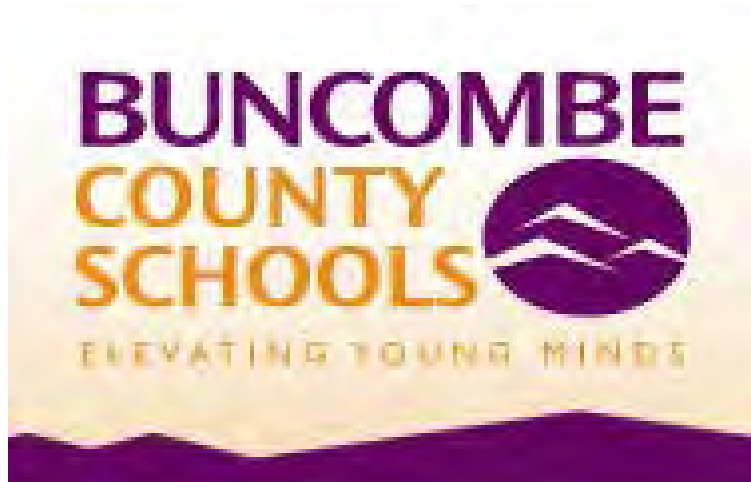


**PROJECT MANUAL  
FOR**

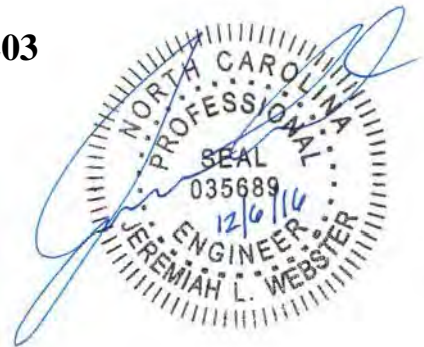


**CHARLES D. OWEN MIDDLE SCHOOL  
AREAS A2-A7 METAL ROOF RETROFIT**

**730 OLD US HWY 70, SWANNANOA, NORTH CAROLINA 28778**

**DECEMBER 6, 2016**

**REI PROJECT NO. 016CLT-203**



NC ENGINEERS LICENSE # C-1520

**REI ENGINEERS**

1927 J.N. PEASE PLACE, SUITE 201, CHARLOTTE, NC 28262

PHONE 704.596.0331 FAX 704.596.0533

ROOFING, WATERPROOFING AND BUILDING ENVELOPE ENGINEERS AND CONSULTANTS

[www.reiengineers.com](http://www.reiengineers.com)

AN EMPLOYEE-OWNED COMPANY

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| <u>No.</u> | <u>Name</u>            |
|------------|------------------------|
| A1         | Roof Plan/Roof Systems |
| A2         | Details                |
| A3.        | Details                |
| A4.        | Details                |
| A5.        | Details                |
| A6.        | Details                |

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Name  
Areas A2 and A3 Roof Framing Plan  
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**END OF SECTION 00 01 10**

## NOTICE TO BIDDERS

Sealed proposals from bidders will be received by The Buncombe County Board of Education in the Executive Conference Room of the Office of The Buncombe County Board of Education, 175 Bingham Road, Asheville, North Carolina no later than 3:00 PM EST, January 25, 2017 for single prime contracts for the furnishing of labor, materials, and equipment entering into the construction of Charles D. Owen Middle School Areas A2-A7 Metal Roof Retrofit.

A pre-bid meeting will be held at Charles D. Owen Middle School located at 730 Old US Hwy 70, Swannanoa, North Carolina 28778 at 10:00 AM on January 5, 2017. Attendance is recommended.

In accordance with NC General Statutes 143-128, this project will be bid using the single prime system. All proposals shall be lump sum.

The Buncombe County Board of Education has adopted guidelines for establishing a verifiable percentage goal for participation by minority businesses in projects awarded pursuant to NC General Statute 143-128 (Suppl. 2001) with respect to the erection, construction, alteration or repair of any buildings when the entire cost of such works shall exceed \$300,000. Among other things, these guidelines provide that notification will be given to certain minority businesses of the projects. The Board's contact person on MBE requirements is Mr. Ron Venturella who may be contacted at 828/255-5891 or by writing to him at 175 Bingham Road, Asheville, North Carolina 28806.

Bidders who wish to mail their proposals shall address them to Mr. Ron Venturella, Purchasing Officer, Buncombe County Schools, 175 Bingham Road, Asheville, North Carolina 28806. To prevent accidental opening, all mailed bids should be clearly marked on the mailer to indicate the project bid, "BID FOR: CHARLES D. OWEN MIDDLE SCHOOL AREAS M2-M6 METAL ROOF RETROFIT. DO NOT OPEN UNTIL 3:00 PM EST, JANUARY 25, 2017."

Complete plans and specifications for this project can be obtained from Buncombe County Schools, 175 Bingham Road, Asheville, North Carolina 28806, by contacting Mr. Ron Venturella at (828) 255-5891 during normal office hours after December 19, 2016. Qualified Bidders may obtain a full set of digital plans and specifications files in PDF format at no charge upon written request.

All Bidders are hereby notified that they must have proper license under the laws of the State of North Carolina, and that the requirements of Chapter 87 of the General Statutes of North Carolina will be observed.

Bids shall include all taxes and, in particular, North Carolina and local sales and use taxes.

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

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of sixty (60) days.

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

By: The Buncombe County Board of Education  
Ann Franklin, Madam Chair

# STATE OF NORTH CAROLINA/BUNCOMBE COUNTY SCHOOLS REQUEST FOR PROPOSAL

**PROJECT:** **CHARLES D. OWEN MIDDLE SCHOOL  
AREAS A2-A7 METAL ROOF RETROFIT (RFP# 63-16)**

**PROJECT DESIGNER:** **Mary Beth Kingston, AIA, Assistant Director of Facilities**

**USING AGENCY:** **Buncombe County Schools**

**ISSUE DATE:** **December 6, 2016**

Sealed proposals from bidders subject to the conditions made a part hereof will be received until **3:00 PM on January 25, 2017** for furnishing all labor, materials, equipment, and services incidental and implied, for completion of the project described herein.

**PREBID CONFERENCE:** A pre-bid conference is scheduled for **10:00 AM on January 5, 2017** at the facility, 730 Old US Hwy 70, Swannanoa, North Carolina 28778

SEND ALL PROPOSALS DIRECTLY TO THE ADDRESS AS SHOWN BELOW:

**Buncombe County Schools, Purchasing Division**  
175 Bingham Road  
Asheville, NC 28806

NOTE: Indicate firm name and RFP number on the front of each sealed proposal envelope or package, along with the date for receipt of proposals specified above.

Direct inquiries concerning this RFP to: Mary Beth Kingston, Asst. Director Phone: 828-255-5916  
Ron Venturella, Purchasing Officer Phone: 828-255-5891

## **THE PROCUREMENT PROCESS**

The following is a general description of the process by which a firm will be selected to provide services.

1. Request for Proposals (RFP) is issued to prospective contractors.
2. A preproposal conference and/or deadline for written questions is five days prior to due date.
3. Proposals in one original will be received from each offeror in a sealed envelope or package. Each original shall be signed and dated by an official authorized to bind the firm. Unsigned proposals will not be considered. Bid bond should be included in a separate sealed envelope.
4. All proposals must be received by the issuing agency not later than the date and time specified on the cover sheet of this RFP.
5. At that date and time the proposals from each responding firm will be opened. Interested parties are cautioned that these costs and their components are subject to further evaluation for completeness and correctness and therefore may not be an exact indicator of an offeror's pricing position. Informal proposals (less than \$ 300,000) are confidential until such time that award has been made. Thereafter, the purchasing division will furnish bid tabs upon request.
6. At their option, the evaluators may request oral presentations or discussion with any or all offerors for the purpose of clarification or to amplify the materials presented in any part of the proposal. However, offerors are cautioned that the evaluators are not required to request clarification; therefore, all proposals should be complete and reflect the most favorable terms available from the offeror.
7. Proposals will be evaluated according to completeness, content, experience with similar projects, ability of the offeror and its staff, and cost. Award of a contract to one offeror does not mean that the other proposals lacked merit, but that, all factors considered, the selected proposal was deemed most advantageous to the State.
8. Offerors are cautioned that this is a request for offers, not a request to contract, and the State/Buncombe County Schools reserves the unqualified right to reject any and all offers when such rejection is deemed to be in the best interest of the State.

**PROPOSAL FORM**

**CHARLES D. OWEN MIDDLE SCHOOL  
AREAS A2-A7 METAL ROOF RETROFIT (RFP# 63-16)**

**DUE DATE: JANUARY 25, 2017 by 3:00 PM**

By submitting this proposal, the potential contractor certifies the following:

- \*\* This proposal is signed by an authorized representative of the firm.
- \*\* It can obtain and submit to the Owner insurance certificates as required within 5 calendar days after notice of award.
- \*\* The cost and availability of all equipment, materials, and supplies associated with performing the services described herein have been determined and included in the proposed cost.
- \*\* All labor costs, direct and indirect, have been determined and included in the proposed cost.
- \*\* All taxes have been determined and included in the proposed cost.
- \*\* The offeror has attended the conference (*if applicable*) or conducted a site visit and is aware of prevailing conditions associated with performing these services.
- \*\* The potential contractor has read and understands the conditions set forth in this RFP and agrees to them with no exceptions.

Therefore, in compliance with this Request for Proposals, and subject to all conditions herein, the undersigned offers and agrees, if this proposal is accepted within 45 days (normally less) from the date of the opening, to furnish the subject services for a cost not to exceed:

**Base Bid:**

\$ \_\_\_\_\_ dollars and \_\_\_\_\_ /100 \$ \_\_\_\_\_

**CONTINGENCY ALLOWANCE INCLUDED:**

It is to be understood that the above base bid amount includes a project contingency allowance of \$10,000.00. This contingency allowance is to be governed as per the terms and conditions specified in Section 01 21 00 of the Project Manual.

**ALTERNATES:**

Alternate No. 1: Provide roof replacement of Area C3.

Add: Words: \_\_\_\_\_ Figures \_\_\_\_\_

Alternate No. 2: Provide roof replacement of Area C4.

Add: Words: \_\_\_\_\_ Figures \_\_\_\_\_

Alternate No. 3: Provide roof replacement of Area C5.

Add: Words: \_\_\_\_\_ Figures \_\_\_\_\_

Alternate No. 4: Provide roof replacement on Area N2.

Add: Words: \_\_\_\_\_ Figures \_\_\_\_\_

**Proposal Form Continued on Next Page**

## **PROPOSAL FORM (CONTINUED)**

### **CHARLES D. OWEN MIDDLE SCHOOL AREAS A2-A7 METAL ROOF RETROFIT (RFP# 63-16)**

**DUE DATE: JANUARY 25, 2017 by 3:00 PM**

#### **UNIT PRICES:**

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the scope of the work all in accordance with the contract documents.

**UP-1:** Remove EPDM roof membrane, replace wet or deteriorated wood  
fiber insulation and provide EPDM roof membrane patch over

replacement area..... \$ \_\_\_\_\_ /SF

**UP-2:** Provide Fall Arrest Anchor ..... \$ \_\_\_\_\_ /EA

#### **MANUFACTURERS:**

Base bid shall utilize metal materials manufactured by \_\_\_\_\_ .  
(One manufacturer only)

#### **SCHEDULE OF COMPLETION:**

Project approval will be requested during the March 2, 2017 Board of Education meeting. The undersigned hereby agrees commence work on this project on June 12, 2017 with all work being substantially complete within ninety (90) calendar days from the date of commencement. Contractor is subject to liquidated damages in the amount of \$250.00 per calendar day for each day in excess of the substantial completion deadline. Final completion all work shall be obtained within fifteen (15) calendar days of the date of substantial completion. Contractor is subject to liquidated damages in the amount of \$250.00 per calendar day for each day in excess of the final completion.

#### **SUBCONTRACTORS:**

If subcontractors are to be utilized, the General Contractor shall fill out all blanks on the list below. All subcontractors shall be listed. The general contractor shall identify work by the general, subcontractor or not applicable. 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 this page.

Trade: \_\_\_\_\_ Company \_\_\_\_\_

Trade: \_\_\_\_\_ Company \_\_\_\_\_

Trade: \_\_\_\_\_ Company \_\_\_\_\_

Trade: \_\_\_\_\_ Company \_\_\_\_\_

Trade: \_\_\_\_\_ Company \_\_\_\_\_

Trade: \_\_\_\_\_ Company \_\_\_\_\_

**We do not plan to use subcontract forces:** \_\_\_\_\_

Contractor Signature (sign if applicable)

**Proposal Form Continued on Next Page**

**PROPOSAL FORM (CONTINUED)**

**CHARLES D. OWEN MIDDLE SCHOOL  
AREAS A2-A7 METAL ROOF RETROFIT (RFP# 63-16)**

**DUE DATE: JANUARY 25, 2017 by 3:00 PM**

Attended Pre-Bid Mtg: YES/NO \_\_\_\_\_

Addendums received and used in computing bid: YES/NO \_\_\_\_\_ Number of Addendums received: \_\_\_\_\_

OFFEROR: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY, STATE, ZIP: \_\_\_\_\_

TELEPHONE NUMBER: \_\_\_\_\_ FAX: \_\_\_\_\_

FED ID No: \_\_\_\_\_ Type & License #: \_\_\_\_\_

E-MAIL: \_\_\_\_\_ MBE Status: \_\_\_\_\_

Principal Place of Business if different from above (See General Information on Submitting Proposals, Item 18.): \_\_\_\_\_

BY: (Signature) \_\_\_\_\_ TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_ (Typed or printed name) \_\_\_\_\_

**End of Proposal Form**

If the winning bid is \$150,000 or greater, the bidder will be required to provide a performance and payment bond before the contract is awarded. Bond forms are included with the RFP. A bid bond is not required for this proposal.

## GENERAL INFORMATION ON SUBMITTING PROPOSALS

1. **EXCEPTIONS:** All proposals are subject to the terms and conditions outlined herein. All responses shall be controlled by such terms and conditions and the submission of other terms and conditions, price lists, catalogs, and/or other documents as part of an offeror's response will be waived and have no effect either on this Request for Proposals or on any contract that may be awarded resulting from this solicitation. Offeror specifically agrees to the conditions set forth in the above paragraph by signature to the proposal.
2. **CERTIFICATION:** By executing the proposal, the signer certifies that this proposal is submitted competitively and without collusion (G.S. 143-54), that none of our officers, directors, or owners of an unincorporated business entity has been convicted of any violations of Chapter 78A of the General Statutes, the Securities Act of 1933, or the Securities Exchange Act of 1934 (G.S. 143-59.2), and that we are not an ineligible vendor as set forth in G.S. 143-59.1. False certification is a Class I felony.
3. **ORAL EXPLANATIONS:** The State/Buncombe County Schools shall not be bound by oral explanations or instructions given at any time during the competitive process or after award.
4. **REFERENCE TO OTHER DATA:** Only information which is received in response to this RFP will be evaluated; reference to information previously submitted shall not be evaluated.
5. **ELABORATE PROPOSALS:** Elaborate proposals in the form of brochures or other presentations beyond that necessary to present a complete and effective proposal are not desired.

In an effort to support the sustainability efforts of the State of North Carolina we solicit your cooperation in this effort.

**It is desirable that all responses meet the following requirements:**

- All copies are printed **double sided**.
  - All submittals and copies are printed on **recycled paper with a minimum post-consumer content of 30%** and indicate this information accordingly on the response.
  - Unless absolutely necessary, all proposals and copies should **minimize or eliminate use of non-recyclable or non re-usable materials** such as plastic report covers, plastic dividers, vinyl sleeves, and GBC binding. Three-ringed binders, glued materials, paper clips, and staples are acceptable.
  - Materials should be submitted in a format which allows for **easy removal and recycling** of paper materials.
6. **COST FOR PROPOSAL PREPARATION:** Any costs incurred by offerors in preparing or submitting offers are the offerors' sole responsibility; the State of North Carolina/Buncombe County Schools will not reimburse any offeror for any costs incurred.
  7. **TIME FOR ACCEPTANCE:** Each proposal shall state that it is a firm offer which may be accepted within a period of 45 days. Although the contract is expected to be awarded prior to that time, the 45 day period is requested to allow for unforeseen delays.
  8. **TITLES:** Titles and headings in this RFP and any subsequent contract are for convenience only and shall have no binding force or effect.
  9. **CONFIDENTIALITY OF PROPOSALS:** In submitting its proposal the offeror agrees not to discuss or otherwise reveal the contents of the proposal to any source outside of the using or issuing agency, government or private, until after the award of the contract. Offerors not in compliance with this provision may be disqualified, at the option of the State/Buncombe County Schools, from contract award. Only discussions authorized by the issuing agency are exempt from this provision.
  10. **RIGHT TO SUBMITTED MATERIAL:** All responses, inquiries, or correspondence relating to or in reference to the RFP, and all other reports, charts, displays, schedules, exhibits, and other documentation submitted by the offerors shall become the property of the State/Buncombe County Schools when received.
  11. **OFFEROR'S REPRESENTATIVE:** Each offeror shall submit with its proposal the name, address, and telephone number of the person(s) with authority to bind the firm and answer questions or provide clarification concerning the firm's proposal.
  12. **SUBCONTRACTING:** Offerors may propose to subcontract portions of the work provided that their proposals clearly indicate what work they plan to subcontract and to whom and that all information required about the prime contractor is also included for each proposed subcontractor.
  13. **PROPRIETARY INFORMATION:** Trade secrets or similar proprietary data which the offeror does not wish disclosed to other than personnel involved in the evaluation or contract administration will be kept confidential to the extent permitted by NCAC T01:05B.1501 and G.S. 132-1.3 if identified as follows: Each page shall be identified in boldface at the top and bottom as "CONFIDENTIAL". Any section of the proposal which is to remain confidential shall also be so marked in boldface on the title page of that section. Cost information may not be deemed confidential. In spite of what is labeled as confidential, the determination as to whether or not it is shall be determined by North Carolina law.

14. **HISTORICALLY UNDERUTILIZED BUSINESSES:** Pursuant to General Statute 143-48 and Executive Order #150, Buncombe County Schools invites and encourages participation in this procurement process by businesses owned by minorities, women, disabled, disabled business enterprises and non-profit work centers for the blind and severely disabled.

The Contractor agrees in particular to maintain open hiring and employment practices and to receive applications for employment in compliance with all requirements of applicable federal, state and local laws and regulations issued pursuant thereto relating to nondiscriminatory hiring and employment practices. Each Prime Contractor shall undertake an affirmative action program to ensure that no person shall be excluded from participation in any employment activities because of age, sex, race, religion, color, national origin or handicap.

15. **PROTEST PROCEDURES:** If an offeror wants to protest a contract awarded pursuant to this solicitation, they must submit a written request to the Purchasing Officer, Buncombe County Schools, 175 Bingham Road, or PO Box 16771, Asheville, NC 28806. This request must be received by the Purchasing Division within thirty (30) consecutive calendar days from the date of the contract award, and must contain specific sound reasons and any supporting documentation for the protest. NOTE: Contract award notices are sent only to those actually awarded contracts, and not to every person or firm responding to this solicitation. Contract status and award notices are available through the purchasing division or the project designer with contact information as shown on the first page of this solicitation. Offeror's may call to obtain a verbal status of contract award. All protests will be handled pursuant to the North Carolina Administrative Code, Title 1, Department of Administration, Chapter 5, Purchase and Contract, Section 5B.1519.
16. **TABULATIONS:** Offeror's may call the purchasing division to obtain a verbal status of contract award.
17. **VENDOR REGISTRATION AND SOLICITATION NOTIFICATION SYSTEM:** Vendor Link NC allows vendors to electronically register free with the State to receive electronic notification of current procurement opportunities for goods and services available on the Interactive Purchasing System. Online registration and other purchasing information are available on the Internet web site: <http://www.state.nc.us/pandc/>.
18. **RECIPROCAL PREFERENCE:** G.S. 143-59 establishes a reciprocal preference law to discourage other states from applying in-state preferences against North Carolina's resident offerors. The "Principal Place of Business" is defined as the principal place from which the trade or business of the offeror is directed or managed.

