or deteriorated roof substrates based on Quantity Allowances and Unit Prices.

C. Inspect metal roof panels and other components before installation. Repair or replace materials with scratches through the finish. Remove damaged and dented materials, and materials scratched through to the steel base material from the project.

D. Verify installation in accordance with approved shop drawings and manufacturer's instructions before beginning work including verifying secondary structural members and/or decking are satisfactory for metal roofing system.

E. Coordinate with metal roof system manufacturer to ensure that reduced clip spacing at eave, rake, ridge and corner areas are accommodated by framing spacing and/or substrate.

F. Inspect substrates and notify Engineer in writing of deficiencies observed effecting the installation and effecting the completed roofing system and associated components.

G. Inspect conditions at the walls. Replace deteriorated rough carpentry and resecure rough carpentry.

H. Inspect conditions at pipes, conduit, fans, stacks and curbs to determine conditions and work requirements necessary to disconnect services, remove equipment, reinstall equipment and install structural supports necessary to support the equipment and curbs. Provide electrical, plumbing, mechanical and other services necessary to relocate rooftop equipment and roof penetrations.

I. Commencement of work signifies acceptance of substrates. Correct defects in roofing work resulting from accepted substrates to Owner's satisfaction at no additional expense.

J. Reject and replace materials damaged during shipping, storage or handling.

K. Inspect storage conditions daily to ensure materials remain protected from damage, condensation, dew, rain or other contamination.

3.2 PREPARATION

A. Roof Substrate:

1. Dry and broom and/or vacuum clean of loose gravel, stone, dirt, dust, debris and foreign matter prior to installation of the roofing system. Do not use blowers unless accepted by the Engineer/Owner.

2. Remove free water and wet or damp debris from deck substrate surface before installing roofing system.
3. Verify wall substrates are in satisfactory condition before commencement of the Work.

B. Protection:

1. Protect the building and materials from exposure to weather related damages.
2. Protect building walls and other surfaces with canvas or suitable tarp wherever equipment or materials are taken up to or down from roof.
3. Protect building interiors using suitable methods required to prevent damage from roofing activities.
4. Dry-in the building daily to ensure the building remains watertight. Take necessary measures to protect the building from weather related exposures during the project.
5. Seal deck openings to prevent dust and debris from entering the building.
6. Protect building grounds, landscaping and exterior components and fixtures from damaged during construction activities. Repair damages to meet pre-construction conditions.

C. Coordination:

1. Coordinate work and associated work activities with the Engineer/Owner
2. Coordinate curb replacement and installation of curbs for fans and equipment with the Engineer/Owner in advance. Limit the scheduled outage of equipment to one day or less, and the schedule for outages in advance with the Engineer/Owner. Work on weekend or non-business hours as necessary to accommodate the Owner and occupancy.
3. Coordinate raising or relocating vent pipe/soil stack pipes with the Engineer/Owner.
4. Coordinate interior access and interior work with Engineer/Owner in advance. Do not proceed with interior work unless agreed upon by the Owner and occupants.

D. Roof Loading, Staging and Storage:

1. Evenly distribute loads of materials on roofs. Do not pre-load roofs with concentrated loads of materials that exceed the roof deck and structure's load bearing capacity.
2. Secure materials and equipment stored on the roof to prevent items from sliding or falling off of the roof.
3. Secure materials and equipment on the roof to prevent materials from being displaced by wind.

3.3 APPLICATION

A. General:

1. Allow for thermal movement, expansion and contraction, of sheet metal components. Install lengths of metal, fastening type and rate, metal joints, and connections to meet sheet metal industry recognized standards and published standards including those referenced herein.
2. Provide uniform sheet metal sections with corners, joints, and angles mitered, sealed and secured for tight fit.

3. Overlap, rivet and seal watertight counter flashing corners.
4. Hem sheet metal edges for strength and appearance.
5. Provide end closures fabricated to terminate each end of the detail for counterflashing, expansion joints and other applicable components. Conceal the adjacent substrates for watertight closures. Conform to the adjacent conditions and provide for a minimum 4-inch overlap.
6. Provide necessary cleats or stiffeners and other reinforcements as required to make sections rigid and substantial.
7. Fabricate, support, cleat, fasten and join sheet metal to prevent warping, "oil canning" and buckling. Adjust substrates, nailers, framing, etc. to ensure finished sheet metal is installed smooth.
8. Install sheet metal to prevent moisture from entering beyond the detail.
9. Provide sheet metal transition details with watertight redundancy including, but not limited to self-adhering underlayment membrane, concealed sealants, and metal joint back-up plates. Install, seal and lap secondary protection to ensure if the sheet metal detail fails to shed water, the secondary protection sheds limited moisture infiltration.
10. Do not allow dissimilar metals or other materials to make contact. Where dissimilar material is found in-place, prevent galvanic corrosion by a separation barrier approved by Manufacturer and accepted by Engineer.
11. Do not allow galvalume and galvanized steel and aluminum materials to be in contact with treated wood products. Provide a physical separation, including PVC underlayment membrane or self-adhering underlayment membrane to prevent contact.
12. Relocate plumbing vent pipes and vents to center of metal roof panels.

B. Self-Adhering Underlayment:

1. Starting at the low point of the roof, adhere underlayment in a shingle fashion with minimum 6 inch end laps and 3 inch side laps. Apply roof cement as required to penetrations and terminations to ensure a watertight condition.

C. Night Seals/Daily Tie-ins:

1. At end of day's work, or when precipitation is imminent, build a water cut-off at open edges and penetrations. Construct tie-ins to withstand extended periods of service, anticipated storms, precipitation and high winds.
2. Take necessary precautions during construction to prevent weather related exposures to the building and materials, roof leaks and other weather-related damages resulting from the work included in the project.
3. Replace building insulation, ceilings, plywood, decking, fixtures, etc. wetted or damaged during Construction.
4. Repair damages resulting from water that enters under the metal roofing and components, and water that enters the building in the work areas during construction.