## NORTH CAROLINA GENERAL CONTRACT TERMS AND CONDITIONS (Contractual and Consultant Services)

1. **GOVERNING LAW:** This contract is made under and shall be governed and construed in accordance with the laws of the State of North Carolina.
2. **SITUS:** The place of this contract, its situs and forum, shall be North Carolina, where all matters, whether sounding in contract or tort, relating to its validity, construction, interpretation and enforcement shall be determined.
3. **INDEPENDENT CONTRACTOR:** The Contractor shall be considered to be an independent contractor and as such shall be wholly responsible for the work to be performed and for the supervision of its employees. The Contractor represents that it has, or will secure at its own expense, all personnel required in performing the services under this agreement. Such employees shall not be employees of, or have any individual contractual relationship with the Agency.
4. **KEY PERSONNEL:** The Contractor shall not substitute key personnel assigned to the performance of this contract without prior written approval by the Agency's Contract Administrator. The individuals designated as key personnel for purposes of this contract are those specified in the Contractor's proposal.
5. **SUBCONTRACTING:** Work proposed to be performed under this contract by the Contractor or its employees shall not be subcontracted without prior written approval of the Agency's Contract Administrator/Project Designer. Acceptance of an offeror's proposal shall include any subcontractor(s) specified therein.
6. **PERFORMANCE AND DEFAULT:** If, through any cause, the Contractor shall fail to fulfill in timely and proper manner the obligations under this agreement, the Agency shall thereupon have the right to terminate this contract by giving written notice to the Contractor and specifying the effective date thereof. In that event, all finished or unfinished deliverable items under this contract prepared by the Contractor shall, at the option of the Agency, become its property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed on such materials. Notwithstanding, the Contractor shall not be relieved of liability to the Agency for damages sustained by the Agency by virtue of any breach of this agreement, and the Agency may withhold any payment due the Contractor for the purpose of setoff until such time as the exact amount of damages due the Agency from such breach can be determined. In case of default by the Contractor, the State may procure the services from other sources and hold the Contractor responsible for any excess cost occasioned thereby. The State reserves the right to require performance bond or other acceptable alternative guarantees from successful offeror without expense to the State.

Upon the entering of a judgment of bankruptcy or insolvency by or against the Contractor, the Agency may terminate this contract for cause.

Neither party shall be deemed to be in default of its obligations hereunder if and so long as it is prevented from performing such obligations by any act of war, hostile foreign action, nuclear explosion, riot, strikes, civil insurrection, earthquake, hurricane, tornado, or other catastrophic natural event or act of God.

7. **TERMINATION:** The Agency may terminate this agreement at any time by 15 days notice in writing from the Agency to the Contractor. In that event, all finished or unfinished deliverable items prepared by the Contractor under this contract shall, at the option of the Agency, become its property. If the contract is terminated by the Agency as provided herein, the Contractor shall be paid for services satisfactorily completed, less payment or compensation previously made.
8. **AVAILABILITY OF FUNDS:** Any and all payments to the Contractor are dependent upon and subject to the availability of funds to the Agency for the purpose set forth in this agreement.
9. **CONFIDENTIALITY:** Any information, data, instruments, documents, studies or reports given to or prepared or assembled by the Contractor under this agreement shall be kept as confidential and not divulged or made available to any individual or organization without the prior written approval of the Agency.
10. **CARE OF PROPERTY:** The Contractor agrees that it shall be responsible for the proper custody and care of any property furnished it for use in connection with the performance of this contract or purchased by it for this contract and will reimburse the State for loss or damage of such property.
11. **COPYRIGHT:** No deliverable items produced in whole or in part under this agreement shall be the subject of an application for copyright by or on behalf of the Contractor.
12. **ACCESS TO PERSONS AND RECORDS:** The State Auditor shall have access to persons and records as a result of all contracts or grants entered into by State agencies or political subdivisions in accordance with General Statute 147-64.7. The Contractor shall retain all records for a period of three years following completion of the contract.
13. **ASSIGNMENT:** No assignment of the Contractor's obligations nor the Contractor's right to receive payment hereunder shall be permitted. However, upon written request approved by the issuing purchasing authority, the State may:
  - a. Forward the contractor's payment check(s) directly to any person or entity designated by the Contractor, or

b. Include any person or entity designated by Contractor as a joint payee on the Contractor's payment check(s). In no event shall such approval and action obligate the State to anyone other than the Contractor and the Contractor shall remain responsible for fulfillment of all contract obligations.

14. **COMPLIANCE WITH LAWS:** The Contractor shall comply with all laws, ordinances, codes, rules, regulations, and licensing requirements (permits) that are applicable to the conduct of its business, including those of federal, state, and local agencies having jurisdiction and/or authority.
15. **AFFIRMATIVE ACTION:** The Contractor shall take affirmative action in complying with all Federal and State requirements concerning fair employment and employment of people with disabilities, and concerning the treatment of all employees without regard to discrimination by reason of race, color, religion, sex, national origin, or disability.
16. **INSURANCE:** During the term of the contract, the contractor at its sole cost and expense shall provide commercial insurance of such type and with such terms and limits as may be reasonably associated with the contract. As a minimum, the contractor shall provide and maintain the following coverage and limits:
- a. Worker's Compensation - The contractor shall provide and maintain Worker's Compensation Insurance, as required by the laws of North Carolina, as well as employer's liability coverage with minimum limits of \$150,000.00, covering all of Contractor's employees who are engaged in any work under the contract. If any work is subcontracted, the contractor shall require the subcontractor to provide the same coverage for any of its employees engaged in any work under the contract.
  - b. Commercial General Liability - General Liability Coverage on a Comprehensive Broad Form on an occurrence basis in the minimum amount of \$2,000,000.00 Combined Single Limit. (Defense cost shall be in excess of the limit of liability).
  - c. Automobile - Automobile Liability Insurance, to include liability coverage, covering all owned, hired and non-owned vehicles, used in connection with the contract. The minimum combined single limit shall be \$500,000.00 bodily injury and property damage; \$500,000.00 uninsured/under insured motorist; and \$100,000.00 medical payment.

Providing and maintaining adequate insurance coverage is a material obligation of the contractor and is of the essence of this contract. All such insurance shall meet all laws of the State of North Carolina. Such insurance coverage shall be obtained from companies that are authorized to provide such coverage and that are authorized by the Commissioner of Insurance to do business in North Carolina. The contractor shall at all times comply with the terms of such insurance policies, and all requirements of the insurer under any such insurance policies, except as they may conflict with existing North Carolina laws or this contract. The limits of coverage under each insurance policy maintained by the contractor shall not be interpreted as limiting the contractor's liability and obligations under the contract.

The Contractor shall furnish a Certificate of Insurance as proof of the above coverages. Certificate will contain provision that the insurance coverages cannot be canceled, reduced in amount or coverage eliminated without 30 days written notice to the Buncombe County Board of Education. Owner's Protective insurance must list the Buncombe County Board of Education as a "Named Insured" as it's interest may appear. Owner's approval of Certificate of Insurance does not decrease or relieve the contractor's responsibility for maintaining insurance coverage as required in this Request for Proposal.

17. **ADVERTISING:** Contractor agrees not to use the existence of this contract, the name of the agency, or the name of the State of North Carolina as part of any commercial advertising.
18. **ENTIRE AGREEMENT:** This contract and any documents incorporated specifically by reference represent the entire agreement between the parties and supersede all prior oral or written statements or agreements. This Request for Proposals, any addenda thereto, and the offeror's proposal are incorporated herein by reference as though set forth verbatim.
- All promises, requirements, terms, conditions, provisions, representations, guarantees, and warranties contained herein shall survive the contract expiration or termination date unless specifically provided otherwise herein, or unless superseded by applicable Federal or State statutes of limitation.
19. **AMENDMENTS:** This contract may be amended only by written amendments duly executed by the Agency and the Contractor.
20. **TAXES:** G.S. 143-59.1 bars the Secretary of Administration from entering into contracts with vendors if the vendor or its affiliates meet one of the conditions of G. S. 105-164.8(b) and refuse to collect use tax on sales of tangible personal property to purchasers in North Carolina. Conditions under G. S. 105-164.8(b) include: (1) Maintenance of a retail establishment or office, (2) Presence of representatives in the State that solicit sales or transact business on behalf of the vendor and (3) Systematic exploitation of the market by media-assisted, media-facilitated, or media-solicited means. By execution of the bid document the vendor certifies that it and all of its affiliates, (if it has affiliates), collect(s) the appropriate taxes.

21. **GENERAL INDEMNITY:** The contractor shall hold and save the State/Buncombe County Schools, its officers, agents, and employees, harmless from liability of any kind, including all claims and losses, with the exception of consequential damages, accruing or resulting to any other person, firm, or corporation furnishing or supplying work, services, materials, or supplies in connection with the performance of this contract, and from any and all claims and losses accruing or resulting to any person, firm, or corporation that may be injured or damaged by the contractor in the performance of this contract and that are attributable to the negligence or intentionally tortious acts of the contractor provided that the contractor is notified in writing within 30 days that the State/Buncombe County Schools has knowledge of such claims. The contractor represents and warrants that it shall make no claim of any kind or nature against the State's agents who are involved in the delivery or processing of contractor goods to the State. The representation and warranty in the preceding sentence shall survive the termination or expiration of this contract.

CONTRACTOR'S SALES TAX REPORT  
NC State and Local Sales Taxes Paid

*Buncombe County Schools*

CONTRACTOR: \_\_\_\_\_ PO#/RFP# \_\_\_\_\_

Address: \_\_\_\_\_ For Period: \_\_\_\_\_

| Invoice Date | Invoice # | Type of Property | NC Tax<br>4.75% | County Tax<br>2.25% | Name of County |
|--------------|-----------|------------------|-----------------|---------------------|----------------|
|              |           |                  |                 |                     |                |
|              |           |                  |                 |                     |                |
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|              |           |                  |                 |                     |                |
|              |           |                  |                 |                     |                |
|              |           |                  |                 |                     |                |
|              |           | <b>TOTAL</b>     | <b>\$</b>       | <b>\$</b>           |                |

I certify that the above figures do not include any tax paid on supplies, tools and equipment which were used to perform this contract and only includes those building materials, supplies, fixtures and equipment which actually became a part of or annexed to the building or structure. I certify that, to the best of my knowledge, the information provided here is true, correct, and complete.

Sworn to and subscribed before me,

This the \_\_\_\_\_ day of  
\_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
Signed

\_\_\_\_\_  
Notary Public

My Commission  
Expires: \_\_\_\_\_

\_\_\_\_\_  
Print or Type Name of Above & Title

Seal

NOTE:  
This certified statement may be subject to audit.

The North Carolina General Assembly has amended the Statute to provide refunds of sales and use tax to local school units in accordance with the provisions of G.S. 105-164. 14(c) effective with tax paid on or after July 1, 1998.

These refunds are to include the "sales and use taxes paid by contractors on building materials, supplies, fixtures and equipment that become a part of or annexed to a building or structure that is owned or leased by the governmental entity and is being erected, altered or repaired for use by the governmental entity (G.S. 105-164.14)."

Sales and Use Tax Technical Bulletin Section 18-2F specifies: "To substantiate a refund claim for sales or use taxes paid on purchases of building materials, supplies, fixtures and equipment by its contractor, the claimant must secure from such contractor certified statements setting forth all of the following information:

- a. the date the property was purchased;
- b. the type of property purchased;
- c. the project for which the property was used;
- d. if the property was purchased in this State, the county in which it was purchased;
- e. if the property was not purchased in this State, the county in which the property was used; and
- f. the amount of sales and use taxes paid.

In the event the contractor makes several purchases from the same vendor, such certified statement must indicate the invoice numbers, the inclusive dates of the invoices, the total amount of the invoices and the State and local sales and use taxes paid thereon. Such statement must also include the cost of any tangible personal property withdrawn from the contractor's warehouse stock and the amount of sales and use tax paid thereon by the contractor. Similar certified statements by his subcontractors must be obtained by the general contractor and furnished to the claimant. Any local sales or use taxes must be shown separately from the State sales or use taxes. The contractor's statements must not contain sales or use taxes paid on purchases of tangible personal property purchased by such contractors for use in performing the contract which does not annex to, affix to or in some manner become a part of the building or structure that is owned or leased by a governmental agency and is being erected, altered or repaired for use by a governmental entity as defined by G.S. 105-164.14(c). Examples of property on which sales or use tax has been paid by the contractor and which shall not be included in the contractor's statement are scaffolding, forms for concrete, fuel for the operation of machinery and equipment, tools, repair parts and equipment rentals.

Please read entire specification package. You will be held accountable for all information. NO payment shall be made if specifications are not followed.

**Scope:** Work shall consist of furnishing all labor, materials, equipment and services, incidental for the completion of work as described herein. All items not specifically mentioned in the specifications, but which obviously are required to make the job complete, shall be included automatically.

**Project Description:** The work consists of Metal Roof Retrofit at Charles D. Owen Middle School on Roof Areas A2-A7 as specified.

**Qualifications:** All Bidders must have proper licenses' for contractors as required by North Carolina State Law. Metal roof panels and metal retrofit framing shall not be subcontracted. Installer of metal roof panels and metal retrofit framing shall be the prime contractor. Prime Contractor s must have General Construction license or Specialty Roofing and Specialty Steel Erection License in order to comply with State Law for proper licensure for the work specified.

**Contractor's Responsibility:** The Contractor shall be responsible for the construction site during the performance of the work. The Contractor shall be responsible for any and all damages to persons and property during the performance of the work and shall further provide all necessary safety measures and shall fully comply with all federal state and local laws, building rules, rules and regulations to prevent accidents or injury to persons or property on or about the location of the work site. This is to include OSHA 1910, General Construction, or those regulations mandated by these specifications. Special attention will be made to proper barricading of the work areas due to the work progressing within an actively operating office atmosphere.

**Safety Regulations:** The Contractor shall adhere to the rules, regulations and interpretations of the North Carolina Department of Labor relating to Occupational Safety and Health Standards for the Construction Industry (Title 29, Code of Federal Regulations, Part 1926, published in Volume 39, Number 122, Part II, June 24, 1974 Federal Register) which is hereby incorporated in these specifications.

**Codes:** All work shall be done in accordance with the specifications and shall comply with North Carolina Building Code, Underwriters' Rules and Regulations and Federal, State and Local Regulations covering work of this nature. Whenever drawings or specifications are in excess of such laws, codes and regulations, the specifications shall hold. All equipment shall have U. L. labels attached.

**Permits:** The Contractor must secure all permits required for the job completion, obtain and deliver to Owner, all certification of inspection issued by the authorities having jurisdiction, with Contractor paying cost of same. Permitting is through the Permitting Division of Buncombe County and Western North Carolina (WNC) Regional Air Quality Agency. **All final certificates must be delivered to owner prior to request for final payment.**

**Workers on Job:** All employees of the Contractor shall, while on Buncombe County Board of Education property, act in a professional and courteous manner. All workers shall be expected to wear long pants and shirts while on Board property. Also, all employees of the Contractor must "sign in" in the main office upon entering the facility and must "sign out" upon leaving the property. Any employee of the Contractor may be told to leave the property by either the Principal or the Assistant Director, if they do not follow the above procedure. The employee shall be replaced with another at no additional cost to the Buncombe County Board of Education.

In accordance with G.S. 14-208.18, all persons who (1) are required to register under the Sex Offender and Public Protection Program AND (2) have been convicted of certain sexually violent offenses or any offense where the victim was under the age of 16 years at the time of the offense are expressly forbidden to knowingly be present on any property owned or operated by the school system, including school buildings, athletic fields,

playgrounds, parking lots, school buses, activity buses or other property of any kind for any reason, including attendance at sporting events or other school related functions, whether before, during or after school hours. It is the responsibility of the contractor or vendor that their employees and sub-contractors are in accordance with G.S. 14-208.18.

**E-Verify:** Contractor shall comply with E-Verify, the federal E-Verify program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hired employees pursuant to federal law and as in accordance with N.C.G.S. §64-25 et seq. In addition, to the best of Contractor's knowledge, any subcontractor employed by Contractor as a part of this contract shall be in compliance with the requirements of E-Verify and N.C.G.S. §64-25 et seq.

**Equipment and Tools:** The Contractor shall use no equipment or tools that are owned by the Buncombe County Board of Education. Also, no employees of the Buncombe County Board of Education shall be utilized by the Contractor except for opening locked doors and giving directions.

**Materials:** No materials shall be stored on site and the Buncombe County Board of Education is not responsible for any materials, equipment or tools lost or stolen from the site.

**Change in the Work:** Changes in the work after execution of the purchase order shall be based upon written agreement by the Owner and the Contractor.

When unforeseen site conditions are identified that require time sensitive changes in the work, the Owner may authorize the Contractor to perform the work, who shall document the time and materials spent to perform the work. The contractor shall provide a lump sum itemized and supported by sufficient substantiating data to permit evaluation, including timesheets, digital photos, material lists and invoices as requested.

For all Change Orders, Overhead, Profit and General Conditions combined, in the total cost to the Owner, shall not exceed the following:

For additive change order work (lump sum):

1. For a Prime Contractor, for any Work performed by its own forces, twenty percent (20%) of the cost.
2. For a Prime Contractor, for Work performed by its subcontractor, ten percent (10%) of the amount due the subcontractor.
3. For each subcontractor included, for any Work performed by the subcontractor's own forces, fifteen percent (15%) of the cost.

Deductive change order work (lump sum)

The Prime Contractor shall include a deduction of at least ten percent (10%) profit. No deduction is required for overhead.

Additive or Deductive Change Order work (unit price)

Overhead, Profit and General Conditions are included in unit prices. Unit Prices are to be added to or deducted from the purchase order as a net amount.

**Clean Up:** The area of work shall be cleaned daily so that the Buncombe County Board of Education shall not incur any additional costs to make the area suitable for the work process. Also, the Contractor shall utilize no trash receptacles or dumpsters owned by the Buncombe County Board of Education. All trash and removed materials shall be properly disposed of off the property.

**Performance of Work:** All work shall be performed at the highest level of quality. The Owner shall be responsible for determining the quality of work, and may notify the Contractor of same. **ANY WORK COMPLETED THAT IS NOT SUITABLE TO THE OWNER SHALL BE REPEATED BY THE CONTRACTOR AT NO COST TO THE OWNER.** Any damage to existing area or utilities will be the responsibility of the Contractor. **NO EXCEPTIONS.**

**Responsible Bidders:** To be considered responsible the lowest bidder for this project must demonstrate or provide the following:

- 1) Contractor's employee who will be on site at all times during construction is certified by the roof manufacturer as required for the specified 20 year warranty.
- 2) Contractor to verify experience with converting from low slope to steep slope roof construction on three projects that most closely reflect the size and complexity of the type of work being requested for the currently proposed project. The similar projects should have been completed within the last five (5) years, at least one of which within the last three (3) years.
- 3) Contractor to be located within 250 miles of the construction site to be able to fulfill the warranty if needed.

**Bonds:** A bid bond is not required. If the winning bid is \$150,000 or greater, the bidder will be required to provide a performance and payment bond before the contract is awarded. Bond forms are included with the RFP.

The Buncombe County Board of Education reserves the right to reject any or all bids  
for any or no reason, and to waive informalities.