D. Field-Cutting Pre-Finished Metal:

1. Prohibit the use of abrasive/grinding blades, circular saws and reciprocating saws. Prohibit cutting operation that grinds, rips and tears the metal.
2. Approved cutting tools for Galvalume and pre-finished steel include aviation snips, sheet metal hand shears, electric metal shears and electric nibblers.

E. Standing Seam Roof Panels:

1. General application in accordance with the Manufacturers published installation instructions.
2. Install roofing system and components with tools recommended by the roofing manufacturer.
3. Install panels plumb, level and straight with seams and ribs parallel, conforming to design and manufacturer's published instructions as indicated.
4. Provide continuous roof panels, with no joints or seams, except where specified.
5. Install metal roof system weathertight, without waves, warps, buckles, fastening stresses or distortion, allowing for expansion and contraction.
6. Provide concealed fastener/clips at panel attachment locations.
7. Provide exposed fasteners in trim components with pre-painted head and washer with EPDM-backed gasket for watertight seal. Fasteners of size and type for metal thickness and substrate material. Follow the fastener manufacturer's published requirements for fastener application and installation instructions.
8. Install roof clips to allow the completed roofing assembly to accommodate anticipated specified thermal movement.

F. Roof Panel Seams:

1. Seam roof panels with the specified Manufacturer's electric seaming tool, producing a 180 degree seam.
2. Ensure the roof panel is seamed per the Manufacturer's published instructions.
3. Ensure seam has factory-applied sealant in place prior to seaming.
4. Calibrate and service seaming tool by the roofing manufacturer or other approved seaming tool manufacturer/service center. Calibrate and adjsut seaming equipment for the metal gage, type and finish.
5. Provide true, straight and aligned seam without bending, warping or scratching through the panel finish.
6. Replace panels due to improper roof panel seaming results.

G. Squareness:

1. Aesthetics of completed roofing is of utmost importance.
2. Provide panels, framing, components and trim aligned true, straight and square.
3. Ensure installation and sequence is square for proper fit of components.
4. Do not exceed tolerance for squareness of 1:500 (1.92 inch per 100 ft).
5. Maintain modularity and alignment of roof panels to prevent roof panel "stair-stepping" or "fanning".
6. Utilize the Manufacturer's "spacer tools", "module makers" and/or measuring tape to maintain consistent roof panel coverage.
7. Ceck for squareness after installing no more than every five (5) panels to ensure the panels are laying-up square and remain true.
8. Complete installation of roofing and associated components for watertight fit, to accommodate concealed sealants where specified, and to allow for specified thermal movement.
9. Correct abrupt and sharp transitions in the substrate to prevent crimping, bending or poor fitting sheet metal components that result in oil canning.
10. Correct roofing, flashing and sheet metal components that do not meet the specified tolerances.

H. Roof components, flashings, closures and trim:

1. Fabriate and supply sheet metal flashings, trim and closure materials by the standing seam roofing Manufacturer, unless otherwise specified.
2. Roof details and flashings pre-approved by the Manufacturer for inclusion in specified warranty.
3. Install in accordance with Manufacturer's shop drawings, details and published requirements.
4. Install details with redundancy, including secondary metal flashing, concealed sealant and metal roof panel underlayment beneath details.
5. Provide uniform sheet metal sections with corners, joints and angles mitered, sealed and secured.
6. Hem (return) exposed edges for strength and appearance.
7. Fit sheet metal close and neat.
8. Provide cleats or stiffeners and other reinforcements to make sections rigid and substantial.
9. Fabricate, support, cleat, fasten and join sheet metal to prevent warping, oil canning, and buckling.
10. Sheet Metal Laps: Unless otherwise indicated:

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

I. Zee Closure:

1. Provide between roof panel seams.
2. Set in sealant tape and secure with five fasteners per roof panel spaced in accordance with manufacturer's installation instructions.
3. Tab vertical leg of zee closure and turn onto vertical panel seams. Set tab in butyl sealant.
4. Secure to vertical panel seam with one fastener.
5. Seal edges of zee and tab to vertical seam with sealant.

J. Headwall Flashing:

1. Lock back-up plate to panel end along headwall.
2. Secure back-up plate to structure.
3. Provide 3 inch long sealant tape along top of female panel seam before male side of next roof panel is installed.
4. Provide zee closure as specified above.
5. Provide sealant tape along top of zee closure.
6. Provide ridge vent secured at 6 inches on center into zee closure. Do not install fasteners through panel seams.
7. Lap adjoining sections of ridge vent not less than 1 inch and provide butyl sealant between sections.
8. Provide sealant tape along top of ridge vent.
9. Provide headwall flashing secured at 6 inches on center through sealant tape. Do not install fasteners through panel seams.
10. Lap adjoining sections or ridge cap a minimum of 4 inches and provide two beads of butyl sealant between sheet metal laps.
11. Provide sealant tape behind top termination of headwall flashing and secure to wall substrate at 12 inches on center.

K. Expansion Joint Cover:

1. Fabricate expansion joint cover and cleat as shown in detail drawing in 10 foot lengths.
2. Prior to installation of expansion joint cover, install compressible insulation in PVC flashing envelope.
3. Provide continuous expansion joint cleat fastened to the expansion curb 8 inches on center.
4. Lock expansion joint cover onto cleat and fasten remaining vertical leg of cover to wood blocking 12 inches on center. If expansion joint is within Corner (Zone 3), secure at 6 inches on center maximum.
5. Notch and lap ends of adjoining expansion joint cleat sheet metal sections not less than 4 inches; apply sealant tape or butyl sealant between sections.
6. Lap expansion joint cover seams in shingle fashion with minimum 6 inch overlap and provide three beads of butyl sealant between sheet metal laps.
7. Provide one-piece expansion joint cover section at four way and tee intersections. Refer to SMACNA Architectural Sheet Metal Manual Figure 5-2.
8. Provide expansion joint end closure at roof edges. Refer to SMACNA Architectural Sheet Metal Manual Figure 5-3.