**SECTION 00 31 26**  
**EXISTING ASBESTOS INFORMATION**



# EMSL Analytical, Inc.

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EMSL Order: 411607920

Customer ID: REIE25

Customer PO:

Project ID:

Attention: Jeremiah Webster

REI Engineers

1927 JN Pease Place

Suite 201

Charlotte, NC 28262

Phone: (704) 596-0331

Fax: (704) 596-0533

Received Date: 10/07/2016 11:45 AM

Analysis Date: 10/19/2016 - 10/20/2016

Collected Date: 10/04/2016

Project: BCS, Charles D. Owen Middle School Areas A2-A6, C4, C5, C6 Job # 016CLT-203

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

| Sample   | Description   | Appearance                          | Non-Asbestos  |                          | Asbestos      |
|--|---|-------------------------------------|---------------|--------------------------|---------------|
|  |   |                                     | % Fibrous     | % Non-Fibrous            | % Type        |
| Roof Area A2 Sample<br>#1 BUR FM-Tar<br><br>411607920-0001                 | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous |               | 100% Non-fibrous (Other) | None Detected |
| Roof Area A2 Sample<br>#1 BUR FM-Cellulose<br>Layer<br><br>411607920-0001A | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Fibrous<br>Homogeneous     | 15% Cellulose | 85% Non-fibrous (Other)  | None Detected |
| Roof Area A2 Sample<br>#2 BUR FM-Tar<br><br>411607920-0002                 | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous | <1% Cellulose | 100% Non-fibrous (Other) | None Detected |
| Roof Area A2 Sample<br>#2 BUR FM-Cellulose<br>Layer<br><br>411607920-0002A | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous | 30% Cellulose | 70% Non-fibrous (Other)  | None Detected |
| Roof Area A3 Sample<br>#1 BUR FM-Tar<br><br>411607920-0003                 | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous |               | 100% Non-fibrous (Other) | None Detected |
| Roof Area A3 Sample<br>#1 BUR FM-Cellulose<br>Layer<br><br>411607920-0003A | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Fibrous<br>Homogeneous     | 15% Cellulose | 85% Non-fibrous (Other)  | None Detected |
| Roof Area A3 Sample<br>#2 BUR FM-Tar<br><br>411607920-0004                 | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous | <1% Cellulose | 100% Non-fibrous (Other) | None Detected |
| Roof Area A3 Sample<br>#2 BUR FM-Cellulose<br>Layer<br><br>411607920-0004A | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous | 20% Cellulose | 80% Non-fibrous (Other)  | None Detected |
| Roof Area A4 Sample<br>#1 BUR FM-Tar<br><br>411607920-0005                 | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous |               | 100% Non-fibrous (Other) | None Detected |
| Roof Area A4 Sample<br>#1 BUR FM-Cellulose<br>Layer<br><br>411607920-0005A | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Fibrous<br>Homogeneous     | 15% Cellulose | 85% Non-fibrous (Other)  | None Detected |
| Roof Area A4 Sample<br>#2 BUR FM-Tar<br><br>411607920-0006                 | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous | <1% Cellulose | 100% Non-fibrous (Other) | None Detected |

Initial report from: 10/20/2016 11:02:23



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

EMSL Order: 411607920

Customer ID: REIE25

Customer PO:

Project ID:

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

| Sample  | Description   | Appearance                          | Non-Asbestos  |  | Asbestos      |
|---|---|-------------------------------------|---------------|--|---------------|
|   |   |                                     | % Fibrous     | % Non-Fibrous                              | % Type        |
| Roof Area A4 Sample<br>#2 BUR FM-Cellulose<br>Layer | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous | 20% Cellulose | 80% Non-fibrous (Other)                    | None Detected |
| 411607920-0006A                                     |   |                                     |               |  |               |
| Roof Area A5 Sample<br>#1 BUR FM-Tar                | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous |               | 100% Non-fibrous (Other)                   | None Detected |
| 411607920-0007                                      |   |                                     |               |  |               |
| Roof Area A5 Sample<br>#1 BUR FM-Cellulose<br>Layer | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Fibrous<br>Homogeneous     | 15% Cellulose | 85% Non-fibrous (Other)                    | None Detected |
| 411607920-0007A                                     |   |                                     |               |  |               |
| Roof Area A5 Sample<br>#2 BUR FM-Tar                | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous | <1% Cellulose | 100% Non-fibrous (Other)                   | None Detected |
| 411607920-0008                                      |   |                                     |               |  |               |
| Roof Area A5 Sample<br>#2 BUR FM-Cellulose<br>Layer | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous | 15% Cellulose | 85% Non-fibrous (Other)                    | None Detected |
| 411607920-0008A                                     |   |                                     |               |  |               |
| Roof Area A6 Sample<br>#1 BUR FM-Tar                | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous |               | 100% Non-fibrous (Other)                   | None Detected |
| 411607920-0009                                      |   |                                     |               |  |               |
| Roof Area A6 Sample<br>#1 BUR FM-Glass<br>Layer     | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Fibrous<br>Homogeneous     | 20% Glass     | 80% Non-fibrous (Other)                    | None Detected |
| 411607920-0009A                                     |   |                                     |               |  |               |
| Roof Area A6 Sample<br>#1A Light Weight Deck        | Light Weight Deck<br>Material, Light Brown<br>Color, Sandy Texture  | Beige<br>Fibrous<br>Homogeneous     | 2% Cellulose  | 5% Mica<br>93% Non-fibrous (Other)         | None Detected |
| 411607920-0010                                      |   |                                     |               |  |               |
| Roof Area A6 Sample<br>#2 BUR FM-Tar                | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous |               | 5% Ca Carbonate<br>95% Non-fibrous (Other) | None Detected |
| 411607920-0011                                      |   |                                     |               |  |               |
| Roof Area A6 Sample<br>#2 BUR FM-Glass<br>Layer     | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous | 8% Glass      | 92% Non-fibrous (Other)                    | None Detected |
| 411607920-0011A                                     |   |                                     |               |  |               |
| Roof Area A6 Sample<br>#2A Light Weight Deck        | Light Weight Deck<br>Material, Light Brown<br>Color, Sandy Texture  | Gray<br>Non-Fibrous<br>Homogeneous  | 2% Cellulose  | 5% Mica<br>93% Non-fibrous (Other)         | None Detected |
| 411607920-0012                                      |   |                                     |               |  |               |
| Roof Area C3 Sample<br>#1 BUR FM-Tar                | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous |               | 100% Non-fibrous (Other)                   | None Detected |
| 411607920-0013                                      |   |                                     |               |  |               |
| Roof Area C3 Sample<br>#1 BUR FM-Cellulose<br>Layer | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Fibrous<br>Homogeneous     | 15% Cellulose | 85% Non-fibrous (Other)                    | None Detected |
| 411607920-0013A                                     |   |                                     |               |  |               |

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EMSL Order: 411607920

Customer ID: REIE25

Customer PO:

Project ID:

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

| Sample  | Description   | Appearance                          | Non-Asbestos  |   | Asbestos      |
|---|---|-------------------------------------|---------------|---|---------------|
|   |   |                                     | % Fibrous     | % Non-Fibrous   | % Type        |
| Roof Area C3 Sample<br>#2 BUR FM-Tar                | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous | <1% Cellulose | 5% Quartz<br>5% Ca Carbonate<br>90% Non-fibrous (Other) | None Detected |
| 411607920-0014                                      |   |                                     |               |   |               |
| Roof Area C3 Sample<br>#2 BUR FM-Cellulose<br>Layer | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous | 20% Cellulose | 80% Non-fibrous (Other)                                 | None Detected |
| 411607920-0014A                                     |   |                                     |               |   |               |
| Roof Area C4 Sample<br>#1 BUR FM-Cellulose<br>Layer | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Fibrous<br>Homogeneous     | 20% Cellulose | 80% Non-fibrous (Other)                                 | None Detected |
| 411607920-0015                                      |   |                                     |               |   |               |
| Roof Area C4 Sample<br>#1 BUR FM-Brown<br>Layer     | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Brown<br>Fibrous<br>Homogeneous     | 99% Cellulose | 1% Non-fibrous (Other)                                  | None Detected |
| 411607920-0015A                                     |   |                                     |               |   |               |
| Roof Area C4 Sample<br>#2 BUR FM-Cellulose<br>Layer | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous | 20% Cellulose | 80% Non-fibrous (Other)                                 | None Detected |
| 411607920-0016                                      |   |                                     |               |   |               |
| Roof Area C4 Sample<br>#2 BUR FM-Brown<br>Layer     | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Brown<br>Fibrous<br>Homogeneous     | 95% Cellulose | 5% Non-fibrous (Other)                                  | None Detected |
| 411607920-0016A                                     |   |                                     |               |   |               |
| Roof Area C5 Sample<br>#1 BUR FM-Insulation         | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Brown/Tan<br>Fibrous<br>Homogeneous | 99% Cellulose | 1% Non-fibrous (Other)                                  | None Detected |
| 411607920-0017                                      |   |                                     |               |   |               |
| Roof Area C5 Sample<br>#1 BUR FM-Cellulose<br>Layer | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Fibrous<br>Homogeneous     | 20% Cellulose | 80% Non-fibrous (Other)                                 | None Detected |
| 411607920-0017A                                     |   |                                     |               |   |               |
| Roof Area C5 Sample<br>#1 BUR FM-Brown<br>Layer     | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Brown<br>Fibrous<br>Homogeneous     | 99% Cellulose | 1% Non-fibrous (Other)                                  | None Detected |
| 411607920-0017B                                     |   |                                     |               |   |               |
| Roof Area C5 Sample<br>#2 BUR FM-Cellulose<br>Layer | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Black<br>Non-Fibrous<br>Homogeneous | 20% Cellulose | 80% Non-fibrous (Other)                                 | None Detected |
| 411607920-0018                                      |   |                                     |               |   |               |
| Roof Area C5 Sample<br>#2 BUR FM-Brown<br>Layer     | Built Up Roof, Field<br>Membrane Black Tar<br>with Gravel Surfacing | Brown<br>Non-Fibrous<br>Homogeneous | 95% Cellulose | 5% Non-fibrous (Other)                                  | None Detected |
| 411607920-0018A                                     |   |                                     |               |   |               |

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EMSL Order: 411607920

Customer ID: REIE25

Customer PO:

Project ID:

Analyst(s)

Eric Loomis (17)

Kyle Collins (18)

Lee Plumley, Laboratory Manager  
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

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

Initial report from: 10/20/2016 11:02:23

## **SECTION 00 60 00**

### **PROJECT FORMS**

#### **PART 1 GENERAL**

##### **1.01 GENERAL**

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

1. Performance Bond Form - 00 61 13.13
2. Payment Bond Form - 00 61 13.16
3. Request for Interpretation - Section 00 63 13
4. Substitution Request Form - Section 00 63 25
5. Change Proposal Form - Section 00 63 55
6. Contractors Two Year Warranty - Section 00 65 36
7. Roofing Close-out Checklist - Section 00 66 00

#### **PART 2 PRODUCTS (NOT USED)**

#### **PART 3 EXECUTION (NOT USED)**

**END OF SECTION 00 60 00**

**PERFORMANCE BOND**

Date of Execution  
of this Bond:

\_\_\_\_\_

Name and Address of  
Principal (Contractor):

\_\_\_\_\_

\_\_\_\_\_

Name and Address  
of Surety:

\_\_\_\_\_

\_\_\_\_\_

Name and Address of  
Contracting Body:

THE BUNCOMBE COUNTY BOARD OF EDUCATION, a  
body corporate of the State of North Carolina, 175 Bingham Road,  
Asheville, NC 28806.

Amount of Bond:

\_\_\_\_\_

Contract:

That certain contract by and between the Principal and the  
Contracting Body above named, dated \_\_\_\_\_  
for \_\_\_\_\_

\_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into a certain contract with the Contracting Body, as identified and shown above and hereto attached.

NOW THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

THIS PERFORMANCE BOND is made and given pursuant to the requirements and provisions of Section 129 of Chapter 143 of the General Statutes of North Carolina and pursuant to Article 3 of Chapter 44-A of the General Statutes of North Carolina, and each and every provision set forth and contained in Article 3 of Chapter 44-A of the General Statutes of North Carolina is incorporated herein, made a part hereof, and deemed to be conclusively written into this Bond.

PFB 1

IN WITNESS WHEREOF, the above-bounded parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

\_\_\_\_\_  
Principal (Name of individual, individual and  
trade name, partnership, corporation or joint  
venture)

WITNESS:

\_\_\_\_\_  
(Proprietorship of Partnership)

BY: \_\_\_\_\_ (SEAL)

TITLE: \_\_\_\_\_  
(Owner, partner, office held in corporation,  
joint venture)

(Corporate Seal)

ATTEST: (Corporation)

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_  
(Corporate Secretary of Assistant Secretary only)

WITNESS:

\_\_\_\_\_  
Surety (Name of Surety Company)

\_\_\_\_\_

BY: \_\_\_\_\_

TITLE: Attorney-in-Fact

(Corporate Seal of Surety)

COUNTERSIGNED:

\_\_\_\_\_  
(Address of Attorney-in-Fact)

\_\_\_\_\_

\_\_\_\_\_  
N.C. Licensed Resident Agent

**PAYMENT BOND:**

Date of Execution  
of this Bond: \_\_\_\_\_

Name and Address of  
Principal (Contractor): \_\_\_\_\_

Name and Address  
of Surety: \_\_\_\_\_

Name and Address of  
Contracting Body: THE BUNCOMBE COUNTY BOARD OF EDUCATION, a  
body corporate of the State of North Carolina, 175 Bingham Road,  
Asheville, NC 28806.

Amount of Bond: \_\_\_\_\_

Contract: That certain contract by and between the Principal and the  
Contracting Body above named, dated \_\_\_\_\_  
for \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into a certain contract with the Contracting Body, as identified and shown above and hereto attached.

NOW THEREFORE, if the Principal shall promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications and extensions of time of said contract that may hereafter be made, notice of which modifications and extensions of time to the Surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

THIS PAYMENT BOND is made and given pursuant to the requirements and provisions of Section 129 of Chapter 143 of the General Statutes of North Carolina and pursuant to Article 3 of Chapter 44-A of the General Statutes of North Carolina, and each and every provision set forth and contained in Article 3 of Chapter 44-A of the General Statutes of North Carolina is incorporated herein, made a part hereof, and deemed to be conclusively written into this Bond.

PYB 1

Section 61 13.16

IN WITNESS WHEREOF, the above-bounded parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

\_\_\_\_\_  
Principal (Name of individual, individual  
and trade name, partnership, corporation or  
joint venture)

WITNESS:

\_\_\_\_\_  
(Proprietorship of Partnership)

BY: \_\_\_\_\_ (SEAL)

TITLE: \_\_\_\_\_  
(Owner, partner, office held in corporation,  
joint venture)

(Corporate Seal)

ATTEST: (Corporation)

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_  
(Corporate Secretary of Assistant Secretary only)

\_\_\_\_\_  
Surety (Name of Surety Company)

WITNESS:

\_\_\_\_\_  
BY: \_\_\_\_\_

TITLE: Attorney-in-Fact

(Corporate Seal of Surety)

\_\_\_\_\_  
(Address of Attorney-in-Fact)

COUNTERSIGNED:

\_\_\_\_\_  
N.C. Licensed Resident Agent

PYB 2

**SECTION 00 63 13**

**REQUEST FOR INTERPRETATION**

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Project: \_\_\_\_\_ RFI Number: \_\_\_\_\_

From: \_\_\_\_\_ Date: \_\_\_\_\_

A/E: \_\_\_\_\_ A/E Project No.: \_\_\_\_\_

Contract For: \_\_\_\_\_ Contract Date: \_\_\_\_\_

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| Specification Section: | Paragraph: | Drawing Reference: | Detail: |
|------------------------|------------|--------------------|---------|
| Request:               |            |                    |         |

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Signed By: \_\_\_\_\_

Response: \_\_\_\_\_

☐ Attachments

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Response From: \_\_\_\_\_ To: \_\_\_\_\_ Date Rec'd: \_\_\_\_\_ Date Ret'd: \_\_\_\_\_

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Signed By: \_\_\_\_\_ Date: \_\_\_\_\_

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Copies:      ☐ Owner      ☐ Contractor      ☐ A/E      ☐ Other

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**SECTION 00 63 25**

**SUBSTITUTION REQUEST FORM**

Project \_\_\_\_\_  
Date: \_\_\_\_\_ Bid Opening 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<br>to Work as Noted in Spec | _____    |

| Criteria or Specified Product                                       | Included |
|---|----------|
| Product Data  | _____    |
| Fabrication Drawings  | _____    |
| Samples Where Applicable  | _____    |
| List of changes or Modifications Needed<br>to Work as Noted in Spec | _____    |

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

Signed: \_\_\_\_\_

**END OF SECTION 00 63 25**

**SECTION 00 63 55**

**CHANGE PROPOSAL FORM**

**Project:** \_\_\_\_\_  
**Contractor:** \_\_\_\_\_

**Project No.:** \_\_\_\_\_  
**Change Order No.:** \_\_\_\_\_

**Description of change:** \_\_\_\_\_

|   |  | <b>SUBTOTALS</b> |
|---|--|------------------|
| <b>Materials</b>  | (Attach list with Quantity, 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  | \$ _____         |
| 5   | Total Materials (1 + 2 + 3 + 4)  | \$ _____         |
| <b>Labor</b>  |  |                  |
| 6   | Total manhours: _____ MH @ \$ _____ / hr   | \$ _____         |
| 7   | Overhead & profit on Item 6<br>(15% maximum on straight cost, not premium portion; includes supervisor's time) | \$ _____         |
| 8   | Payroll taxes and insurance _____ %  | \$ _____         |
| 9   | Total Labor (6 + 7 + 8)  | \$ _____         |
| <b>Equipment Rental (Include quotes)</b>                                    |  |                  |
| 10  | Equipment rental   | \$ _____         |
| 11  | Overhead & profit on Item 10 (6% maximum)  | \$ _____         |
| 12  | Total Equipment Rental (10 + 11 + 12)  | \$ _____         |
| <b>Subcontractors (Include quotes with material &amp; equipment backup)</b> |  |                  |
| 13  | Subcontractors   | \$ _____         |
| 14  | Overhead & profit on Item 13 (6% maximum)  | \$ _____         |
| 15  | Total Subcontractors (13 + 14)   | \$ _____         |
| 16  | Subtotal of Proposal (5 + 9 + 12 + 15)   | \$ _____         |
| 17  | Bonds (% of subtotal of proposal) _____ %  | \$ _____         |
| <b>TOTAL OF CHANGE PROPOSAL (16 + 17)</b>                                   |  | <b>\$ _____</b>  |

Time Extension Request: \_\_\_\_\_ calendar day(s)

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

Contractor's Signature \_\_\_\_\_ Date: \_\_\_\_\_

Approval Recommended by the Engineer: \_\_\_\_\_ Date: \_\_\_\_\_

Owner's Representative Approval: \_\_\_\_\_ Date: \_\_\_\_\_

**SECTION 00 65 36**

**CONTRACTOR'S TWO-YEAR WARRANTY**

Know all men by these presents, that we, (Contractor) \_\_\_\_\_, having installed roofing system, flashings and sheet metal on the Charles D. Owen Middle School Areas A2-A7 Metal Roof Retrofit under contract between Buncombe County Schools (Owner) and Contractor, warrant to the Owner with respect to said work that for a period of two (2) years from date of substantial completion, the work shall be absolutely watertight and free from any and all leaks, provided however the following are excluded from this Warranty:

- a. Defects or failures resulting from abuse by the Owner.
- b. Defect in design involving failure of (1) structural frame, (2) load bearing walls, and (3) foundations.
- c. Damages caused by fire, tornado, hail, hurricane, acts of God, wars, vandalism, riots or civil commotion.

We, Contractor, agree that should any leaks occur in the work we will perform emergency repairs within 24 hours notice and perform permanent repairs within a reasonable time in a manner to restore the work to a watertight condition by methods compatible to the system and acceptable under industry standards and general practice, all at no expense to the Owner.

We, Contractor, further agree that for a period of two (2) years from date of substantial completion referred to above, we will make repairs at no expense to the Owner to any defects which may develop in the work in a manner compatible to the system and acceptable under industry standards and general practice as established by the Engineer.

Signature: \_\_\_\_\_ Title: \_\_\_\_\_

\_\_\_\_\_ Carolina

\_\_\_\_\_ County

I, \_\_\_\_\_, a Notary Public for \_\_\_\_\_ County, \_\_\_\_\_ Carolina, 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\_\_\_\_\_.

\_\_\_\_\_  
Notary Public (OFFICIAL SEAL)

My commission expires \_\_\_\_\_, 20\_\_\_\_\_.

**END OF SECTION 00 65 36**

# Buncombe County Schools Facilities Department

## Re-Roofing Administrative & Close Out Requirements

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### **Pre-Construction Administrative Requirements**

### **Received**

1. Approved Submittals/Shop Drawings
2. Pre-Installation Notice; Accepted by roof manufacturer
3. Permits

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### **Project Close Out**

1. Manufacturer's Final Inspection Report
2. Approved completion of Punch List
3. Allowance Authorization & Change Orders
4. Accepted warranties
  - a. Manufacturer's 20-year Metal Roof Weathertight Warranty
  - b. Manufacturer's Metal Panel Finish Warranty
  - c. Contractor's 2-year warranty
5. Operations & Maintenance Documents
6. Documentation of acceptance from Authorities Having Jurisdiction (AHJ)
7. Final Invoice

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### **NOTES:**

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## SECTION 01 11 00

### SUMMARY OF WORK

#### **PART 1 GENERAL**

##### **1.01 RELATED DOCUMENTS**

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

##### **1.02 WORK COVERED BY CONTRACT DOCUMENTS**

- A. Project Identification: Charles D. Owen Middle School Areas A2-A7 Metal Roof Retrofit
- B. Project Location: 730 Old US 70, Swannanoa, NC 28778
- C. Owner: Buncombe County Schools
- D. Engineer: The Contract Documents, dated December 6, 2016, were prepared by REI Engineers.
- E. This work includes the provision of all labor, material, equipment, supervision and administration to integrate the work outlined in this project manual into the total building system such that no leakage into the system occurs. In general, the scope of work in the **Base Bid** will include:
  - 1. Areas A2, A3, A4, A5, A6 and A7: Prepare existing low slope EPDM roof and provide steep slope retrofit framing and standing seam metal roof including new wall panels, soffit panels, sheet metal flashings, gutters, downspouts, and accessories to provide a complete, watertight, 20-year warrantable roof assembly.
  - 2. Contractor shall be responsible to ensure retrofit framing and fasteners penetrating EPDM roof system are installed in a watertight condition.
  - 3. Provide snow guard system along gutter edge of Areas A2-A7.
  - 4. Provide twelve (12) mill finish aluminum standing seam roof anchors certified for 5,000 lbs. by OHSA/ANSI in locations as determined by Owner. Install and tighten in accordance with manufacturer's printed installation instructions.
- F. The contractor is responsible for all electrical, plumbing, mechanical, and other related trade work necessary to facilitate project operations.
  - 1. Contractor is responsible for re-locating all conduit, HVAC equipment, curbs, and/or plumbing necessary to comply with the requirements of these documents.
  - 2. All work shall conform to the requirements of the current Building Code approved in the State of the project location.
  - 3. Provide permits, inspections and acceptance by Buncombe County for all subcontract work.
  - 4. Avoid disruptions of school instruction. Coordinate any interruption of services with school schedule and staff.
- G. Asbestos Containing Roofing Materials (ACRM):
  - 1. No roofing materials anticipated to be disturbed during the project tested positive for asbestos.
  - 2. The overhang soffit is reported to be constructed with asbestos board. Contractor

shall not disturb this material during construction. The attachment of the hat channel framing for soffit panels shall be in the center of the steel plate between asbestos board joints so as to not disturb the asbestos boards.

3. It is the intention of these specifications that no asbestos bearing materials be incorporated into the work. In the event the contractor should determine unanticipated asbestos bearing materials to be present in the existing building components, Contractor is to stop all work in the affected area, notify the Engineer and Owner, and provide temporary protection as required. Costs incurred, if any, due to the presence of hidden and/or unanticipated asbestos bearing materials will be authorized by Change Order to this contract.

- 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. Specific items listed herein may improve the standards required by the manufacturers and will take precedence where their compliance will not affect the manufacturers' guarantee or warranty provisions.

### **1.03 CONTRACT**

- A. Project will be constructed under a single prime general construction contract.

### **1.04 SITE INVESTIGATION**

- A. The Contractor acknowledges that he has satisfied himself as to the nature and location of the Work, the general and local conditions, particularly those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, ground water table or similar physical conditions at the site, the conformation and condition of the ground, the character, quality and quantity of surface and subsurface materials to be encountered, the character of equipment and facilities needed prior to and during the prosecution of the Work and all other matters which can in any way affect the Work or the cost thereof under this Contract. Any failure by the Contractor to acquaint himself with all the available information concerning these conditions will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the Work. Field measurements shall be taken at the site by the Contractor to verify all data and conditions affected by the Work.

### **1.05 WORK UNDER OTHER CONTRACTS**

- A. Separate Contract: Owner may award a separate contract for performance of certain construction operations at Project site.
  1. No work under other contracts is anticipated.
- B. Contractor shall cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying Work under this Contract.

### **1.06 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. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
  2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
    - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION 01 11 00**

## **SECTION 01 14 00**

### **WORK RESTRICTIONS**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

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

##### **1.02 RELATED DOCUMENTS**

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

##### **1.03 WORK SEQUENCE**

- A. The Work shall be conducted 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 will provide alternative usage.
  - 3. Construction shall be scheduled in such a manner that once work has commenced on one facility, the Contractors work force shall remain at that facility continuously each work day through final completion at that facility.

##### **1.04 WORK RESTRICTIONS**

- A. Works hours shall generally be performed during normal business hours. Should the Contractor elect to work outside of normal business hours, notification to the Owner and Engineer at least 48 hours in advance shall be required. No work shall be scheduled without prior notification and authorization.
- B. Contractor shall coordinate work schedule with School's testing and special events schedule and may not be allowed to be on-site during certain testing days/events.

##### **1.05 OCCUPANCY REQUIREMENTS**

- A. Owner Occupancy
  - 1. Owner will occupy the premises during the entire period of construction to conduct his normal operations. Cooperate with Owner in all construction operations to minimize conflict, and to facilitate Owner usage.
  - 2. Contractor shall at all times conduct his operations as to insure the least inconvenience and the greatest amount of safety and security for the Owner, his staff, and the general public.
  - 3. Control noise from operations so that building occupants are not affected.

##### **1.06 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 fire lanes, driveways and entrances and exits serving premises clear and available to Owner, Owner's employees, and emergency vehicles and personnel at all times. Do not use these areas for parking or storage of materials.
  - a. Schedule deliveries to minimize use of driveways and entrances.
  - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
  - c. Schedule deliveries to avoid student pick up and drop off times.
3. Move any stored materials and equipment that interfere with operations of the Owner.

**B. Use of Existing Building**

1. Maintain existing building in a weathertight condition throughout construction period.
2. To take every precaution against injuries to persons or damage to property.
3. Protect building, its contents, and its occupants during construction period.
4. The Contractor shall not overload or permit any part of the structure to be loaded with such weights as will endanger its safety or to cause excessive deflection. Materials placed on the roof prior to installation shall be equally distributed over the roof area.
5. To protect any existing surface improvements, such as pavements, curbs, sidewalks, lawn and landscaped areas, utilities, etc.
6. To repair to the Owner and Engineer's satisfaction, or to restore to a condition equal to that existing at the time of award of Contract, or to make restitution acceptable to the Owner, any and all damages to the building, its contents, or surface improvements resulting from, or attributable to, the work operation.

**1.07 OWNER POLICIES**

**A. Tobacco Policy**

1. The Owner has adopted a Tobacco Free Policy which applies to all school property. This is a total ban on all 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 shall constitute 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, all 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, any gun, rifle, pistol or other firearm of any kind; or any 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 any 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 any 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 shall 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 any private police employed by the School Board, when acting in the discharge of their official duties.

C. Criminal Record Investigation – Contractor Agreement

1. When requested by Owner, the successful bidder shall obtain a county, state and national criminal history covering the past ten years on any contractor applicant or contractor employee, hereafter called prospective worker, providing services to Owner. As a minimum, criminal information sources will 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 shall be forwarded to the Federal Bureau of Investigation for the search. Previously conducted criminal histories more than one year old must be updated. The Contractor shall provide a Criminal Histories Report two weeks prior to arriving "on-site" and said report will be updated monthly for all 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 any other disqualifying offense as determined by the Owner Superintendent, will not be allowed on the property.

D. Conduct Policy

1. The conduct of all contractor employees during any project shall be exemplary; at no time shall profanity, drinking, lewd or suggestive comments or gestures or other acts of this nature be tolerated.

E. Drug Free Policy

1. Owner conforms to a drug free policy. Any 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 shall constitute 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 at all times, as well as long pants. Identification of employees, vehicles, uniforms, etc. may be required when indicated.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION 01 14 00**

## **SECTION 01 21 00**

### **ALLOWANCES**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Administrative and procedural requirements governing allowances.

##### **1.02 RELATED DOCUMENTS**

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

##### **1.03 CONTINGENCY ALLOWANCE**

- A. A \$10,000.00 contingency allowance shall be included in the base bid.
- B. Any unused portion remaining at the completion of the contract shall be credited back to the Owner as a credit.
- C. The Owner reserves the right to modify the contingency allowance prior to award of Contract.

**END OF SECTION 01 21 00**

## **SECTION 01 22 00**

### **UNIT PRICES**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Administrative and procedural requirements for unit prices.

##### **1.02 RELATED DOCUMENTS**

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

##### **1.03 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.

##### **1.04 UNIT PRICE MEASUREMENT**

- A. Prior to performing any work under a unit price as specified herein, the Contractor shall notify the Engineer to allow for measurement of the actual quantities of work. Any work performed under these items without prior approval and measurement shall be at the Contractor's expense.
- B. The Contractor shall 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.

##### **1.05 UNIT PRICE PAYMENT**

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

##### **1.06 UNIT PRICE PERFORMANCE**

- A. Unit price work shall be installed in accordance with the applicable specification section(s) and Contract Drawings for the project.

#### **PART 2 PRODUCTS (NOT USED)**

#### **PART 3 EXECUTION**

##### **3.01 SCHEDULE OF UNIT PRICES**

- A. Unit prices for the items indicated below shall be provided on the Bid Form.

1. UP-1: Remove EPDM roof membrane, replace wet or deteriorated wood fiber insulation and provide EPDM roof membrane patch over replacement area.
  - a. Unit of Measurement: Square Foot (SF)
2. UP-2: Provide Fall Arrest Anchor
  - a. Unit of Measurement: Each (EA)

**END OF SECTION 01 22 00**

## **SECTION 01 23 00**

### **ALTERNATES**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Administrative and procedural requirements for alternates.

##### **1.02 RELATED DOCUMENTS**

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

##### **1.03 DEFINITIONS**

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

##### **1.04 ALTERNATES**

- A. Indicate on the Bid Form whether the alternate bid amount is to be added to or deducted from the base bid in the event the alternate bids are accepted.
- B. The Owner reserves the right to accept or reject any or all of the alternate bids.
- C. Each Bidder shall be 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 full and proper allowance therefore in the submission of any alternate bid.
- D. Include the cost of each alternate bid as specified in the technical specification sections and/or as described on the drawings. Work required by the alternate bids shall be performed 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 for a period not to exceed sixty (60) calendar days from the time of accepting the contract without a change in the dollar amount of the alternate bids.

#### **PART 2 PRODUCTS (NOT USED)**

#### **PART 3 EXECUTION**

##### **3.01 SCHEDULE OF ALTERNATES**

- A. Alternate No. 1: Provide roof replacement on Roof Area C3.

1. Remove and dispose of the existing roof system including flashings and sheet metal down to the existing wood plank deck; secure the wood plank deck to structural framing members; adhere tapered insulation system in foam adhesive; adhere overlayment insulation in foam adhesive; fully adhere thermoplastic polyolefin single ply membrane along with flashings and accessories; provide new sheet metal flashings and trim to provide a complete, watertight, 20-year warrantable roof assembly.
- B. Alternate No. 2: Provide roof replacement on Roof Area C4.
1. Remove and dispose of the existing roof system including flashings and sheet metal down to the existing wood plank deck; secure the wood plank deck to structural framing members; adhere tapered insulation system in foam adhesive; adhere overlayment insulation in foam adhesive; fully adhere thermoplastic polyolefin single ply membrane along with flashings and accessories; provide new sheet metal flashings and trim to provide a complete, watertight, 20-year warrantable roof assembly.
- C. Alternate No. 3: Provide roof replacement on Roof Area C5.
1. Remove and dispose of the existing roof system including flashings and sheet metal down to the existing wood plank deck; secure the wood plank deck to structural framing members; adhere tapered insulation system in foam adhesive; adhere overlayment insulation in foam adhesive; fully adhere thermoplastic polyolefin single ply membrane along with flashings and accessories; provide new sheet metal flashings and trim to provide a complete, watertight, 20-year warrantable roof assembly.
- D. Alternate No. 4: Provide roof replacement on Roof Area N2.
1. Remove and dispose of the existing ballast, roof membrane, flashings and sheet metal down to the existing tapered insulation system to remain; mechanically attach overlayment insulation; fully adhere thermoplastic polyolefin single ply membrane along with flashings and accessories; provide new sheet metal flashings and trim to provide a complete, watertight, 20-year warrantable roof assembly.

**END OF SECTION 01 23 00**

## **SECTION 01 25 00**

### **PRODUCT SUBSTITUTIONS**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. This Section specifies administrative and procedural requirements for handling requests for substitutions prior to the Owner's receipt of bids.

##### **1.02 RELATED DOCUMENTS**

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

##### **1.03 DEFINITIONS**

- A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Requests for changes in products, materials, and equipment, of construction required by Contract Documents proposed by the Contractor are considered requests for "substitutions". The following are not considered substitutions:
  - 1. Substitutions that are requested by Bidders beyond the 14 days prior to bid opening submittal period.
  - 2. Revisions to Contract Documents requested by the Owner or Engineer.
  - 3. Specified options of products and construction methods included in Contract Documents.
  - 4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

##### **1.04 SUBMITTALS – PRIOR TO BID**

- A. Substitution Request Submittal: Written requests for substitution from prime bidders will be considered if received by the Engineer ten (10) calendar days prior to the bid opening.
  - 1. Submit each request for substitution on the form contained in Section 00 61 12- Substitution Request Form for consideration in accordance with procedures required below.
  - 2. Identify the product or the fabrication or installation method to be replaced in each request. Include related specification sections and drawing number.
  - 3. Provide complete documentation on both the product specified and the proposed substitution including the following information as appropriate.
    - a. Comparison of specified and proposed substitute product data, fabrication drawings, and installation procedures.
    - b. Samples where applicable or requested.
    - c. A detailed comparison of significant qualities of the proposed substitution with those of the work specified.
    - d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors that will become necessary to

accommodate the proposed substitution.

4. Certification by the Contractor or manufacturer that the substitution proposed is equal-to or better in every respect to that required by the Contract Documents, and that it will perform equal or superior to product specified in the application indicated. The Contractor waives any right to additional payment or time, which may subsequently become necessary because of the failure of the substitution to perform adequately.
  5. Engineer's Action: The Engineer may request additional information or documentation necessary for evaluation of the request. The Engineer will notify the Contractors of acceptance of the proposed substitution by means of an addendum to the bid documents. If the proposed substitute is accepted through an addendum use the product specified by name.
- B. Engineer's Substitution Approval during bidding and subsequent addendums does not void the Contractor's responsibility to submit the required shop drawings and comply with the other contract documents and requirements.

## **1.05 SUBMITTALS – AFTER AWARD OF CONTRACT**

- A. After award, requests for approval of equivalent items shall be submitted in writing to the Engineer for approval within seven (7) calendar days after Notice to Proceed.
- B. Submit each request in writing for substitution for consideration in accordance with procedures required below.
- C. Requests for approval of equivalent items shall be accompanied by information sufficient for the Engineer to make a determination as to the equivalency of a product. The determination of the Engineer of the equivalency of a product shall be final. The Engineer reserves the right to request information or documentation for evaluation including but not limited to the following:
  1. Statement indicating why specified product cannot be provided.
  2. Coordination of information, including a list of modifications needed to other parts of the work that will be necessary to accommodate proposed substitution.
  3. Product data including drawings, descriptions, and fabrication/installation procedures.
  4. Samples where applicable.
  5. Material test reports from a qualified testing agency indicating the interpreting test results for compliance with requirements.
  6. Contractor's certification that proposed substitution complies with requirements in the contract documents and is appropriate for applications indicated.
  7. 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.
  8. If requesting product substitution after bid award, Contractor shall provide cost information including proposal of change, if any, in the contract sum.

## **PART 2 PRODUCTS**

### **2.01 SUBSTITUTIONS – PRIOR TO BID**

- A. Conditions: The Contractor's substitution request will be received and considered by the Engineer when all of the following conditions are satisfied, as determined by the

Engineer; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of Contract Documents.
3. The request is timely, fully documented and properly submitted.
4. The request is directly related to an “or equal” clause or similar language in the Contract Documents.

- B. The Contractor’s submittal and Engineer’s acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an approval or valid request for substitution.

## **2.02 SUBSTITUTIONS – AFTER AWARD OF CONTRACT**

- A. Substitutions after award are solely for the convenience of the Contractor and will be considered and approved by Change Order which is accompanied by a credit to the Owner. The Contractor shall be required to bear any additional costs related to making the substituted material or system work, such as extra engineering, material or system modifications, or any time considerations relating to material or system installation requirements.

## **PART 3 EXECUTION (NOT USED)**

**END OF SECTION 01 25 00**

## **SECTION 01 26 00**

### **CONTRACT MODIFICATION PROCEDURES**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Administrative and procedural requirements for handling and processing Contract modifications.

##### **1.02 RELATED DOCUMENTS**

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

##### **1.03 PROPOSAL REQUESTS**

- A. Owner-Initiated Proposal Requests: Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Proposal Requests issued by 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 to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include costs of labor and supervision directly attributable to the change.
    - d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- 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 complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
  - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
  - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
  - 4. Include costs of labor and supervision directly attributable to the change.

5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Division 1 if the proposed change requires substitution of one product or system for product or system specified.