L. Fascia Cover:

1. Provide fascia cover secured at 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.

M. Rake Flashing:

1. Provide slotted rake angle along rake edge.
2. At beginning roof panel, but panel to rake angle and allow horizontal flange of seam to extend past angle. At ending panel, turn roof panel up rake angle and back 1" minimum to provide horizontal flange for securement.
3. Provide sealant tape along roof panel flange.
4. Fabricate rake flashing and continuous cleat as shown in detail drawings in 8 foot or 10 foot lengths.
5. Install a continuous cleat as indicated in detail drawings fastened to substrate 6 inches on center. Locate fasteners no greater than 1-3/4 inch from the break at the bottom hem.
6. Lock rake flashing onto continuous cleat crimp as shown.
7. Hand tong metal edge onto continuous cleat.
8. Secure rake flashing to roof panel through sealant tape at 6 inches on center.
9. Lap rake flashing seams in shingle fashion with minimum 6 inch overlap and provide three beads of butyl sealant between sheet metal laps.

N. Ridge:

1. Lock back-up plate to panel end along both sides of ridge.
2. Secure back-up plate (offset 3/8 inch) to structure.
3. Provide 3 inch long sealant tape along top of female panel seam before male side of next roof panel is installed.
4. Provide zee closure as specified above.
5. Provide sealant tape along top of zee closure.

6. Provide ridge cap secured at 6 inches on center through sealant tape. Do not install fasteners through panel seams.
7. Lap adjoining sections of ridge cap a minimum of 4 inches and provide two beads of butyl sealant between sheet metal laps.

O. Hip Cap:

1. Lock back-up plate to panel end along both sides of ridge.
2. Secure back-up plate to structure.
3. Provide 3 inch long sealant tape along top of female panel seam before male side of next roof panel is installed.
4. Provide zee closure as specified above.
5. Provide sealant tape along top of zee closure.
6. Provide hip cap secured at 6 inches on center through sealant tape. Do not install fasteners through panel seams.
7. Lap adjoining sections or hip cap a minimum of 4 inches and provide two beads of butyl sealant between sheet metal laps.

P. Valley Flashing:

1. Provide valley support plate.
2. Provide valley flashing secured at 12 inches on center.
3. Lap adjoining sections of valley flashing in shingle fashion a minimum of 8 inches and provide three beads of butyl sealant between lapped section.
4. Lap roof panel over valley flashing a minimum of 8 inches and provide triple bead tape sealer below metal roof panel and terminate roof panel at 3 inches on center through tape sealer.

Q. Gutters:

1. Fabricate to profile shown in Contract Drawings.
2. Formed in 10 foot lengths. Joints in gutters lapped a minimum of 1 inch, riveted 1 inch on center. Install butyl sealant between gutter sections and silicone sealant at exposed inside edge and on rivets. Lap joints in the direction of water flow if possible.
3. Provide butt type expansion joints in gutters at spacing appropriate for the type material used to fabricate gutters. Refer to SMACNA Manual Figure 1-7. Maximum length of gutters 50 feet.
4. Provide downspout outlets in downspout locations. Refer to SMACNA Manual Figure 1-33B. Gutter outlet tubes tabbed a minimum of 1 inch, set in a bead of butyl sealant and secured to gutter with a minimum of two rivets per tab.
5. Attachment:

    a. Provide top and bottom hangers as shown in detail drawings. Space be 32 inches on center or every other panel rib on standing seam metal roofs. Provide a minimum of two fasteners to secure top hanger to standing seam and one fastener to secure top hanger to bottom hanger. Provide two fasteners to secure each lower hanger to gutter.
    b. Space brackets and spacers 36 inches on center, staggered. Rivet spacers to both sides of the gutter only. Secure brackets to wood blocking with two stainless steel fasteners.

6. Hang gutters level.

R. Downspouts:

1. Fabricate downspouts in 10 foot lengths. Refer to SMACNA Architectural Sheet Metal Manual Figure 1-32B.
2. Tie into below grade storm drainage system or if no below grade system is present, kick-out above grade onto concrete splash blocks. Fill in soil to provide slope away from building.
3. Provide square to round transition to tie into below grade storm drainage system.
4. Secure to the structure with two-piece hangers spaced no more than 8 feet apart with a minimum of two hangers per downspout with a hanger located within 12 inches• • from bottom. Prime and paint hangers to match downspouts. Refer to SMACNA Architectural Sheet Metal Manual Figure 1-35H.
5. Fashion downspouts to run back to (at overhangs) and parallel to the facility walls.
6. Provide discharge elbow at the base of downspout where it kicks out onto splash pan or splash block.
7. Where downspouts discharge onto lower adjacent roof areas, provide splash pans at discharge as specified below.

S. Fasteners:

1. Install fasteners as specified, detailed and as published and designed by the fastener manufacturer for the materials being joined.
2. Consult and follow the fastener manufacturer's published literature for proper preparation and installation.
3. Properly seat fasteners, do not over drive or under drive. Do not bend, dent or warp sheet metal during fastener installation.
4. Pre-drill substrates where required to properly install fasteners.
5. Replace improperly driven/installed fasteners with properly sized fastener for each application.
6. Rivets: #44 stainless steel rivets with stainless steel mandrel with factory painted head to match adjacent sheet metal. Length of rivet to properly fasten particular sheet metal components.