C. Proposal Request Approval:

1. The form of Change Order shall be AIA Document G701 submitted by the Engineer to be signed by the Contractor and Owner.
2. The Contractor shall not commence work or purchase materials for such change orders until written approval is received from the Owner in the form of an executed Change Order.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION 01 26 00**

## **SECTION 01 29 00**

### **PAYMENT PROCEDURES**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

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

##### **1.02 RELATED DOCUMENTS**

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

##### **1.03 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.

##### **1.04 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 Consultant along with Submittals.
  - 3. Subschedules: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.
- B. Format and Content: Use the sample Continuation Sheet contained in the Project Manual as a guide to establish line items for the Schedule of Values. 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. Project name and location.
    - b. Name of Consultant.
    - c. Consultant's project number.
    - d. Contractor's name and address.
    - e. Date of submittal.
  - 2. Submit draft of AIA Document G703 Continuation Sheets.
  - 3. Arrange the Schedule of Values in tabular form with separate columns to indicate

the following for each item listed:

- a. Related Specification Section or Division.
  - b. Description of the Work.
  - c. Change Orders (numbers) that affect value.
  - d. Dollar value.
  - i. Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
  5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
  6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
    - a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
  7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
  8. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
  9. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
    - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
  10. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

## **1.05 APPLICATION FOR PAYMENT**

- A. The Contractor shall submit three originals of applications for payment on AIA Document G702 and G703, current editions.
  1. The date for each progress payment shall be indicated in the Agreement between Owner and Contractor. The period of Work covered by each application is the period indicated in the Agreement
  2. All copies shall be on original AIA forms.
  3. The application for payment shall be complete, notarized and executed by a person authorized to legally sign documents on behalf of the Contractor.
  4. A complete breakdown of the work showing separate labor and material amounts

- shall be shown on Document G703 in accordance with the approved Schedule of Values.
5. Each application shall be consistent with previous applications and payments as certified by Engineer and paid for by Owner.
  6. Engineer shall return incomplete applications without action.
- B. Within forty-five (45) days of receipt of consultant-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. Entries shall match data on the schedule of values and Contractor's construction schedule. Include amounts of change orders issued before last day of construction period covered by the application.
- D. The Engineer reserves the right to contact material manufacturers directly, without contractor consent, to verify material invoices. Material invoices shall be made available to the Engineer upon his request from the contractor or material manufacturer.
- E. When requesting payment for materials stored on site, the Contractor shall submit with his 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.
- F. Prior to initial application for payment, the following items must precede or coincide with submittal:
1. List of subcontractors
  2. Schedule of values
- G. With each application for payment, the Contractor shall also submit the following:
1. County/State Sales/Use Tax Statement: The Contractor shall submit with each pay request an original notarized statement (Refer to Section 00 62 76.13) provided by the Owner showing all taxes paid on the project. It shall list any payments made directly to each supplier indicating the supplier name, invoice date, invoice amount before taxes, taxes paid indicating state and county, and total invoice amount. If no sales taxes have been paid, indicate "NONE" on the statement form and submit accordingly.
  2. Unit Price Daily Logs: Copies of any unit price daily logs and appropriate change order forms shall be submitted with each application for payment unless no unit price work was accomplished during the period covered by the application.
  3. AIA Document G706, Contractor's Affidavit of Payment of Debts and Claims
  4. AIA Document G706A, Contractor's Affidavit of Release of Liens
- H. At substantial completion, submit an application for payment showing one hundred percent completion for portion of the work claimed as substantially complete. Include documentation supporting claim that the work is substantially complete.
- I. 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 shall not become due until all required documents have been submitted.
1. Project Closeout Submittals

2. Final County/State Sales/Use Tax Statement
3. AIA Document G706, Contractor's Affidavit of Payment of Debts and Claims
4. AIA Document G706A, Contractor's Affidavit of Release of Liens
5. AIA Document G707, Consent of Surety to Final Payment

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION 01 29 00**

## **SECTION 01 31 00**

### **PROJECT MANAGEMENT AND COORDINATION**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. General project coordination procedures.
  - 2. Coordination.
  - 3. Administrative and supervisory personnel.
  - 4. Project meetings.
  - 5. Weekly Reports

##### **1.02 RELATED DOCUMENTS**

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

##### **1.03 COORDINATION**

- A. Coordinate construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. The Contractor shall coordinate its operations with 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: The scheduling and sequence of all operations shall be carefully coordinated 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 Contractor's Construction Schedule.
  - 2. Preparation of the Schedule of Values.
  - 3. Installation and removal of temporary facilities and controls.

4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-Construction conference.
7. Pre-installation conferences.
8. Project closeout activities.

## **1.04 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 the Contractor and each person present. The Contractor may make and distribute such other copies as he wishes.
2. Attendance: Contractor Project Manager, Job Superintendent and Job Foreman, Owner, Engineer's Representative, manufacturer's representatives, installers of related work and all other persons concerned with the installation and performance. The Contractor shall also provide three (3) local telephone numbers, which may be used to contact the Contractor or his authorized representative in the event of an emergency after normal business hours.
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. The Contractor shall 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 the Contractor and each person present. The Contractor may make and distribute such other copies as he wishes.
2. Attendance: Owner, Engineer, Contractor, Job Superintendent, material Supplier, and Subcontractors, as appropriate. Each representative shall be thoroughly familiar with the status of the project and shall be prepared to discuss and act upon any situations, which may arise. The time, date and location of these meetings will be established during pre-construction conference. The Contractor shall provide an updated job progress schedule at each weekly meeting.
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. Punch List 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; identification of problems, which may impede issuance of warranties.
4. Refer to Section 01 77 00 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, material manufacturer.
3. Minimum Agenda: Walkover inspection; verification of final completion including the completion of the punch list items.
4. Refer to Section 01 77 00 for other requirements.

**1.05 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.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION 01 31 00**

## **SECTION 01 33 00**

### **SUBMITTAL PROCEDURES**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

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

##### **1.02 RELATED DOCUMENTS**

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

##### **1.03 SUBMITTAL PROCEDURE**

- A. General: The Contractor is responsible for providing the submittals to the Engineer. Each submittal must be accepted in writing prior to commencement of work. One original copy of the submittals must be submitted to the Engineer for review. The submittals will then be returned to the Contractor with comments. Final submittals will require written responses to all Construction Document submittal comments. The submittals shall then be submitted in quadruplicate in one complete package. Partial or incomplete Submittals will be returned to the Contractor. Each of the four copies shall be bound in a three ring binder with tabs for each submittal item.
  - 1. At the Engineer's discretion this may be an electronic submittal
- B. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence 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.
- C. Identification: Submit in a labeled three ring binder with tabs for each identification number.
- D. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals and provide letter describing in detail any proposed changes, substitutions, or deviations from the project or manufacturer's specifications. A written explanation of why substitutions should be considered is required and shall be included under the appropriate tab.
- E. Transmittal: Package submittals appropriately for transmittal and handling using a transmittal form. 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.
- F. Use for Construction: Use only final submittals with mark indicating action taken by Engineer in connection with construction.

**1.04****SCHEDULE OF SUBMITTALS**

- A. The following items shall be placed in a three ring binder with tabs to identify each component as specified below:
1. Emergency contact list including pager, mobile and home numbers of key Contractor and Subcontractor personnel, and office and mobile numbers of key Owner and REI personnel.
  2. Work schedule indicating start date, crew size, production rate, completion date, etc.
  3. Sample Application for Payment including Schedule of Values. Immediately after execution and delivery of the Contract, and before the first partial payment is submitted, the Contractor shall submit to the Owner through the Engineer the following:
    - a. An Application for Payment on AIA G702.
    - b. 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 shall serve as the format for preparation of the Continuation Sheet. A sample Continuation Sheet is included in the Project Manual.
  4. Copy of Contractor's Certificate of Insurance
  5. Copy of Performance and Payment Bonds
  6. Copy of Construction Permits
  7. Copy of all warranties indicated in Section 01 77 00 to meet the requirements of their respective specification section
  8. Letter describing in detail any proposed changes, substitutions, or deviations from the project or manufacturer's specifications. A written explanation of why substitutions should be considered is required.
  9. Roof Retrofit Framing (Section 05 54 20)
  10. Preparation for Reroofing (Section 07 01 50)
  11. Roof Insulation (Section 07 22 16)
  12. Metal Roof Panels (Section 07 41 13)
  13. Metal Wall/Soffit Panels (Section 07 42 13)
  14. EPDM Roof Repairs and Flashing (Section 07 53 23)
  15. Flashing and Sheet Metal (Section 07 62 00)
  16. Roof Accessories (Section 07 72 00)
  17. Fall Arrest Anchors (Section 07 72 01)
  18. 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 Contractor has discovered no existing damaged components and takes responsibility for any damages caused by operations.
  19. Complete list of materials with Material Safety Data Sheets (MSDS)
  20. Shop drawings and engineering calculations for metal roof retrofit as described in Sections 05 54 20, 07 41 13 and 07 42 13.

**PART 2 PRODUCTS****2.01 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 must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
  2. Mark each copy of each submittal to show which products and options are applicable.
  3. Include the following information, as applicable:
    - a. Manufacturer's written recommendations.
    - b. Manufacturer's product specifications.
    - c. Manufacturer's installation instructions.
    - d. Manufacturer's catalog cuts.
    - e. Wiring diagrams showing factory-installed wiring.
    - f. Printed performance curves.
    - g. Operational range diagrams.
    - h. Compliance with recognized trade association standards.
    - i. Compliance with recognized testing agency standards.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Include the following information, as applicable:
    - a. Dimensions.
    - b. Identification of products.
    - c. Fabrication and installation drawings.
    - d. Roughing-in and setting diagrams.
    - e. 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 to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
  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 actual 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. Sample sets may be used to determine final acceptance of construction associated with each set.
- E. Contractor's Construction Schedule: Comply with requirements in Division 01.
- F. 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.
- G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.
- H. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.
- I. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.
- J. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.
- K. 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.
- L. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- M. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- N. 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.
- O. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

**PART 3        EXECUTION**

**3.01            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.

**3.02            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, as follows:
  - 1.     Accepted
  - 2.     Accepted as noted
  - 3.     No Action Required
  - 4.     Rejected/Resubmit
  - 5.     Not Subject to Review
- B.     Submittals not required by the Contract Documents will not be reviewed and may be discarded.

**END OF SECTION 01 33 00**

## **SECTION 01 40 00**

### **QUALITY REQUIREMENTS**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.

##### **1.02 RELATED DOCUMENTS**

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

##### **1.03 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. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

##### **1.04 DELEGATED DESIGN**

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer.

##### **1.05 SUBMITTALS**

- A. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

##### **1.06 QUALITY ASSURANCE**

- A. It is the intent under this contract that workmanship shall 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 shall in no way relieve the Contractor of his responsibility to furnish materials and construction in full compliance with the drawings

and specifications. The Owner and Engineer shall have the authority to judge the quality and require replacement of unacceptable work or personnel at any time.

- B. All contractors shall cooperate in the execution of their work and shall plan their work in such manners as to avoid conflicting schedules or delay of work. If any part of a Contractor's work depends upon the work of another Contractor, defects, which may affect that work, shall be reported to the Engineer in order that prompt inspection may be made and defects corrected. Commencement of work by a Contractor where such condition exists will constitute acceptance of the other Contractor's work as being satisfactory in all respects to receive the work commenced, except defects, which may later develop. Work of all trades under this contract shall be closely coordinated in such a manner as to obtain the best possible workmanship for the entire project. All components of the work shall be installed in accordance with the best practices of the particular trade. The General Contractor is responsible to advise the Owner sufficiently in advance of operations to allow for assignment of personnel.
- C. Materials or methods described by words which, when applied, have a well known technical or trade meaning will be held to refer to such recognized standard. Standard specifications or manufacturer's literature, when referenced, shall be of the latest revision or printing unless otherwise stated, and are intended to establish the minimum requirements acceptable.
- D. All materials shall be new, all materials and workmanship shall be in every respect in accordance with the best modern practice.
- E. When special makes or grades of material which are normally packaged by the supplier or manufacturer are specified or accepted, such materials shall be delivered to the site in original packages or containers with seals unbroken and labels intact and shall not be opened until inspected and approved by the Consultant. Contractor shall notify the Consultant prior to such material's delivery.
- F. The Contractor's Foreman or Superintendent to maintain one complete set of the contract documents and approved submittals on the job site.
- G. 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. Office performing work to be located within 250 miles of the project site.
  - 2. Be certified in writing for a minimum of two years by the roofing materials manufacturer to install the primary roofing products.
  - 3. 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. Also all crew workers on site are to be experienced and have a working knowledge of the system being installed.
  - 4. 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 the application of building envelope involving removal of the existing building envelope systems.
  - 5. Licensed by state work is occurring in for the type and dollar amount of work contemplated by these Contract Documents.
  - 6. At any time during the construction and completion of work covered by these

Specifications, if the conduct of any workman of the various crafts be determined unsuitable or a nuisance to the Owner or Engineer, or if the workman be considered incompetent or detrimental to the work, the Contractor shall order such party removed immediately from the grounds with the person not returning at any time during the course of work on the project.

7. During the performance of any work by the Contractor or subcontractors, the Contractor shall provide for the entire length of the project 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 at all times while work is being performed, and whose primary responsibility is to supervise and direct the performance of the Work.
- b. The superintendent shall be in attendance at the project site at all times during the progress of the work and his duties as superintendent shall be limited to this project only. The superintendent shall supervise and instruct workmen without engaging in the work process. Should the superintendent be absent temporarily from the project at any time, he shall designate a competent foreman to assume duties. During the superintendent’s absence the foreman shall not engage in the work process but shall supervise and instruct only. Likewise, any communications given to the foreman shall be as binding as if given to the Contractor.
- c. It shall be the superintendent’s responsibility to communicate all matters pertaining to the Work with the Owner and/or Engineer. In case of emergency or safety, superintendent shall communicate directly with the Owner and/or Engineer. No decisions regarding changes in the Work will be made without the Owner’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 at all times.
- h. Employed by the Contractor at least six months prior to project commencement.
- i. Owner and Engineer/Engineer approval.
- j. No later than ten days prior to the pre-construction conference, Contractor shall provide the Owner, in writing, the names of the proposed project manager, job 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.

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

I. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.

J. 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.

- K. 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.

## **1.07 QUALITY CONTROL**

- A. The authorized representatives and agents of Owner shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records.
- B. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.
  - 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.
- C. Contractor's Responsibilities:
  - 1. Repair and protection of work and materials are Contractor's responsibility.
  - 2. Should any work or materials not conform with requirements of the Specifications or become damaged during the progress of the work, such work or materials shall be removed and replaced, together with any work disarranged by such alterations, at any time before completion and acceptance of the project. All such work shall be done at the expense of the Contractor.
  - 3. Contractor will 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 as during inclement weather, or whenever the Engineer shall direct, the Contractor will protect carefully its work and materials against damage or injury from weather. If, in the opinion of the Engineer, any work or materials have been damaged or injured by reason of failure of the Contractor to protect its work, such materials shall be removed and replaced at the expense of the Contractor.
    - b. During inclement weather and temporary suspension of work, the Contractor shall inspect the facility no later than 9:00 AM each day for leaks and perform temporary repairs if necessary. Inspections shall be made daily during extended periods of inclement weather. Upon arrival at the facility, Superintendent shall immediately inform the Owner of his presence and purpose.
    - c. If Contractor does not inspect the facility 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 shall 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. The Contractor shall reimburse the Owner in the form of deductive change order for services provided by the outside contractor an equitable amount as determined

- d. solely by the Owner.
  - d. Should inclement weather occur after normal business hours Friday, Saturday, and Sunday or holidays, Contractor shall make arrangements with the Owner to provide access to the building to inspect for leaks.
- D. Manufacturer's Field Services: During construction and until substantial completion, manufacturer's representative shall perform monthly quality assurance site visits to ensure materials are being properly installed and as required to obtain the specified warranty.
  - 1. The first site visit shall be performed within the first three (3) days of operations.
  - 2. Coordinate all site visits with Engineer. Submit reports of findings within one week of inspection. Payment applications will be rejected until applicable reports are received.
  - 3. Inspections to be performed by an employee of the selected manufacturer that is assigned full time to their technical services department. Sales personnel will not be acceptable for this function and may result in rejection of the work installed that does not fulfill this requirement.
  - 4. Manufacturer's final inspections shall be performed only with REI personnel in attendance. A minimum of seven days' written notice is required. Any manufacturer's final inspection conducted without REI personnel in attendance will be repeated at no additional cost to the Owner.
  - 5. Any violation of this requirement will result 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**

**3.01 REPAIR AND PROTECTION**

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Comply with the Contract Document requirements for Section 01 73 29-Cutting and Patching.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

**END OF SECTION 01 40 00**

## SECTION 01 42 00

### REFERENCES

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Requirements relating to Referenced Standards.

##### **1.02 RELATED DOCUMENTS**

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

##### **1.03 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, complete and ready for the intended use.
- I. "Installer": Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.
- J. "Experienced": When used with an entity, "experienced" means having successfully

completed 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. Refer to Section 01 40 00-Quality Requirements.

- 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.

#### **1.04 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: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.
- D. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

|         |  |
|---------|--|
| ADAAG   | Accessibility Guidelines for Buildings and Facilities<br>Available from Access Board<br><a href="http://www.access-board.gov">www.access-board.gov</a>   |
| CFR     | Code of Federal Regulations<br>Available from Government Printing Office<br><a href="http://www.access.gpo.gov/nara/cfr">www.access.gpo.gov/nara/cfr</a> |
| FED-STD | Federal Standard (See FS)  |
| FS      | Federal Specification<br>Available from National Institute of Building Sciences<br><a href="http://www.nibs.org">www.nibs.org</a>                        |

#### **1.05 ABBREVIATIONS AND ACRONYMS**

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change

and are believed to be accurate and up-to-date as of the date of the Contract Documents.

|        |  |
|--------|--|
| AA     | Aluminum Association, Inc. (The)<br><a href="http://www.aluminum.org">www.aluminum.org</a>   |
| ACI    | American Concrete Institute/ACI International<br><a href="http://www.aci-int.org">www.aci-int.org</a>                                |
| ACPA   | American Concrete Pipe Association<br><a href="http://www.concrete-pipe.org">www.concrete-pipe.org</a>                               |
| AGC    | Associated General Contractors of America (The)<br><a href="http://www.agc.org">www.agc.org</a>                                      |
| AHA    | American Hardboard Association<br><a href="http://www.ahardbd.org">www.ahardbd.org</a>   |
| AI     | Asphalt Institute<br><a href="http://www.asphaltinstitute.org">www.asphaltinstitute.org</a>  |
| AIA    | American Institute of Architect's (The)<br><a href="http://www.e-architect.com">www.e-architect.com</a>                              |
| AISC   | American Institute of Steel Construction<br><a href="http://www.aisc.org">www.aisc.org</a>   |
| AISI   | American Iron and Steel Institute<br><a href="http://www.steel.org">www.steel.org</a>  |
| AITC   | American Institute of Timber Construction<br><a href="http://www.aitc-glulam.org">www.aitc-glulam.org</a>                            |
| ALCA   | Associated Landscape Contractors of America<br><a href="http://www.alca.org">www.alca.org</a>  |
| ALSC   | American Lumber Standard Committee   |
| ANLA   | American Nursery & Landscape Association<br><a href="http://www.anla.org">www.anla.org</a>   |
| ANSI   | American National Standards Institute<br><a href="http://www.ansi.org">www.ansi.org</a>  |
| APA    | APA - The Engineered Wood Association<br><a href="http://www.apawood.org">www.apawood.org</a>  |
| APA    | Architectural Precast Association<br><a href="http://www.archprecast.org">www.archprecast.org</a>                                    |
| ASCE   | American Society of Civil Engineers<br><a href="http://www.asce.org">www.asce.org</a>  |
| ASHRAE | American Society of Heating, Refrigerating and<br>Air-Conditioning Engineers<br><a href="http://www.ashrae.org">www.ashrae.org</a>   |
| ASME   | ASME International (The American Society of<br>Mechanical Engineers International)<br><a href="http://www.asme.org">www.asme.org</a> |
| ASTM   | American Society for Testing and Materials<br><a href="http://www.astm.org">www.astm.org</a>   |
| AWI    | Architectural Woodwork Institute<br><a href="http://www.awinet.org">www.awinet.org</a>   |
| AWPA   | American Wood-Preservers' Association<br><a href="http://www.awpa.com">www.awpa.com</a>  |
| AWS    | American Welding Society<br><a href="http://www.aws.org">www.aws.org</a>   |
| BHMA   | Builders Hardware Manufacturers Association<br><a href="http://www.buildershardware.com">www.buildershardware.com</a>                |
| BIA    | Brick Industry Association (The)<br><a href="http://www.bia.org">www.bia.org</a>   |