T. Sealants:

1. Seal sheet metal joints and junctures between sheet metal and adjacent substrates with specified, compatible sealants.
2. Clean sheet metal and adjacent substrates free of dust, debris and incompatible coatings.
3. Prime and preare sheet metal and adjacent substrates s to meet sealant manufacturers' published literature and recommendations.
4. Inspect sheet metal joints before sealant application. Fasten and/or tightly fit joints to prevent sealed joints from buckling or opening.
5. Ensure environmental conditions area dry and precipitation is not anticipated during, or no less than 24 hours after, sealant application. Follow sealant manufacturers' published literature regarding environmental conditions.
6. Apply and tool sealant as indicated and recommended in sealant manufacturers' published literature.

U. Roof Curbs:

1. Ensure curbs fit accurately to roofing system and equipment. Replace improperly fabricated, sized and installed curbs with properly sized curbs for accurate fit.
2. Comply with metal roof system manufacturer's shop drawings, instructions and recommendations for installation of roof curbs. Refer to metal roof system manufacturer's standard installation details. Anchor curbs securely in place with provisions for thermal and structural movement.
3. Ensure dimensions of curbs and supports fit the rooftop equipment and conform to the metal roofing system for accurate and watertight fit to accommodate thermally induced panel movement.
4. Protect equipment and building from damages during construction.
5. Install materials and components supplied by curb manufacturer to support the equipment and curb, and allow for thermal movement of roofing panels.
6. Install and seal curb and seam caps for a permanent watertight detail without relying on exterior applied sealants.
7. Install equipment on the curbs, secure and seal watertight. Ensure equipment operates to Engineer/Owners satisfaction upon completion of work.
8. Inaccurate installation and poor fit between curb and roofing panels is not acceptable; replace or reinstall improper curbs.
9. Provide PVC condensate drain lines for HVAC units secured to the standing seam with compatible hardware and extend down to the gutter along the roof edge.

V. Prefabricated Roof Jacks:

1. Move/relocate and re-secure pipe penetrations that touch roof panel standing seams to ensure the pipe and roof jack are installed in the flat of the panel pan without touching the vertical seam
2. Refer to referenced standards and applicable State Plumbing Code.
3. Reinstall to ensure the vent pipes or penetrations are operational to pre-construction function.
4. Seal vent pipes airtight at joints and connections.
5. Ensure roof jack installation without damages or exposure to building interior to weather exposure.

3.4 CLEAN UP

A. Dispose of excess materials and remove debris from site. Maintain construction related debris in approved disposal containers.

B. Clean work in accordance with manufacturer's recommendations.

C. Protect work against damage until final acceptance. Replace or repair, to the satisfaction of the Owner, work that becomes damaged prior to final acceptance.

D. Touch up minor scratches and abrasions with touch up paint supplied by the metal roof system manufacturer. Minor scratches are considered scratches that extend into the finish only, not down to the base metal:

1. Scratches that extend into the paint finish only and not down to the base metal.
2. Scratches that do not extend more than 4 inches in length.
3. Where no more than 2 scratches in lengths of less than 4 inches are present in a 1 sf area of a metal roof panel.

E. Replace significantly scratched metal panels.

1. Scratches that extend down to the base metal.
2. Scratches that extend more than 4 inches in length.
3. Where more than 2 scratches in lengths less than 4 inches are present in a 1 sf area of a metal roof panel.
4. Where touch up paint is visible when viewing the metal roof panels from a common pedestrian area from the ground as judged by the Owner and Engineer.

F. Do not allow panels or trim to come in contact with dissimilar metals including copper, lead or graphite. Control water run-off from dissimilar materials.

G. Remove metal dust and cut debris produced by cutting, drilling and fastening. Do not allow metal dust and cut debris to remain on pre-finished metal panels.

H. Prevent metal chips, shavings, etc. from staining the building, roof and associated fixtures and components. Remove rust stains.

I. Prevent damage during cleaning activities. Do not allow cleaning materials and methods to damage building, grounds, components or fixtures.

J. Ensure trash and debris, especially nails and shingles, are removed from the yard and grounds. Place nails, shingles, sharp sheet metal scraps and other construction related debris in suitable waste containers.

END OF SECTION

SECTION 07 42 13

METAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Provide prefinished, prefabricated nonstructural flush seam wall panels with interlocking seams providing cladding protection of a weather barrier substrate.

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 06 10 00 "Rough Carpentry"
2. Section 07 41 13 "Metal Roof Panels"

1.3 REFERENCES

A. ASTM International

1. A750/A 750 M - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil Coating Process for Exterior Exposed Building Products.
2. A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
3. A792 - Standard Specification for Steel Sheet, 50 percent Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
4. B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
5. D523 - Standard Test Method for Specular Gloss.
6. D659 - Standard Guide for Testing Industrial Water-Reducible Coatings.
7. D822 - Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
8. D2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.

B. American Architectural Manufacturer's Association (AAMA) 605.2 - Voluntary Specification for High Performance Organic Coatings.

C. National Roofing Contractors Association (NRCA) - Roofing Manual.

D. Sheet Metal and Air Conditioning Contractors National Association, 1nc. (SMACNA) - Architectural Sheet Metal Manual.

E. Underwriters Laboratories (UL) - Building Materials Directory.

1.4 PERFORMANCE REQUIREMENTS

A. Design Requirements:

1. Provide factory preformed wall panel system tested and certified by the manufacturer to comply with specified requirements under installed conditions.
2. Provide one-piece, single length wall panels.
3. Provide continuous interlocking seams with open hem male legs that inherently increases load span capability, stiffness, and flexural stress handling.

B. Attachment of Panels as determined in accordance with ASTM E 1592 along with holding strength of fasteners to structure in accordance with submitted test data, provided by fastener manufacturer, based on length of embedment and properties of materials.