|          |   |
|----------|---|
| CCFSS    | Center for Cold-Formed Steel Structures<br><a href="http://www.umn.edu/~ccfss">www.umn.edu/~ccfss</a>   |
| CDA      | Copper Development Association Inc.<br><a href="http://www.copper.org">www.copper.org</a>   |
| CIMA     | Cellulose Insulation Manufacturers Association<br><a href="http://www.cellulose.org">www.cellulose.org</a>  |
| CISCA    | Ceilings & Interior Systems Construction Association<br><a href="http://www.cisca.org">www.cisca.org</a>  |
| CISPI    | Cast Iron Soil Pipe Institute<br><a href="http://www.cispi.org">www.cispi.org</a>   |
| CLFMI    | Chain Link Fence Manufacturers Institute<br><a href="http://www.chainlinkinfo.org">www.chainlinkinfo.org</a>  |
| CPA      | Composite Panel Association<br>(Formerly: National Particleboard Association)<br><a href="http://www.pbmdf.com">www.pbmdf.com</a>                                     |
| CPPA     | Corrugated Polyethylene Pipe Association<br><a href="http://www.cppa-info.org">www.cppa-info.org</a>  |
| CRSI     | Concrete Reinforcing Steel Institute<br><a href="http://www.crsi.org">www.crsi.org</a>  |
| CSI      | Construction Specifications Institute (The)<br><a href="http://www.csinet.org">www.csinet.org</a>   |
| DHI      | Door and Hardware Institute<br><a href="http://www.dhi.org">www.dhi.org</a>   |
| EIMA     | EIFS Industry Members Association<br><a href="http://www.eifsfacts.com">www.eifsfacts.com</a>   |
| EJMA     | Expansion Joint Manufacturers Association, Inc.<br><a href="http://www.ejma.org">www.ejma.org</a>   |
| FMG (FM) | FM Global (Formerly: FM - Factory Mutual System)<br><a href="http://www.fmglobal.com">www.fmglobal.com</a>  |
| GA       | Gypsum Association<br><a href="http://www.gypsum.org">www.gypsum.org</a>  |
| GANA     | Glass Association of North America<br>(Formerly: FGMA - Flat Glass Marketing Association)<br><a href="http://www.glasswebsite.com/gana">www.glasswebsite.com/gana</a> |
| HPVA     | Hardwood Plywood & Veneer Association<br><a href="http://www.hpva.org">www.hpva.org</a>   |
| IGCC     | Insulating Glass Certification Council<br><a href="http://www.igcc.org">www.igcc.org</a>  |
| LGSI     | Light Gage Structural Institute<br><a href="http://www.loseke.com">www.loseke.com</a>   |
| MBMA     | Metal Building Manufacturers Association<br><a href="http://www.mbma.com">www.mbma.com</a>  |
| MCA      | Metal Construction Association<br><a href="http://www.metalconstruction.org">www.metalconstruction.org</a>  |
| MFMA     | Metal Framing Manufacturers Association   |
| MIA      | Marble Institute of America<br><a href="http://www.marble-institute.com">www.marble-institute.com</a>   |
| NAAMM    | National Association of Architectural Metal Manufacturers<br><a href="http://www.naamm.org">www.naamm.org</a>   |
| NAIMA    | North American Insulation Manufacturers Association (The)<br><a href="http://www.naima.org">www.naima.org</a>   |
| NCMA     | National Concrete Masonry Association   |

|       |   |
|-------|---|
|       | <a href="http://www.ncma.org">www.ncma.org</a>  |
| NCPI  | National Clay Pipe Institute<br><a href="http://www.ncpi.org">www.ncpi.org</a>  |
| NECA  | National Electrical Contractors Association<br><a href="http://www.necanet.org">www.necanet.org</a>                           |
| NEMA  | National Electrical Manufacturers Association<br><a href="http://www.nema.org">www.nema.org</a>                               |
| NETA  | International Electrical Testing Association<br><a href="http://www.netaworld.org">www.netaworld.org</a>                      |
| NFPA  | National Fire Protection Association<br><a href="http://www.nfpa.org">www.nfpa.org</a>  |
| NFRC  | National Fenestration Rating Council<br><a href="http://www.nfrc.org">www.nfrc.org</a>  |
| NGA   | National Glass Association<br><a href="http://www.glass.org">www.glass.org</a>  |
| NHLA  | National Hardwood Lumber Association<br><a href="http://www.natlhardwood.org">www.natlhardwood.org</a>                        |
| NLGA  | National Lumber Grades Authority<br><a href="http://www.nlga.org">www.nlga.org</a>  |
| NPA   | National Particleboard Association<br>(See CPA)   |
| NRCA  | National Roofing Contractors Association<br><a href="http://www.nrca.net">www.nrca.net</a>                                    |
| NRMCA | National Ready Mixed Concrete Association<br><a href="http://www.nrmca.org">www.nrmca.org</a>                                 |
| NSA   | National Stone Association<br><a href="http://www.aggregates.org">www.aggregates.org</a>                                      |
| NTMA  | National Terrazzo and Mosaic Association, Inc.<br><a href="http://www.ntma.com">www.ntma.com</a>                              |
| NWWDA | National Wood Window and Door Association<br>(See WDMA)   |
| PCI   | Precast/Prestressed Concrete Institute<br><a href="http://www.pci.org">www.pci.org</a>  |
| PDCA  | Painting and Decorating Contractors of America<br><a href="http://www.pdca.com">www.pdca.com</a>                              |
| PDI   | Plumbing & Drainage Institute<br><a href="http://www.pdionline.org">www.pdionline.org</a>                                     |
| RCSC  | Research Council on Structural Connections<br><a href="http://www.boltcouncil.org">www.boltcouncil.org</a>                    |
| RMA   | Rubber Manufacturers Association<br><a href="http://www.rma.org">www.rma.org</a>  |
| SDI   | Steel Deck Institute<br><a href="http://www.sdi.org">www.sdi.org</a>  |
| SDI   | Steel Door Institute<br><a href="http://www.steeldoor.org">www.steeldoor.org</a>  |
| SGCC  | Safety Glazing Certification Council<br><a href="http://www.sgcc.org">www.sgcc.org</a>  |
| SIGMA | Sealed Insulating Glass Manufacturers Association<br><a href="http://www.sigmaonline.org/sigma">www.sigmaonline.org/sigma</a> |
| SJI   | Steel Joist Institute<br><a href="http://www.steeljoist.org">www.steeljoist.org</a>   |

|        |   |
|--------|---|
| SMACNA | Sheet Metal and Air Conditioning Contractors' National Association<br><a href="http://www.smacna.org">www.smacna.org</a>  |
| SPFA   | Spray Polyurethane Foam Alliance<br>(Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division)<br><a href="http://www.sprayfoam.org">www.sprayfoam.org</a> |
| SPI    | The Society of the Plastics Industry<br><a href="http://www.plasticsindustry.org">www.plasticsindustry.org</a>  |
| SPIB   | Southern Pine Inspection Bureau (The)<br><a href="http://www.spib.org">www.spib.org</a>   |
| SPRI   | SPRI (Single Ply Roofing Institute)<br><a href="http://www.spri.org">www.spri.org</a>   |
| SSINA  | Specialty Steel Industry of North America<br><a href="http://www.ssina.com">www.ssina.com</a>   |
| SSMA   | Steel Stud Manufacturers Association<br>(Formerly: ML/SFA - Metal Lath/Steel Framing Association)<br><a href="http://www.ssma.com">www.ssma.com</a>   |
| SSPC   | SSPC: The Society for Protective Coatings<br><a href="http://www.sspc.org">www.sspc.org</a>   |
| SWI    | Steel Window Institute<br><a href="http://www.steelwindows.com">www.steelwindows.com</a>  |
| TCA    | Tile Council of America, Inc.<br><a href="http://www.tileusa.com">www.tileusa.com</a>   |
| TPI    | Truss Plate Institute   |
| UL     | Underwriters Laboratories Inc.<br><a href="http://www.ul.com">www.ul.com</a>  |
| WDMA   | Window & Door Manufacturers Association<br>(Formerly: NWWDA - National Wood Window and Door Association)<br><a href="http://www.wdma.com">www.wdma.com</a>  |
| WMMPA  | Wood Moulding & Millwork Producers Association<br><a href="http://www.wmmpa.com">www.wmmpa.com</a>  |
| WWPA   | Western Wood Products Association<br><a href="http://www.wwpa.org">www.wwpa.org</a>   |

- B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

|       |   |
|-------|---|
| BOCA  | BOCA International, Inc.<br><a href="http://www.bocai.org">www.bocai.org</a>  |
| IAPMO | International Association of Plumbing and Mechanical Officials (The)<br><a href="http://www.iapmo.org">www.iapmo.org</a>                          |
| ICBO  | International Conference of Building Officials<br><a href="http://www.icbo.org">www.icbo.org</a>  |
| ICC   | International Code Council<br>(Formerly: CABO - Council of American Building Officials)<br><a href="http://www.intlcode.org">www.intlcode.org</a> |
| SBCCI | Southern Building Code Congress International, Inc.<br><a href="http://www.sbcci.org">www.sbcci.org</a>   |

- C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

|      |   |
|------|---|
| CPSC | Consumer Product Safety Commission<br><a href="http://www.cpsc.gov">www.cpsc.gov</a>          |
| EPA  | Environmental Protection Agency<br><a href="http://www.epa.gov">www.epa.gov</a>               |
| OSHA | Occupational Safety & Health Administration<br><a href="http://www.osha.gov">www.osha.gov</a> |

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION 01 42 00**

## **SECTION 01 50 00**

### **TEMPORARY FACILITIES AND CONTROLS**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

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

##### **1.02 RELATED DOCUMENTS**

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

#### **PART 2 PRODUCTS**

##### **2.01 MATERIALS**

- A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Engineer. Provide materials suitable for use intended.
- B. 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.
- 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; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- 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. Lamps and Light Fixtures: Provide GFCI protected general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- I. Scaffolds: Scaffolds should be built in their entirety and not left unfinished or in an unsafe condition. All scaffolds must be tagged to indicate the latest inspection. Scaffolds

should be tied into the structure as close to a 3:1 ratio as possible and repeated tie-ins shall follow OSHA guidelines. All scaffolds shall have safe access with stairs being the first choice over a ladder. Scaffolds should include netting on upper levels if there is any possibility for materials to fall over the toe boards, per OSHA guidelines.

## **PART 3 EXECUTION**

### **3.01 TEMPORARY UTILITIES**

- A. Water Service: Water for construction purposes will be available from the Owner at no charge. Contractor shall operate exterior hose bids only with properly fitted handles which shall be removed at the end of each work day. Any damage to hose bids or hose bib stems shall be repaired by Contractor. Hose bibs shall not be operated with pliers.
- B. Electrical Power Service: Contractor shall provide portable generators for all electrical power requirements.
- C. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.
  - 1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

### **3.02 CONSTRUCTION FACILITIES**

- A. Temporary construction facilities shall include the following:
  - 1. Field Office (if appropriate): prefabricated, mobile units or job-built construction with lockable entrances and serviceable finishes including lights and utilities.
  - 2. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities. Facilities will be located at sites approved by Owner.
    - 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. Drinking-Water Facilities: Provide bottled-water, drinking-water units.
  - 3. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations at a location approved by the Owner. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements. 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 to be deposited.

### **3.03 VEHICULAR ACCESS AND PARKING**

- A. Parking for Contractor vehicles may be available only in the approved Set-up and Staging area. No other vehicle parking on site will be allowed.

**3.04                    TEMPORARY BARRIERS AND ENCLOSURES**

- A. Contractor shall provide temporary barriers and enclosures for protection from exposure, foul weather, construction operations and other activities. Contractor is responsible for protecting buildings and grounds from damages during construction.
- B. Contractor shall 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.
- C. Contractor shall provide storm water controls sufficient to prevent flooding from heavy rain.
- D. Contractor shall provide 6' chain link fencing with lockable gates and green mesh to completely enclose the materials storage and staging area.

**3.05                    TEMPORARY CONTROLS**

- A. Contractor shall provide security controls to protect work and materials at the project site.

**3.06                    PROJECT SIGNS**

- A. Contractor shall provide temporary signs to provide information to building occupants directing them away for construction operations.

**END OF SECTION 01 50 00**

## **SECTION 01 73 29**

### **CUTTING AND PATCHING**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. This Section includes procedural requirements for cutting and patching.

##### **1.02 RELATED DOCUMENTS**

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

##### **1.03 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.

##### **1.04 QUALITY ASSURANCE**

- A. Engineer's Approval: Obtain approval of cutting and patching before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.
- B. Structural Elements: Do not cut and patch structural elements in a manner that could change 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 structural elements or related components in a manner that could change their load-carrying capacity that results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety.
- 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 would, in the Engineer's opinion, reduce 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.

## **1.05 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**

### **2.01 MATERIALS**

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
  - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to minimize interruption of services to occupied areas.

### **3.03 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 a cutting machine, such as an abrasive saw or a diamond-core drill.
  4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
  5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
  3. Floors and Walls: Where walls or partitions that are removed extend from one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
  4. 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. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty and similar materials.

#### **END OF SECTION 01 73 29**

## **SECTION 01 74 00**

### **CLEANING AND WASTE MANAGEMENT**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. The Owner has established that this Project shall include proactive measures for waste management participation by all parties to the contract.
  - 1. The purpose of this program is to ensure that during the course of the Project all diligent means are employed to pursue practical and economically feasible waste management and recycling options.
  - 2. Upon award, each subcontractor shall be required to furnish documentation from suppliers or manufacturers regarding waste management and recycling options for those products and procedures furnished.
  - 3. Waste disposal to landfills shall be minimized.

##### **1.02 RELATED DOCUMENTS**

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

##### **1.03 DEFINITIONS**

- A. Waste: Any 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: Any material or byproduct of construction that is regulated by the Environmental Protection Agency and that may not be disposed in any landfill or other waste end-source without adherence to applicable laws.
- E. Trash: Any product or material unable to be returned, reused, recycled or salvaged.
- F. Landfill: Any 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.

#### **PART 2 PRODUCTS**

##### **2.01 MATERIALS**

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

#### **PART 3 EXECUTION**

### 3.01

### 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: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Final Acceptance.
- G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.
  - 1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.
- H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at 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 assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or

otherwise deleterious exposure during the construction period.

### **3.02 CONSTRUCTION WASTE MANAGEMENT**

#### **A. Construction Waste Management Plan Implementation:**

1. The Contractor shall provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse and return methods to be used by all parties at appropriate stages of the Work.
2. Separation facilities:
  - a. Contractor shall define specific areas to facilitate separation of materials for recycling, salvage, re-use or return.
  - b. Recycle and waste bin areas are to be maintained in an orderly manner and clearly marked to avoid contamination of materials.
  - c. Do not mix recyclable materials.
  - d. Store hazardous wastes in secure areas.
3. Hazardous wastes:
  - a. Hazardous wastes shall be separated, stored and disposed of in accordance with local and EPA regulations and additional criteria listed below:
    - i. Building products manufactured with PVC or containing chlorinated compounds shall not be incinerated.
    - ii. Disposal of fluorescent tubes to open containers is not permitted.
    - iii. Unused fertilizers shall not be co-mingled with construction waste.

#### **B. Program profits:**

1. All profits from recycling of construction waste shall be granted to the Contractor.

### **3.03 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.
  - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including, waste material, litter, and other foreign substances.
  - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
  - c. Remove tools, construction equipment, machinery, and surplus material from Project site.
  - d. 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.

- e. Remove debris and surface dust from roofs and walls.
  - f. 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.
  - g. Remove labels that are not permanent.
  - h. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
  - i. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess foreign substances.
  - j. Replace parts subject to unusual operating conditions.
  - k. 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 01 74 00**

## **SECTION 01 77 00**

### **CLOSEOUT PROCEDURES**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

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

##### **1.02 RELATED DOCUMENTS**

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

##### **1.03 SUBSTANTIAL COMPLETION**

- A. The Contractor shall 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. Advise 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. Advise 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 substantial completion certification, the Engineer will make a substantial completion inspection within seven (7) days after receipt of certification.
  - 1. A punch list of items will be prepared for correction and completion before the Final Inspection. The Contractor shall complete the punch list items within thirty (30) days of the punch list inspection. If the Contractor fails to complete the punch list within this period, the Owner will have the right to impose liquidated damages in the amount of two hundred fifty (\$250.00) dollars for each consecutive day until all of the items are completed.
  - 2. Should the Engineer consider the Work not substantially complete, he will immediately notify the Contractor, in writing, stating the reasons. The Contractor shall 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.
3. 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).

#### **1.04 FINAL COMPLETION**

- A. Before requesting final inspection for determining date of Final Completion, complete the following:
  1. Submit signed copy of Engineer's inspection list of items to be completed or corrected (punch list). The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  2. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  3. 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, he will request the Contractor to make Project Closeout Submittals.
  2. Should the Engineer consider that the Work is not finally complete, he will notify the Contractor, in writing, stating the reasons.
  3. The Contractor shall take immediate 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.

#### **1.05 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. The Contractor shall submit all required record documents and warranties within sixty (60) days of the punch list inspection. If the Contractor fails to properly submit all required items within this period, the Owner will have the right to impose liquidated damages in the amount of two hundred fifty (\$250.00) dollars for each consecutive day until all of the items are properly submitted. Liquidated damages for incomplete punch list items and unapproved closeout documents may run concurrently (i.e. \$500.00 for each consecutive day).
- 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 the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

- a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
    - b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
  2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
  3. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
  4. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.
- C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
  3. Note related Change Orders and Record Drawings, where applicable.
- D. Miscellaneous Record Submittals: Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference. The following items shall be submitted, not limited to:
1. Completed and signed Engineer's Punch List
  2. Copy of Manufacturer's Final Inspection Report
  3. Certificate of Occupancy

## **1.06 WARRANTIES**

- A. Provide the weathertight warranty and finish warranty specified in Section 07 41 13-Metal Roof Panels.
- B. Contractor's two (2) year warranty on their company letterhead using sample contained in the Project Manual.
  1. Contractor will be required to attend an inspection prior to the 2-year warranty end date and complete any corrective action requested by Owner, Engineer, or Manufacturer at no additional cost to the Owner.

## **PART 2 PRODUCTS (NOT USED)**

## **PART 3 EXECUTION (NOT USED)**

### **END OF SECTION 01 77 00**

## **SECTION 05 54 20**

### **ROOF RETROFIT FRAMING**

#### **PART 1 GENERAL**

##### **1.01 WORK INCLUDED**

- A. Install Roof Retrofit Framing for specified standing seam metal roofing system and associated components. The roof retrofit framing system shall accommodate the irregularities of the existing building roof and provide the structural framework for supporting the new metal roof panels at the specified slope. Framing design and materials shall be approved by standing seam roofing panel manufacturer.
- B. Provide engineering and design of metal roof retrofit framing system including analysis of existing structure to support the design loads of the retrofit system.

##### **1.02 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. Preparation for Reroofing Section 07 01 50
  - 2. Metal Roof Panels Section 07 41 13
  - 3. Metal Wall/Soffit Panels Section 07 42 13

##### **1.03 REFERENCES**

- A. Refer to the following references for specification compliance:
  - 1. 2012 North Carolina Building Code
  - 2. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures.
  - 3. AISC American Institute of Steel Construction. "Steel Construction Manual."
  - 4. AISC "2001 North American Specification for the Design of Cold Formed Structural Members."
  - 5. AISI American Iron and Steel Institute "Cold Form Steel Design Manual", (1996 Edition).
  - 6. ASTM International
  - 7. UL580: "Tests for Uplift Resistance of Roof Assemblies", Underwriters Laboratories, Inc.
  - 8. LGSI: "Light Gauge Structural Institute."

##### **1.04 DESCRIPTION**

- A. Roof Retrofit Framing:
  - 1. Retrofit framing shall include framing members, components and fasteners required to support all specified loads for the specified standing seam metal roofing.
  - 2. Contractor shall furnish all labor, materials, tools, equipment, services required to provide and install roof retrofit framing for specified standing seam metal roofing, fascia and wall panel systems.
  - 3. Roof retrofit framing shall be engineered and designed by the standing seam metal roofing, Manufacturer to meet all requirements specified herein.

## 1.05

### DESIGN REQUIREMENTS

- A. The design shall meet the requirements of the current North Carolina building codes.
1. Dead Load:
    - a. Dead loads shall be the weight of the existing roof system to remain, new roofing system and any collateral loads that may be supported by the retrofit framing.
  2. Live Load:
    - a. Live load shall be designed to support a minimum of 20 psf.
  3. Snow Load:
    - a. Ground snow load has been determined to be 10 psf.
  4. Wind Design:
    - a. Wind induced pressure resistance shall meet the North Carolina Building Code and ASCE 7, and the following:
      - i. Wind Speed: 90 mph
      - ii. Importance Factor: 1.15
      - iii. Exposure: C
    - b. The retrofit framing shall be designed to withstand design loads for the standing seam metal roofing and fascia system specified in Section 07 41 13. The design shall meet ASTM E 1592 for negative loading for the proposed framing. Capacity of roof framing span for other than those tested shall be determined by interpolating between submitted test values only.
    - c. Retrofit framing shall meet gauge and span requirements listed in specified FM 4471 Approval and UL580 Listing (Refer to Section 07 41 13).
    - d. The design uplift force for each connection shall be determined by wind uplift pressure in the roof “area” or “zone” and the tributary area supported by the connection. The following safety factors and “prying” shall be considered:
      - i. A safety factor of 3.0 shall be used for single fastener connections.
      - ii. A safety factor of 2.25 shall be used for two or more fasteners used per connection.
      - iii. Each retrofit framing connection securing new retrofit framing members to existing framing shall consist of a minimum of two (2) fasteners per connection.
- B. Contractor shall provide written certification, from an engineer, licensed in the State, indicating that the existing structure is capable of supporting all additional loads imposed by the retrofit framing system. The engineer will confirm that design loads of the retrofit standing seam metal roof system as being in compliance with all codes.