1. Do not exceed 4 feet on center for fastener spacing for attachment of panels.

1.5 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

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

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

D. Shop Drawings: Show details, trim pieces, transitions and closures necessary to install wall panels.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Minimum of 10 years' experience supplying metal siding to the region where the work is performed.

B. Installer Qualifications:

1. Acceptable to, licensed or certified by manufacturer.
2. Not less than 3 years' experience with systems.

C. Regulatory Requirements:

1. Comply with local Building Code requirements if more restrictive than those specified.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect against damage and discoloration.

B. Handle panels with non-marring slings.

C. Do not bend panels.

D. Store panels above ground, with one end elevated for drainage.

E. Protect panels against standing water and condensation between adjacent surfaces.

F. If panels become wet; separate sheets, wipe dry with clean cloth, and allow to air dry.

G. Remove strippable film coating prior to installation and do not allow it to remain on the panels in extreme cold, heat or in direct sunlight.

H. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.8 WARRANTY

A. Included in the metal roof panel manufacturer's weathertight and finish warranty as specified in Section 07 41 13 "Metal Roof Panels".

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Same as manufacturer of metal roof panel system. Refer to Section 07 41 13 "Metal Roof Panels"

2.2 PRODUCTS

A. Flush Seam Wall Panels:

1. Base Metal: 24-gauge, Galvalume coated steel meeting or exceeding AZ50 per ASTM A792.
2. Face: Manufactured with two radii stiffening ribs.
3. Panel size: 12 inches in width.
4. Seam size: Nominal 1 inchdeep interlocking seams with a structurally qualifying open hem on the male leg.

2.3 RELATED MATERIALS

A. Fasteners:

1. Flush Seam Panel Screws:

a. For metal: #10-16 x 1" long self-drilling, self-tapping pancake head Phillips drive screws.
b. For plywood: #10-12 x 1" long A-point fastener, pancake head Phillips drive screws.

2. Blind Rivets: Solid-threaded, sealed stem type with EPDM washer under head and factory painted heads to match wall panel finish color.

B. Accessories:

1. Provide manufacturer's standard accessories and other items essential to completeness of roof installation including anchor clips, trim, ridge and hip caps, closures, flashing, and fascia.
2. Form flashings, closure, and trim from same gauge and finish as roof panels.

C. Hat Channel Sub Framing:

1. 7/8 inch x 5-1/4 inch, 16-gauge, galvanized steel hat channel.

D. Hat Channel 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.

E. Sealant: Refer to Section 07 62 00 "Sheet Metal Flashing and Trim". Sealant color to match wall panel.

F. Metal Wall Panel Closures: Refer to Section 07 62 00 "Sheet Metal Flashing and Trim".

2.4 FABRICATION

A. Correctively leveled and handled to minimize stress and waviness of sheet steel.

B. Form and fabricate sheets, seams, strips, clips, valleys, ridges, edge treatments, integral flashings, and other components of the metal roofing to the profiles, patterns, and drainage arrangements as determined by Engineer, to provide permanent leakproof construction, with no oil canning or panel distortion.

1. Fabricate exposed items of prefinished sheet metal, color to match panels.
2. Hem exposed edges on underside 1/2-inch miter and seam corners.
3. Provide for thermal expansion and contraction of the Work.
4. Seal joints to achieve leak proof construction per manufacturer's detail.

C. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

D. Provide continuous length panels with no end laps.

E. Factory form panels. Field formed panels are not acceptable.

2.5 FINISH

A. Exterior Finish:

1. 70 percent Kynar 500/Hylar 5000 for a total 1.0 mil dry film thickness with a specular gloss of 10-15 percent when tested in accordance with ASTM D523 at 60 degrees.

B. Interior Finish:

1. Primer Coat Material: Corrosion-resistant primer; primer coat dry film thickness: 0.15 mils; finish coat material: polyester paint, finish coat dry film thickness: 0.35 mils.
2. Total Interior Dry Film Thickness: 0.50 mils.
3. Color: Off-White.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Substrate:

1. Examine substrate to ensure that it is properly secured and prepared to receive metal wall panels.
2. Ensure substrate is installed flat, free from objectionable warp, wave, and buckle.

3.2 INSTALLATION

A. Hat Channel Sub-Framing:

1. Secure to wall with specified fasteners in accordance with fastener manufacturer's installation instructions.
2. Spacing as indicated in Contract Drawings or as required for metal wall panel attachment.

B. Metal Wall Panels:

1. Follow panel manufacturer's directions.
2. Install panel seams vertically.
3. Lap panels away from prevailing wind direction.
4. Do not stretch or compress panel side-laps.
5. Secure panels without warp or deflection.
6. Clean and dry surfaces prior to applying sealant.
7. Exposed fasteners are not allowed, except to fasten flashings, at fixed points, or as indicated on Drawings.
8. Field apply sealant to penetrations, transitions, and other locations necessary to prevent water infiltration.
9. Leave 1/4 inch space between bottom of metal wall panels and receiver flashing.

C. Flashing:

1. Follow manufacturer's directions and Engineer accepted Shop Drawings.
2. Install flashings to allow for thermal movement.
3. Remove strippable protective film preceding flashing installation.
4. Make end cuts and install sealant and flashings to achieve weathertight installation.

D. Cutting and Fitting:

1. Neat, square and true. Torch cutting, electric saws and grinders with abrasive wheels are prohibited where cut is exposed to final view.
2. Openings 6 inches and larger in one direction: Shop fabricate and reinforce to maintain original load capacity.
3. Where necessary to saw-cut panels, debur cut edges.

E. Dissimilar Metals:

1. Where sheet metal is in contact with dissimilar metals, execute juncture to facilitate drainage and minimize possibility of galvanic action.
2. At point of contact with dissimilar metal, coat metal with protective paint or tape which can be placed between metals.