## 1.06

### QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Manufacturer shall have a minimum of 10 years' experience supplying roof and wall panel retrofit systems to the region where the work is to be done.
2. Manufacturer is required to provide shop drawings based on manufacturers' approved details.
3. Manufacturer must be able to provide in-house inspection services.
4. Installer must have successfully completed a minimum of three metal roof retrofit and projects of the size and complexity as that specified. Project references will be required during the submittal process.
5. Responsibility for the metal roof framing and wall panel framing system installation shall be by only a first-tier subcontractor. The first-tier subcontractor shall not act as a broker, and shall perform all work with its own labor forces. The workers or technicians required to perform the work shall be employees of the installing contractor at time of installation. Split contracts are not acceptable.

**1.07 SUBMITTALS**

A. Refer to Section 01 33 00 for Submittals.

B. Shop drawings:

1. The Contractor shall submit complete shop drawings and erection details, approved by the Standing Seam Metal Roofing, Fascia and Wall Panel Manufacturer, and sealed by a licensed North Carolina engineer within thirty (30) days after a Notice to Proceed is issued to the Contractor.
2. The Contractor shall submit sealed calculations indicating that the existing structure is capable of supporting all additional loads imposed by the retrofit framing system.
3. The Contractor shall submit engineering calculations for the design of the attachment method of the retrofit roofing system to the existing building's roof structural system. Calculations shall indicate the type of fastener and spacing to be used and its installation methods, and shall be sealed by a licensed North Carolina engineer.
4. The Contractor shall not proceed with retrofit framing installation until Manufacturer Approved shop drawings have been submitted for review and acceptance.

**1.08 DELIVERY, STORAGE, AND HANDLING**

A. Delivery:

1. Contractor shall ensure metal components are delivered to the job site properly packaged to provide protection against transportation damage.
2. The Contractor shall be responsible for inspecting materials delivered to the project site. Materials damaged during shipping shall be rejected by the Contractor, and shall not be installed on the project.
3. Material shall be delivered in the manufacturer's original sealed and labeled shrouds and in quantities to allow continuity application.

B. Handling:

1. Contractor shall exercise extreme care in unloading, storing and erecting metal roof system to prevent bending, warping, twisting and surface damage.
2. Dented, bent or damaged materials resulting in improper fit or function shall be

removed from the project and replaced.

C. Storage:

1. If conditions do not permit immediate erection, extra care should be taken to protect materials from damage.
2. Materials shall be stored out of direct exposure to the elements or pallets or dunnage at least 4 inches above ground level. Non-sweating tarpaulins will be placed to prevent moisture contamination.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

A. Acceptable Manufacturer/Supplier of retrofit framing shall be same as manufacturer of metal roof panels.

B. System Components:

1. Base members shall be open-faced channels or zee shapes. Vertical columns shall be cee shapes. Roof purlins shall be zee shapes with the top-flange roll formed or press broken to match the slope of the retrofit roof system slope. Eave struts shall be cee shapes or angles with the top flange roll formed or press broken to match the slope of the retrofit roof system.
2. All hot-rolled steel columns, base members, and purlins shall conform to ASTM A1011, minimum yield strength of 55 ksi. The gauge and depth will be as required by the engineering calculations provided by the Manufacturer.
3. Bracing angles and struts shall conform to ASTM A792, 22 gauge, 50 ksi; ASTM A446 18 gauge, 50 ksi; and ASTM A1011, 16 gauge 55 ksi, as required by engineering calculations provided by the Manufacturer.

C. Component Finish:

1. Retrofit framing components shall have a protective shop primer coating conforming to FS TT-P-646 with base steel prepared in accordance with SSPC-SP10.

D. Fasteners:

1. All fasteners associated with the roofing installation shall be supplied by, and/or approved by, the specified Manufacturer.
  - a. Fastener length and threads and drill point shall be as required for the metal and other substrates being joined. Refer to fastener manufacturer and/or roofing manufacturer published literature.
  - b. All self-tapping/self-drilling fasteners, bolts, nuts, self-locking rivets and other suitable fasteners shall be corrosion resistant, designed to withstand specified design loads.

E. Accessories:

1. All accessories and associated components shall be manufactured, supplied and/or otherwise approved by the specified Manufacturer.
2. Contractor shall provide and install all components required per the metal roof system Manufacturer's approved shop drawings for a complete metal roof

system.

## **PART 3 EXECUTION**

### **3.01 INSPECTION**

#### **A. General Inspection:**

1. Contractor shall inspect substrates and verify that conditions are acceptable and complete such that retrofit framing work may begin.
2. Contractor shall inspect retrofit framing components before installation. Materials damaged, bent, twisted or warped shall be removed from the project, not to be installed.
3. Contractor shall verify that installation will be accordance with approved shop drawings and Manufacturer's instructions.
4. Contractor shall inspect substrates and notify Engineer in writing of any deficiencies observed effecting the installation, and effecting the completed roofing system and associated components.
5. OSB, rough carpentry, decking and structural components shall be inspected and deficiencies corrected before installation of retrofit framing components.
6. Commencement of work signifies Contractor's acceptance of substrates. Any defects in roofing work resulting from such accepted substrates shall be corrected to Owner's satisfaction at no additional expense.
7. Manufacturers On-site Technical Support:
  - a. The manufacturer shall attend the project start-up meeting, be onsite for the first day of framing, at 50% completion of framing and prior to installation of metal roof and fascia panels. Inspection reports shall be copied to the Engineer within seven (7) days of each visit.
  - b. The Manufacturer's on-site technical representative shall be employed by the Manufacturer as a Technical Representative.

### **3.02 PREPARATION**

- A. Damaged, deficient or deteriorated substrate shall be repaired before installing retrofit framing.
- B. Protection:
  1. Protect building, grounds, landscaping and exterior components and fixtures from damage during construction activities. Damages shall be repaired/replaced to meet pre-construction conditions to the Owner's satisfaction.
- C. Coordination:
  1. Contractor shall be responsible for the following Coordination activities:
    - a. The Contractor shall be responsible for communicating roof work with the Owner so that the Owner and occupants may relocate or take other precautions.
    - b. Coordinate all work and associated work activities with the Owner and occupants.
    - c. Coordinate all interior access and interior work with Owner in advance. The Contractor shall not proceed with interior work unless pre-approved by the Owner and occupants.

- d. All service interruptions to equipment and facilities services shall be coordinated with the Owner, and approved by the Owner, in advance of the work.

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. The Contractor shall secure all 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.

### **3.03 APPLICATION**

A. General application shall be in accordance with the Manufacturer's published installation instructions and shop drawings for retrofit framing, components, fasteners and all associated accessories.

B. The Contractor shall provide all electrical, mechanical, plumbing and related services to relocate all services that must be relocated to accommodate new retrofit metal framing for roofing or walls.

1. Plumbing vent pipes located in the standing seams shall be relocated to the center of standing seam panels.

C. Retrofit Framing:

1. Install retrofit framing per Manufacturer's approved shop drawings.
2. Install retrofit framing true and straight per design and manufacturer's published instructions to ensure completed standing seam metal roofing system is within specified tolerances.
3. Secure retrofit framing members to ensure the existing roofing underlayment remains watertight and prevents water dams.
4. Contractor shall ensure retrofit framing provides the completed standing seam roof panels with a consistent slope as indicated on Roof Plan.
5. Contractor shall ensure retrofit framing spacing is reduced to meet clip spacing requirements at eaves, hips and ridges.

D. Fasteners:

1. Fasteners shall be of size, length, corrosion resistance, thread and drill point as specified and shown on Manufacturer's shop drawings for each application and substrate.
2. Contractor shall consult Manufacturer and/or fastener manufacturer's published literature for installation requirements and recommendations for optimal fastener performance.
3. Fasteners used for the attachment of the new retrofit framing system to the existing roof structural support system shall be of the type and size that is appropriate for secure attachment to satisfy the required wind uplift pressure values at each location. A minimum of two (2) fasteners shall be installed to secure retrofit framing to the existing structure at each connection point.
4. Fasteners securing new retrofit framing to existing structure shall be installed perpendicular (right angle) to the retrofit framing and top flange of existing

- structural member.
- 5. Fasteners under-driven or over-driven shall be corrected or removed and replaced before installing standing seam roofing panels.

E. Field Cutting Metal Framing:

- 1. Metal framing shall be cut on the ground, away from pre-finished panels.
- 2. The Contractor shall not use abrasive/grinding blades, circular saws and reciprocating saws that produce metal chips within range of pre-finished roof panels.
- 3. Torches and other hot work shall be prohibited unless hot work permit procedures are used by the Contractor.

F. Squareness:

- 1. Retrofit framing and components shall be aligned true, straight and square.
- 2. Installation and sequence shall ensure completed installation is square for proper fit of components.
- 3. Installation tolerance for squareness shall not exceed 1:500 (1.92 inch per 100 ft).

**3.04 CLEAN UP**

- A. Dispose of excess materials and remove debris from site. Maintain all construction related debris in approved disposal containers.
- B. Debris that enters the building as a result of construction operations shall be cleaned immediately by the Contractor.
- C. The Contractor shall protect work against damage until final acceptance. The Contractor shall replace or repair to the satisfaction of the Owner, any work that becomes damaged prior to final acceptance.
- D. Do not allow framing to come in contact with dissimilar metals such as copper, lead or graphite.

**END OF SECTION 05 54 20**

## **SECTION 06 10 00**

### **ROUGH CARPENTRY**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Rough Carpentry work required to facilitate installation of new roof assembly including:
1. Re-securement of existing rough carpentry to remain in place.
  2. Removal and replacement of damaged, rotted or deteriorated wood plank deck with wood plank deck to match existing.
  3. Re-securement of existing wood plank decking to structural framing members.
  4. Removal and replacement of damaged, rotted or deteriorated wood blocking with wood blocking to match existing.
  5. Installation of new wood blocking and plywood where indicated in Contract Drawings.

##### **1.02 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. Preparation for Reroofing Section 07 01 50
  2. Roof Insulation Section 07 22 16
  3. Thermoplastic Polyolefin Roofing Section 07 54 23
  4. Sheet Metal Flashing and Trim Section 07 62 00

##### **1.03 REFERENCES**

- A. Refer to the following references, current edition for specification compliance:
1. North Carolina Building Code
  2. American Society for Testing and Materials (ASTM)
  3. American Wood-Preserver's Association (AWPA)
    - a. AWPA C1 All Timber Products-Preservative Treatment by Pressure Process
    - b. AWPA C2 Lumber, Timber, Bridge Ties and Mine Ties – Pressure Treatment by Pressure Processes.
    - c. AWPA C9 Plywood – Preservative Treatment by Pressure Processes
    - d. AWPA C15 Wood for Commercial-Residential Construction Preservative Treatment by Pressure Process.
  4. American Plywood Association (APA)
  5. American National Standard
    - a. ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems
  6. Underwriters Laboratories, Inc. (UL)
  7. FM Global/Factory Mutual Research (FM)

#### **1.04 DEFINITIONS**

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

#### **1.05 SUBMITTALS**

- A. Refer to Section 01 33 00-Submittal Procedures for Submittals.
- B. Manufacturer's Product Data Sheets for all materials specified certifying material complies with this specification.

#### **1.06 QUALITY ASSURANCE**

- A. Contractor shall inspect wood to be installed for damage, warping, splits, and moisture content as defined by the applicable wood products industry standards. Materials that do not comply shall be rejected.
- B. Rough carpentry installation shall 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 who shall be present at all times during execution of this portion of the work, and who shall be thoroughly familiar with type of construction involved in this section and related work and techniques specified.
- D. Moisture Content:
  - 1. Contractor shall be responsible for ensuring lumber is delivered, stored and installed at 19% or less moisture content.
  - 2. Plywood shall be 18% or less before being covered/enclosed into roofing assembly.
- E. Lumber Standards: Comply with PS 20 and applicable rules of respective grading and inspecting agencies for species and products indicated.
- F. 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.
- G. Installation of all required new rough carpentry for roofing and flashing terminations to ensure plumb, uniform and level metal flashings.
- H. Rough carpentry installation shall ensure roof membrane flashing transitions are smooth for complete roof drainage and appearance.
- I. Installation of all fasteners and associated materials to secure rough carpentry as detailed and specified.

#### **1.07 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. Exposure to precipitation during shipping, storage or installation shall be avoided. If material does become wet, it shall be replaced or permitted to dry prior to covering or enclosure by other roofing, sheet metal or other construction materials (except for protection during construction).
- C. Immediately 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**

### **2.01 MATERIALS**

- A. Lumber: Shall Be No. 2 or better spruce or southern yellow pine. Shall be sound, thoroughly seasoned, dressed to nominal finish dimension, and free of warpage, cupping, and bowing. Dimensions shall be determined by job conditions or as indicated in detail drawings.
- B. Plywood Sheathing: Shall be structural 1 rated. Plywood shall be stamped APA RATED SHEATHING grade-C or better, and shall be manufactured with exterior glue (exposure 1). Plywood shall have a minimum thickness of 3/4 inch or as required to match existing.

### **2.02 FASTENERS**

- A. General:
  - 1. All fasteners shall be stainless steel or as approved by Engineer.
  - 2. Fasteners securing pressure treated lumber shall be manufactured for corrosion resistance and exposures associated with pressure treated wood applications.
  - 3. Nails shall not be used at roof edges to fasten rough carpentry, lumber, plywood, etc. Screws, anchors, and/or machine bolts shall be used to secure rough carpentry at roof perimeter edges.
  - 4. Masonry screws, spikes, and drive-pins shall not be used to fasten edge/perimeter nailers to concrete decks. Minimum 1/2" diameter anchors or bolts shall be used to secure roof edge nailers to concrete substrates.
- B. Wood to wood:
  - 1. 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".
  - 2. Nails: 8, 10 or 16 penny, stainless steel, ring shank nails. Length to embed into base substrate a minimum 1-1/2". Acceptable manufacturers include:
    - a. Maze Nails
    - b. Anchor Staple and Nail
    - c. Swan Secure Products
    - d. Engineers accepted equivalent.

## **PART 3 EXECUTION**

### **3.01 INSPECTION**

- A. Contractor shall inspect substrates to receive rough carpentry, and ensure substrates are in satisfactory condition prior to installation of rough carpentry.
- B. Contractor shall inspect all new and existing rough carpentry including fasteners for material condition before proceeding with installation. Deteriorated, rotted, damaged, split, warped, twisted or wet materials shall be removed and replaced with specified materials. Refer to Section 01 22 00-Unit Prices.
- C. Contractor shall remove old cants, tapered edge strips, debris, old fasteners, etc. that interfere with the installation of new rough carpentry.
- D. Contractor shall notify Engineer in writing of unsatisfactory conditions.
- E. Commencement of work signifies Contractor's acceptance of substrates. Any defects in roofing work resulting from such accepted substrates shall be corrected at no additional expense to the Owner.

### **3.02 PREPARATION**

- A. Steel/Metal Substrates:
  - 1. Any pressure treated wood to contact steel or metal shall have the steel/metal coated with a heavy coating of asphalt primer.
- B. Roof Deck and Structure:
  - 1. Roof deck and structure shall be dried and broomed and/or vacuumed clean of debris and foreign matter prior to installation of the new rough carpentry.
  - 2. Contractor shall adjust substrates to receive rough carpentry to ensure completed rough carpentry installation is acceptable for roofing and sheet metal flashings.
  - 3. Steel decking shall be coated with a uniform, heavy application of asphalt primer, or separated by membrane or other acceptable means to prevent contact between steel and treated wood products.
  - 4. Treated lumber shall not make direct contact with light gage steel decking.

### **3.03 INSTALLATION**

- A. Remove existing damaged or deteriorated wood blocking, nailers, and curbs and replace with new material of same dimensions.
- B. Re-secure all existing wood nailers at roof edges that are to remain. Fastener type and spacing shall comply with this specification.
- C. Wood blocking and nailers shall be installed 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.
- D. 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 any obtrusive surface irregularities. Drive nails and spikes home; and pull bolt

nuts tight with heads and washers in close contact with the wood.

- E. 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. All joints between wood shall be installed for a smooth transition.
- F. Attachment:
  - 1. The Contractor shall 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. Anchor to resist a minimum force of 300 lbs/lineal foot in any direction.
  - 3. Rough carpentry attachment shall meet the requirements herein and that of the current FM Loss Prevention Data Sheet 1-49, Perimeter Flashing.
  - 4. Install bolts flush with the top surface of nailers where possible to avoid countersinking. Bolt bottom nailers then fasten upper nailers where possible. Countersink bolts, nuts and screws flush with wood surfaces only as detailed.
  - 5. Install fasteners without splitting wood. Pre-drill where necessary. Split or damaged wood shall be removed, or repaired and/or re-secured 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. Damaged masonry shall be repaired, and fasteners shall be removed and re-installed in an acceptable location.
  - 7. Fastener spacing: Fasteners shall be staggered 1/3 the board width and installed within 6" of each end.
    - a. Screws securing wood to wood shall be installed 12 inches apart, staggered, with two screws installed within 6 inches of each end of nailer lengths to prevent wood from twisting at board joints.
    - b. Nails securing wood to wood shall be spaced 12 inches apart, staggered, with two nails installed within 6 inches of each end of nailer lengths to prevent wood from twisting at board joints.
- G. Select fasteners of size and length that will not be exposed from the building interior and/or from the ground, or remove protruding fasteners, paint or finish to eliminate exposure.
- H. Thickness of wood nailers shall be flush with adjacent insulation and other materials. Additional fasteners shall be installed to ensure nailers are flush.
- I. Unless otherwise detailed, plywood used as blocking or shim shall be installed below dimensional lumber such that the fastener head terminates at the dimensional lumber surface.
- J. Wood nailers at roof perimeters, expansion joints, roof area dividers, etc. shall not be less than 3 feet long.
- K. 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.
- L. Each end of nailers shall be fastened with additional fasteners to ensure a smooth

transition at butted joints, and to prevent warping and/or twisting.

**3.04**

**CLEAN-UP**

- A. The Contractor shall ensure the site and building are cleaned to meet pre-construction conditions, as accepted by the Owner.
- B. The site and building shall be free of saw dust from pressure treated lumber, fasteners and other debris.
- C. Damages to the building, grounds, equipment and site shall be repaired or replaced by the Contractor to meet pre-construction conditions, as accepted by the Owner.

**END OF SECTION 06 10 00**

## **SECTION 07 01 50**

### **PREPARATION FOR REROOFING**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Preparatory work to be completed prior to roof installation including the following:
1. Soil pipe extensions.
  2. Raising of mechanical units/HVAC units to meet the required minimum flashing height.
  3. Unit Price No. 1: Replacement of wet or deteriorated wood fiber insulation and provide EPDM roof membrane patch over replacement area.
  4. Alternates Nos. 1-3: Removal of existing roof assemblies down to the wood plank deck on Areas C3, C4 and C5.
  5. Alternate No. 4: Removal of existing ballasted EPDM roof membrane and flashings down to the tapered insulation on Roof Area N.

##### **1.02 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. Roof Retrofit Framing    | Section 05 54 20 |
| 2. Metal Roof Panels        | Section 07 41 13 |
| 3. Metal Wall-Soffit Panels | Section 07 42 13 |

##### **1.03 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 selective demolition. When permitted by Engineer, items may be removed to a suitable, protected storage location during selective demolition and then 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 materials shall become the Contractor's property and shall be removed from the site.