3.3 PROTECTION

A. Protect work as required to ensure no metal wall panel system damage at time of final completion.

B. Do not allow panels or trim to come in contact with dissimilar metals including copper, lead or graphite. Control water run-off from dissimilar materials.

C. Remove metal dust and cut debris produced by cutting, drilling and fastening. Do not allow metal dust and cut debris to remain on pre-finished metal panels.

D. Prevent metal chips, shavings, etc. from staining the building, roof and associated fixtures and components. Remove rust stains.

E. Prevent damage during cleaning activities. Do not allow cleaning materials and methods to damage building, grounds, components or fixtures.

3.4 REPAIR

A. Touch up minor scratches and abrasions with touch up paint supplied by the metal roof system manufacturer. Minor scratches are considered scratches that extend into the finish only, not down to the base metal:

1. Scratches that extend into the paint finish only and not down to the base metal.
2. Scratches that do not extend more than 4 inches in length.
3. Where no more than 2 scratches in lengths of less than 4 inches are present in a 1 sf area of a metal roof panel.

B. Replace significantly scratched metal panels.

1. Scratches that extend down to the base metal.
2. Scratches that extend more than 4 inches in length.
3. Where more than 2 scratches in lengths less than 4 inches are present in a 1 sf area of a metal roof panel.
4. Where touch up paint is visible when viewing the metal roof panels from a common pedestrian area from the ground as judged by the Owner and Engineer.

END OF SECTION

SECTION 07 54 00

THERMOPLASTIC SINGLE PLY ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Provide an 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 and Specification Sections apply to this Section, including but not limited to:

1. Section 05 01 30 "Steel Roof Deck Repair and Securement"
2. Section 06 10 00 "Rough Carpentry"
3. Section 07 01 50 "Preparation for Reroofing"
4. Section 07 22 16 "Roof Insulation"
5. Section 07 62 00 "Sheet Metal Flashing and Trim"
6. Section 22 14 26 "Roof Drains"

1.3 REFERENCES

A. Refer to Section 01 42 00 "References" for referenced standards and applicable building code.

B. Refer to the following references, current edition for specification compliance:

1. ASTM International
2. National Roofing Contractors Association (NRCA)
3. Underwriters Laboratory (UL)
4. FM Global
5. Single Ply Roofing Institute

1.4 PERFORMANCE REQUIREMENTS

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

B. Wind Design: Provide an approved, tested roof assembly to resist the design wind uplift pressures specified in the Contract Drawings.

1.5 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

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

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

D. 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.

E. 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

F. 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.

L. Refer to Section 01 14 00 "Work Restrictions" for precautions when using membrane adhesives at or near rooftop vents or air intakes. Keep lids on unused cans.

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 to include but not be limited to membrane, insulation, adhesives, fasteners, sealants, flashings, polymer clad sheet metal, etc.
2. Warranty Period: years from date of Substantial Completion
3. Warranty to remain in effect for wind speeds up to 72 mph.
4. Warranties requiring the Owner's signature are not acceptable.

B. Contractor's Warranty:

1. 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
4. Soprema

2.2 MEMBRANE MATERIALS

A. Membrane: Thermoplastic membrane with fiberglass and/or polyester reinforcement meeting ASTM D 4434 or ASTM D 6754 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
4. Soprema Sentinel P150HFB

B. Flashing/Stripping Membrane: Non fleeceback, thermoplastic membrane reinforced with fiberglass. Utilize asphalt resistant flashing membrane where in contact with residual asphaltic materials or as required by the manufacturer.

1. Sika Sarnafil 60-mil G410
2. Fibertite 45-mil SM
3. Siplast Parasolo PVC Kee Smooth 60-mil
4. Soprema Sentinel P150 Membrane

C. 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
4. Soprema Sentinel S Bonding Adhesive

B. Flashing Adhesive: Membrane manufacturer's solvent-based adhesive.

1. Sika Sarnafil Sarnacol 2170
2. Fibertite FTR 190e
3. Siplast Parasolo PVC Bonding Adhesive
4. Soprema Sentinel S Bonding Adhesive

2.4 RELATED MATERIALS

A. T-joint Patch: Membrane manufacturer's circular patch welded over T-joints formed by overlapping thick membranes.

B. 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.

C. 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.

D. Termination Bar: Manufacturer's 1/8 inch by 1 inch mill finish extruded aluminum bar with pre-punched slotted holes.

E. Counterflashing Bar: Prefabricated extruded aluminum metal counterflashing and termination bar. 0.10-0.12 inch thick bar with 2-1/4 inch profile, pre-drilled holes 8 inchs on center and sealant kick out at top edge.

F. Sealant: Manufacturer's multi-purpose sealant.

G. Primary Membrane Cleaner: High-quality solvent cleaner provided by membrane manufacturer for use as a general membrane cleaner.

H. Pre-weld Cleaner: High-quality solvent based seam cleaner with moderate evaporation rate as recommended and provided by membrane manufacturer.

I. Walkway Pad: Walkway pad by manufacturer of membrane.

J. 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 my 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 INSTALLATION (ADHERED)

A. Over the properly installed and prepared substrate, spread membrane adhesive in accordance with the manufacturer's instructions and application rates utilizing equipment as required by the manufacturer.

1. Do not allow adhesive to skin-over or surface-dry prior to installation of roof membrane.
2. Do not utilize water based membrane adhesive if temperatures below 40º F (5º C) are expected during application or subsequent drying time.
3. Comply with the manufacturer's published requirements for adhesive application rates.
4. Count the amount of pails of adhesive used per area per day to verify conformance to the specified adhesive rate.
5. Do not apply adhesive in seam areas.
6. Replace notched squeegees daily or as notches are reduced below 1/4 inch.

B. Place roof membrane into the adhesive in accordance with manufacturer's instructions.

C. Shingle seams with flow of water. Overlap upslope, adjacent rolls 3 inches over previous roll. This process is repeated throughout the roof area.

D. After placement of membrane, press roll into place with the manufacturer's recommended roller by frequent rolling in two directions.

E. Weld membrane coverstrips at fleeceback membrane seams without a factory selvage edge.

3.4 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.

3.5 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. Seal off Polymer Clad sheet metal incorporated into the roofing system with a hot-air welded stripping ply. Extend stripping ply four inches beyond sheet metal onto roof membrane and fit closely to edge of sheet metal.

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

3.6 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 inchwide nozzle is recommended for use. For corners and compound connections, the 3/4 inchwide 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.

3.7 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.

3.8 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.

3.9 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.

3.10 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 and Specification Sections apply to this Section, including but not limited to:

1. Section 06 10 00 "Rough Carpentry"
2. Section 07 41 13 "Metal Wall Panels"
3. Section 07 54 00 "Thermoplastic Single Ply Roofing"

1.3 REFERENCES

A. Refer to Section 01 42 00 "References" for referenced standards and applicable building code.

B. Refer to the following references for specification compliance:

1. ASTM International
2. National Roofing Contractors Association (NRCA)
3. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)

    a. Architectural Sheet Metal Manual, Seventh Edition - January 2012

4. ANSI/SPRI ES-1
5. FM Global

    a. Data Sheet 1-49, Perimeter Flashing

1.4 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

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

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

D. Shop Drawings: For any transitions and/or terminations not depicted in Contract Drawings.

E. Color Charts:

1. Pre-finished Sheet Metal
2. Polymer Clad Sheet Metal

1.5 MOCK-UPS

A. Provide mock-ups of the following sheet metal components prior to fabrication of the components:

1. Wall Expansion Joint: Provide minimum 10 foot length of expansion joint cover and cleat mock-up. Include at least one seam of the configuration specified. Provide mock-up of receiver and/or counter flashing components as part of the detail.

1.6 QUALITY ASSURANCE

A. Install in accordance with the Contract Drawings.

B. Ensure work is free of leaks.

C. Fabricate metal edge (where no gutter is present) and coping in accordance with ANSI/SPRI ES-1 requirements.

D. 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 substantial completion.

PART 2 - PRODUCTS

2.1 PRIMARY SHEET METAL

A. Pre-finished Galvalume: 24-gauge, galvalume coated steel meeting or exceeding AZ50 per ASTM A792. Manufacturer's smooth finish, pre-finished color coatings consisting 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.

1. Receiver Flashing
2. Counterflashing
3. Wall Expansion Joint Cover
4. Expansion Joint Cleat
5. Crimped On Metal Edge
6. Scupper Face Plate

2.2 GALVALUME

A. 22-gauge, galvalume coated steel meeting or exceeding AZ50 per ASTM A792:

1. Continuous Cleat

2.3 POLYMER CLAD METAL

A. Heat-weldable, 24 gauge, AISI G90 galvanized steel sheet with a 20-mil unsupported thermoplastic membrane coating to match the flashing membrane composition laminated on one side. Polymer-Clad metal manufactured by, and included in the warranty of, the single-ply membrane Manufacturer utilized in Section 07 54 00 "Thermoplastic Single Ply Roofing" Color selected by Owner.

1. Flange/Sleeve
2. Drip Edge
3. Scupper Liner

2.4 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 though 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.

2.5 RELATED MATERIALS

A. PVC Flashing: 20 mil corrosion resistant, waterproof PVC flashing.

B. Compressible Insulation: Un-faced friction-fit fiberglass building insulation, cut to fit from 3-1/2 inch x 15 inch x 48 inch batts.

C. Sealant Tape: Minimum 1/2 inch wide, non-skinning, butyl sealant tape.

D. Butyl Sealant: Gun grade, non-skinning, non-hardening, flexible blend of butyl rubber and polyisobutylene sealant.

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. Provide for thermal movement (expansion and contraction) of sheet metal.
3. Where dissimilar metals contact, prevent galvanic action by means of heavy coat of asphalt primer or separate with sheet metal underlayment.

4. 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.
5. Provide uniform sheet metal sections with corners, joints and angles mitered, sealed and secured.
6. Hem (return) exposed edges for strength and appearance.
7. Fit sheet metal close and neat.
8. Provide cleats or stiffeners and other reinforcements to make sections rigid and substantial.
9. 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. 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.

E. Pipe Penetration:

1. Fabricate flange/sleeve and watertight umbrellas as shown in detail drawings. Refer to SMACNA Architectural Sheet Metal Manual Figure 8-9C.
2. Strip in flange as specified.
3. Install watertight umbrella with stainless steel draw band and sealant properly tooled to ensure adhesion and slope to shed water.
4. 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.
5. Clean and solder seams.

F. 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 in saw-cut reglet. Cover soft metal wedges with sealant.

G. 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.

H. Wall Expansion Joint:

1. Fabricate expansion joint cover and cleat as shown in detail drawing in 10 foot lengths. Refer to SMACNA Architectural Sheet Metal Manual Figure 5-6B.
2. Prior to installation of expansion joint cover, install compressible insulation in PVC flashing envelope.
3. Provide continuous cleat fastened to the expansion joint curb 8 inches on center.
4. Lock expansion joint cover onto cleat and fasten to wall substrate 12 inches on center.
5. Notch and lap ends of adjoining expansion joint cleat sheet metal sections not less than 4 inches; apply sealant tape or butyl sealant between sections.
6. Notch and lap ends of adjoining expansion joint cover sheet metal sections not less than 6 inches and apply two beads of butyl sealant between sections. Center 8-inch wide cover plate over exposed edge of sheet metal and apply butyl sealant to each side of lap. Rivet cover plate at 2 inches on center to one side of lap only.

I. Through Edge Scupper:

1. Fabricate through wall 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.

J. 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. Provide sealant tape at base of flashing membrane on outside of wall to prevent moisture infiltration.
4. 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.
5. Strip flange of continuous cleat with hot-air welded stripping membrane as specified.
6. Lock metal edge onto continuous cleat crimp as shown.
7. Hand tong metal edge onto continuous cleat.
8. 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.

K. Drip Edge:

1. Fabricate drop edge as shown in detail drawings in 10 foot lengths. Refer to SMACNA Architectural Sheet Metal Manual Figure 2-1 except for continuous cleat dimensions as shown in Contract Drawings.
2. Terminate membrane at roof edge and hot-air weld flashing membrane strip to extend down the outside vertical face over the wall.
3. Provide sealant tape at base of flashing membrane on outside of wall to prevent moisture infiltration.
4. 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.
5. Strip flange of metal edge with hot-air welded stripping membrane as specified in the Contract Drawings.
6. Hand tong metal edge onto continuous cleat.
7. 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 Architectural Sheet Metal Manual 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.

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 72 53

SNOW GUARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Provide snow guards at perimeter eave and upslope side of vent pipe penetrations.

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 07 41 13 "Metal Roof Panels"
2. Section 07 54 00 "Thermoplastic Single Ply Roofing"

1.3 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

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

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

D. Shop Drawings: Snow Guard Layout and Attachment Details

1. Include engineering calculations to document snow guard layout will support the design snow load and snow drift for the building.

1.4 DELEGATED DESIGN

A. Design of snow guard layout by a North Carolina registered Professional Engineer (PE).

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with labels intact.

B. Storage: Adequately protect against damage while stored at the site.

C. Handling: Comply with Manufacturer's instructions.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions required.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers:

1. S-5! Colorgard
2. Alpine SnowGuards
3. Sno Gem
4. Engineer's Accepted Equivalent.

2.2 MATERIALS

A. Snow Guards:

1. Clamps:

   a. Manufactured from 6061-T6 Aluminum extrusions conforming to ASTM B221 or aluminum castings conforming to ASTM B85 and to AA Aluminum Standards and Data.
   b. Clamp Model: Designed for attachment to metal panel seam configuration.
   c. Set Screws: 300 series stainless steel, 18-8 alloy, 3/8 inch diameter, with round nose point.
   d. Attachment Bolts: 300 series stainless steel, 18-8 alloy, 10 mm diameter, with flat washers.

2. Cross Members:

   a. Manufactured from 6061-T6 alloy and temper aluminum extrusions conforming to ASTM B221 and to AA Aluminum Standards and Data.
   b. Receptacle face to receive color-matched metal strips.
   c. Provide splice connectors ensuring alignment and structural continuity at end joints.

3. Color Strips:

   a. Same material and finish as roof panels, obtained from roof panel manufacturer.

4. Snow and Ice Clips: Aluminum, with rubber foot, minimum 3 inches wide.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates to receive Work and report detrimental conditions in writing to Engineer. Commencement of Work will be construed as acceptance of substrates.

B. Coordinate with other Work which affects, connects with, or will be concealed by this Work.

3.2 INSTALLATION

A. Install snow guard per manufacturer's instructions where indicated in the Contract Documents and approved Shop Drawings.

3.3 ADJUSTING

A. Remove and replace damaged snow guards with new material.

3.4 CLEANING

A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises.

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 .
2. Provide retrofit roof drains approved by roof system manufacturer.

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 05 01 30 "Steel Roof Deck Repair and Securement"
2. Section 06 10 00 "Rough Carpentry"
3. Section 07 01 50 "Preparation for Reroofing"
4. Section 07 22 16 "Roof Insulation"
5. Section 07 41 13 "Metal Roof Panels"
6. Section 07 54 00 "Thermoplastic Single Ply Roofing"

1.3 REFERENCES

A. Refer to Section 01 42 00 "References" for referenced standards and applicable building code.

B. Refer to the following references for specification compliance:

1. American Society of Mechanical Engineers - ASME

    a. ASME A112.21.2 Roof Drains

2. International Association Plumbing & Mechanical Officials - IAPMO
3. ASTM International

1.4 SUBMITTALS

A. Refer to Section 01 33 00 "Submittal Procedures".

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

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

D. 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 MATERIALS

A. High Flow Retrofit Roof Drain: Prefabricated aluminum drain insert composed of 11 gauge spun aluminum drain body, 17.5 inch diameter flange, cast aluminum clamping ring, cast aluminum strainer, built-in vortex breaker providing more consistent flow, watertight U-Flow seal and stem length and diameter as required by field conditions. Drain approved by roof system manufacturer. Field verify drain diameter and required stem length prior to ordering drains.

1. Provide 2 inch high, .050 spun aluminum, round, drain attachment to serve as an overflow drain water diverter at overflow roof drains.

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. 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.

C. Do not route piping and fixtures to interfere with the service of in-place equipment and systems.

D. 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

A. Prior to commencement of work on the project inspect leaders 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 scrapping down to the first elbow in the drain line.
4. Flood test leaders to determine that there are no plumbing leaks unrelated to the existing roof system and to verify proper function and flow.
5. 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.
6. 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 .

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 RETROFIT DRAINS

A. Remove clamping ring and strainer dome.

B. Examine drain leader to ensure there are not elbows preventing drain insert from being installed. Field verify this condition along with drain diameter prior to ordering drain inserts.

C. Prepare inside of drain leader in accordance with manufacturer's preparation instructions.

D. Install drain insert in accordance with manufacturer's installation instructions, secure to roof deck and properly tighten compression seal.

E. Provide roof drain flashings as specified.

F. Install and clamping rings and properly tighten bolts/nuts.

G. Install stainer dome and ensure it remains in place daily.

3.5 CLEANING

A. Clean interior of piping of dirt and superfluous materials. Flush with potable water.

END OF SECTION