##### **1.04 EXISTING ROOF ASSEMBLIES\***

- A. Areas A2, A3, A4 and A5
1. EPDM Roof Membrane
  2. ½" Wood Fiber Board (mechanically attached to gypsum roof deck)
  3. 6-mil Polyethylene Sheeting (observed at random locations during core cuts)
  4. Aggregate Surfacing
  5. Built-up Asphalt Roof Membrane
  6. Base Sheet
  7. 2" Gypsum Fill Roof Deck

8. ½" Gypsum Form Board
9. Metal Bar Joists

B. Area A6

1. EPDM Roof Membrane
2. ½" Wood Fiber Board (mechanically attached to gypsum roof deck)
3. 6-mil Polyethylene Sheeting
4. Aggregate Surfacing
5. Built-up Asphalt Roof Membrane
6. Base Sheet
7. 2-1/2" Lightweight Insulation Concrete Cover over various thickness tapered expanded polystyrene insulation
8. 7/8" Steel Form Deck
9. Metal Bar Joists

C. Area A7

1. EPDM Roof Membrane (mechanically attached)
2. 4" polyisocyanurate insulation
3. Steel deck

D. Areas C3, C4 and C5

1. EPDM Roof Membrane
2. ½" Wood Fiber Board
3. Built-up asphalt roof membrane with gravel surfacing
4. Base sheet
5. Red rosin paper
6. Wood Plank Deck

E. Area N2

1. Ballasted EPDM roof membrane
2. Tapered polyisocyanurate insulation
3. Steel deck

\*Roof system composition is based on random sampling. Contractor is responsible for verification of roof system composition.

## 1.05 SUBMITTALS

- A. Refer to Section 01 33 00-Submittal Procedures for Submittals.
- B. Manufacturer's Product Data Sheets for all materials specified certifying material complies with this specification.

## 1.06 QUALITY ASSURANCE

- A. Qualifications: Previous experience installing metal retrofit roof framing systems over existing low slope roofing systems.
- B. Requirements: Contractor to comply with governing EPA regulations and hauling/disposal regulations of authorities having jurisdiction.

**1.07 SCHEDULING**

- A. Conduct installation and/or demolition so that Owners operations will not be disrupted. Provide 72 hours notification to Owner of activities that will affect Owner's operations.

**1.08 WARRANTIES**

- A. Any damage to existing items under warranty shall be repaired/replaced with materials acceptable to the Warrantor.

**PART 2 PRODUCTS**

**2.01 ROOF REPAIR MATERIALS**

- A. EPDM Membrane: Refer to Section 07 53 23.
- B. Wood Fiber: Shall high density, moisture resistant, non-structural, non-load bearing wood fiber material with treated top surface, and tested in accordance with ASTM C 208 and ASTM C209. Board Size shall be 4' by 4' and thickness shall be 1/2".

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Survey existing conditions to determine extent of installation.
- B. Record the conditions of items to be removed/reinstalled and items to be removed/salvaged.
- C. Contractor shall not remove any element that may result in structural deficiency or collapse of any part of the structure or adjacent structures during demolition.
- D. Contractor to inspect substrate for soundness and notify Engineer in writing of any deficiencies. Commencement of work signifies Contractor's acceptance of site conditions.

**3.02 UTILITIES/SERVICES**

- A. Maintain existing utilities that are to remain in service and protect them against damage during construction unless otherwise authorized in writing by the Owner and authorities having jurisdiction.
  - 1. If utilities serving occupied portions of the site must be shut down, temporary services shall be provided.
  - 2. Provide 72 hours notice to Owner if shut down is required.
  - 3. Where services are to be removed, relocated or abandoned, provide necessary bypass connections to remaining occupied buildings and areas.

**3.03 PREPARATION**

- A. Do not begin installation until utilities have been disconnected/sealed if required, 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 such as 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.

### **3.04 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. Do not use water where damage may occur or where hazardous conditions would be created such as ice or flooding.

### **3.05 REMOVALS**

- A. Demolish and remove existing construction only to the extent required by new construction.
- B. Remove or correct any obstruction which might interfere with the proper application of new materials.
- C. Lift or remove all existing equipment so that existing flashings can be totally removed and new flashings installed if required.
- D. Remove debris from existing materials to provide clean, dry substrate.
- E. Demolish asphalt, concrete and masonry in small sections. Cut concrete and masonry at juncture with construction to remain using powered masonry saw, core drill or hand tools. Do not use powered impact tools.
- F. Remove and transport debris in a manner that will prevent damage/spills to adjacent buildings and areas.
- G. Transport demolished materials off-site and dispose of materials in a legal manner.
- H. Perform progress inspections to detect hazards resulting from demolition activities.

### **3.06 FLASHING HEIGHTS**

- A. Permanently raise roof top equipment as required to achieve 8" minimum flashing height.
- B. Extend all existing sanitary vents to height required by the applicable Plumbing Code, but no less than 8 inches and no more than 12 inches above the finished roof system.

### **3.07 CLEANING**

- A. Inspect the site daily and clean up debris and hazards at the end of each day. Adjacent roads, drives and walkways shall remain 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 07 01 50**

## **SECTION 07 22 16**

### **ROOF INSULATION**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Alternate No. 1: Roof Area C3 - Remove and dispose of the existing roof system including flashings and sheet metal down to the existing wood plank deck; secure the wood plank deck to structural framing members; adhere tapered insulation system in foam adhesive; adhere overlayment insulation in foam adhesive; fully adhere thermoplastic polyolefin single ply membrane along with flashings and accessories; provide new sheet metal flashings and trim to provide a complete, watertight, 20-year warrantable roof assembly.
- B. Alternate No. 2: Roof Area C4 - Remove and dispose of the existing roof system including flashings and sheet metal down to the existing wood plank deck; secure the wood plank deck to structural framing members; adhere tapered insulation system in foam adhesive; adhere overlayment insulation in foam adhesive; fully adhere thermoplastic polyolefin single ply membrane along with flashings and accessories; provide new sheet metal flashings and trim to provide a complete, watertight, 20-year warrantable roof assembly.
- C. Alternate No. 3: Roof Area C5 - Remove and dispose of the existing roof system including flashings and sheet metal down to the existing wood plank deck; secure the wood plank deck to structural framing members; adhere tapered insulation system in foam adhesive; adhere overlayment insulation in foam adhesive; fully adhere thermoplastic polyolefin single ply membrane along with flashings and accessories; provide new sheet metal flashings and trim to provide a complete, watertight, 20-year warrantable roof assembly.
- D. Alternate No. 4: Roof Area N2 - Remove and dispose of the existing ballast, roof membrane, flashings and sheet metal down to the existing tapered insulation system to remain; mechanically attach overlayment insulation; fully adhere thermoplastic polyolefin single ply membrane along with flashings and accessories; provide new sheet metal flashings and trim to provide a complete, watertight, 20-year warrantable roof assembly.

##### **1.02 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. Rough Carpentry Section 06 10 00
  - 2. Preparation for Reroofing Section 07 01 50
  - 3. Thermoplastic Polyolefin Roofing Section 07 54 23

##### **1.03 REFERENCES**

- A. Refer to the following references for specification compliance:
  - 1. North Carolina Building Code
  - 2. National Roofing Contractors Association – NRCA

3. FM Global
4. Underwriters Laboratories, Inc. – UL
5. ASHRAE Standard 90.1

#### **1.04 SUBMITTALS**

- A. Refer to Section 01 33 00-Submittal Procedures for requirements.
- B. Manufacturer's Product Data Sheets for all materials specified certifying material complies with all specified requirements.
- C. Tapered insulation plan from material supplier with minimum R-value for each roof area.
- D. Latest edition of the Manufacturer's current material specifications and installation instructions.

#### **1.05 QUALITY ASSURANCE**

- A. Insulation to be installed in accordance with their respective manufacturer's requirements.
- B. Insulation(s) not bearing UL label at point of delivery shall be rejected.
- C. Insulation damaged or wetted before, during, or after installation shall be removed from the job site no later than the next working day from the day such damage or moisture contamination is noted.
- D. Wind Design: Install insulation system to meet the required wind uplift pressures as specified in Section 07 54 23.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery: Material shall be delivered in the manufacturer's original sealed and labeled shrouds and in quantities to allow continuity application.
- B. Storage: Materials shall be stored out of direct exposure to the elements on pallets or dunnage at least 4 inches above ground level at site location acceptable to Owner.
  1. Utilize tarps that will completely 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: Material shall be handled in such a manner to preclude damage and contamination with moisture or foreign matter.

#### **1.07 PROJECT CONDITIONS**

- A. Insulation shall not be applied during precipitation. Contractor assumes all responsibility for starting installation in the event there is a probability of precipitation occurring during application.
- B. Contractor will take necessary action to restrict dust, asphalt, and debris from entering the structure.

- C. No more roofing will be removed than can be replaced with insulation, membrane and base flashings in the same day to create a watertight installation.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

#### **A. Insulation Boards:**

1. Tapered Insulation System: Shall be rigid polyisocyanurate roof insulation board with factory applied glass fiber reinforced cellulosic felt facers on the top and bottom. Boards to comply with ASTM C1289 Type II, Class 1, Grade 2 and meet the following requirements:
  - a. Curing time shall be 24 hours minimum, plus an additional 24 hours minimum per inch thickness, at a minimum of 60 degrees F before shipment from the manufacturer.
  - b. Dimensional stability shall be 2 percent maximum linear change when conditioned at 158 degrees F and 97 percent relative humidity for seven days.
  - c. Board size shall be 4 foot by 4 foot.
  - d. Slope shall be 1/4" per foot and minimum thickness shall be 1.5"
  - e. Fill Insulation: Shall be rigid polyisocyanurate meeting the above requirements with board size of 4 foot by 4 foot and thickness of 2".
  - f. Crickets and Saddles: Shall be rigid polyisocyanurate meeting the above requirements with a board size of 4 foot by 4 foot and 1/2" per foot slope.
2. Cover Board: Shall be lightweight, high-density polyisocyanurate roof board with coated fiberglass facers; compressive strength shall be a minimum of 90 psi; R-value of 2.5 and thickness shall be 1/2".

#### **B. Insulation Accessories**

1. Asphalt impregnated wood fiber tapered edge strips to be the sizes detailed or required by field conditions meeting ASTM C 208.
  - a. Shall be installed at edges to make transitions as detailed in Contract Drawings.
  - b. Use 1/2" x 6" tapered edge strips to provide slope transition for overlayment insulation at roof edge.

#### **C. Insulation Attachment Materials:**

1. Mechanical Fasteners and Stress Plates: Shall be corrosion resistant 3" 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: Shall be a one or two part, VOC compliant, moisture-cured polyurethane foamable adhesive designed as roof insulation adhesive and approved by insulation manufacturer.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Contractor to inspect substrate for soundness and notify Engineer in writing of any deficiencies.
- B. Commencement of work signifies Contractor's acceptance of substrate. Any defects in roofing work resulting from such accepted substrates shall be corrected to Owner's satisfaction at no additional expense.

### **3.02 PREPARATION**

- A. General
  - 1. Roof deck to be dry and broomed clean of debris and foreign matter prior to installation of insulation system.

### **3.03 APPLICATION**

- A. General
  - 1. Application shall be in accordance with the insulation/membrane manufacturer's instructions and these specifications.
  - 2. All insulation to be in full sheets, carefully fitted and pushed against adjoining sheets to form tight joints. Gaps exceeding 1/4 inch will not be accepted.
  - 3. Insulation and overlayment boards that must be cut to fit shall be saw cut or knife-cut in a straight line, not broken. Chalk lines shall be used to cut insulation. Uneven or broken edges are not acceptable.
  - 4. Remove insulation dust and debris that develops during insulation cutting operations.
  - 5. Joints between successive and adjacent layers of insulation to be offset a minimum of six (6") inches.
  - 6. Stagger joints of gypsum overlayment/overlayment insulation one (1') foot (vertically and laterally) to ensure that joints do not coincide with joints from the previous or adjacent layer.
  - 7. Crickets, saddles and tapered edge strips shall be installed before the overlayment insulation.
  - 8. 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.
  - 9. 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.
  - 10. Field modifications of insulation, tapered insulation, tapered edge strips and cants shall be made by the Contractor where required to accommodate roof and flashing conditions, prevent water dams and ponding water. Ponding water at scuppers and cricket valleys shall not be accepted.
  - 11. Provide necessary modifications to prevent standing water which is defined as 1/4" of water in a 4 square foot or larger area 24 hours or more after precipitation.
- B. Tapered Insulation

1. Install tapered insulation system to provide positive slope for complete roof drainage.
2. Crickets shall be sized as shown in the Contract Drawings. Modifications shall be provided to ensure positive slope and prevent standing water along the cricket valley.
  - a. Minimum length to width ratio shall be 2:1. Fabricate partial crickets with dimensions which would result in a minimum length to width ratio of 2:1 if they were extended to full size.
  - b. Unless otherwise noted, fabricate all crickets from tapered stock as required to provide the specified minimum slope. For example, when roof slope is indicated as 1/4" per foot minimum, fabricate crickets with slope of 1/2" per foot minimum.
  - c. Construct crickets on up slope side of all 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. Insulation Mechanical Attachment

1. Fastener quantity and spacing shall be as indicated in the Contract Drawings.
2. Fasteners shall be installed using manufacturer's recommended equipment and in accordance with the manufacturer's requirements.
3. Fasteners and stress plates shall be set secure and tight against the insulation surface, and shall not be over-driven.

D. Foam Adhesive Application

1. Adhesive beads shall be positioned and spaced at a minimum as indicated in the Contract Drawings. Comply with the requirements of the membrane manufacturer's tested assembly for adhesive spacing and positioning.
2. Adhesive beads shall be sized in accordance with the adhesive manufacturer's guidelines.
3. Insulation boards shall be placed onto the beads and immediately "walked" and/or "weighted" into place. Insulation boards must be placed into the adhesive in strict accordance with the adhesive manufacturer's guidelines.
4. Ensure full adhesion of all layers of insulation and take whatever steps necessary to achieve full adhesion, including but not limited to temporary ballasting of insulation until adhesive sets.

**END OF SECTION 07 22 16**

## **SECTION 07 41 13**

### **METAL ROOF PANELS**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Work shall include all labor, material, tools, equipment and services for the completion of standing seam metal roof system.

##### **1.02 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. Roof Retrofit Framing Section 05 54 20
  - 2. Metal Wall-Soffit Panels Section 07 42 13
  - 3. Sheet Metal Flashing and Trim Section 07 62 00

##### **1.03 REFERENCES**

- A. Refer to the following references for specification compliance:
  - 1. North Carolina Building Code
  - 2. ASCE 7 Minimum Design Loads for Buildings and Other Structures
  - 3. American Society for Testing and Materials:
    - a. ASTM E 1592: "Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference".
    - b. ASTM E 1680: "Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
    - c. ASTM E 1646: "Standard Test Method for Water Penetration Through Exterior Metal Roof Panel Systems.
    - d. 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)".
    - e. ASTM E 1514-03: "Standard Specification for Structural Standing Seam Steel Roof Panel Systems".
    - f. ASTM E 408: Standard Test Method for Total Normal Remittance of Surfaces Using Inspection Meter Techniques.
    - g. ASTM E 903 Standard Test Method for Solar Absorptions, Using Integrating Spheres.
  - 4. Underwriters Laboratory:
    - a. UL580: "Tests for Uplift Resistance of Roof Assemblies", Underwriters Laboratories, Inc.
    - b. UL2218: Class 4 Impact Resistance Rating
  - 5. SMACNA: "Architectural Sheet Metal Manual", Sheet Metal and Air Conditioning Contractors National Association, Inc.
  - 6. AISC: "Steel Construction Manual", American Institute of Steel Construction.
  - 7. National Roofing Contractors Association, NRCA "Roofing and Waterproofing

#### **1.04 DEFINITIONS**

- A. Metal Roofing Panel System: The metal roofing panel system components shall consist of the roofing panels, fascia, clips, fasteners, trim, flashings and associated accessories which, when assembled, result in a watertight, wind resistant assembly meeting all of the requirements specified herein, including the requirements to meet the specified Manufacturer’s Guarantee.

#### **1.05 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. The Contractor shall 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: Shall 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:
    - a. Provide roof system which has been tested by an approved testing agency to meet or exceed the ultimate uplift pressure which is two times the design uplift pressures determined in accordance with ASCE 7-05.
    - b. Standing seam roofing Manufacturer shall submit test reports meeting ASTM E 1592 for negative loading for the proposed panel width and gage, and clip spacing in each area (zone) of the roof. Determine panel bending and clip-to-panel strength by testing in accordance with ASTM E 1592 procedures. Capacity for gauge, span or loading other than those tested shall be determined by interpolating between submitted test values only.
    - c. Standing seam roofing Manufacturer shall submit data/calculations for clip attachment to deck substrate or retrofit framing. Clip attachment shall be designed to withstand loads induced by wind uplift lift pressures as indicated above.
  - 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 (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
  - 4. Structural Panel Deflection: Framing members and clips supporting the standing seam roofing system shall be spaced to ensure a maximum deflection under applied live load of 20 psf shall not exceed L/240 of the span.
  - 5. Fire Testing: Shall meet ASTM E 108 and Class 1A-UL 90

## **1.06 SUBMITTALS**

- A. Refer to Section 01 33 00 for Submittals.
- B. Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Manufacturer's Product Data Sheets for all materials specified.
- D. Shop drawings:
  - 1. The Contractor shall submit complete 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. The Contractor shall not proceed with work until Manufacturer Approved drawings have been submitted for review and acceptance.
  - 2. The shop drawings shall 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 all materials not supplied and proposed identification of component parts and their finishes.
- E. Testing: Contractor shall submit all testing reports for ASTM E 1592-01, ASTM E 1646, ASTM E 1680 to meet the test results shown in this specification document. Contractor shall submit the appropriate documentation to prove State Building Code design compliance. All test reports for ASTM E 108, ASTM D 5894, ASTM D 968, ASTM G23 and G153.
- F. Contractor shall provide manufacturer's calculations demonstrating compliance with the performance requirements of this specification and all applicable Codes. Calculations shall be signed and sealed by an Engineer registered to practice in the applicable state. Contractor shall provide calculations demonstrating holding strength of fasteners, to existing structure, in accordance with submitted test data, provided by fastener manufacturer, based on length of embedment and properties of materials.
- G. Standard Colors: Contractor will 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.

## **1.07 QUALITY REQUIREMENTS**

- A. Source Limitations: Obtain each type of metal panel and framing through once source from a single manufacturer.
- B. Manufacturer's Qualifications: The roof system manufacturer shall meet and provide written certification stating:
  - 1. The manufacturer has been regularly engaged in the fabrication of metal standing seam roof systems for at least ten (10) years, regardless of name change. A brief list of similar projects shall be submitted with the shop drawings.
  - 2. The manufacturer maintains a certified installer program for its products and maintains up-to-date authorized roofing contractor list.
  - 3. The manufacturer has a written warranty covering durability, color and

weathertightness of its roof system and shall include the insulation curbs and flashings from the roofing manufacturer. Sample warranties shall be provided with the bid proposal.

4. Manufacturer has 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. Manufacturer agrees to provide the technical data, shop drawings and calculations specified herein.
6. Manufacturer must be able to provide in-house inspection services as specified in Section 01 40 00. as specified in Section 01 40 00.
7. Manufacturer has an 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. Written and/or oral examinations that must be taken to pass certification.
  - f. Requirement for re-certification of training at a minimum of every five (5) years.
8. Manufacturer has 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 shall be employed by the manufacturer as a Technical Representative. The manufacturer shall 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. Engineer is to be notified a minimum of forty eight (48) hours prior to all manufacturer's inspections. Inspection report noting deficiencies shall be copied to Engineer within seven (7) days after each site visit.
10. Upon completion of the work and prior to final payment, the manufacturer shall conduct a final inspection in presence of the Contractor and Engineer. Deficiencies in the work shall be recorded and immediately corrected. 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. Contractor is an approved installer, certified by the Manufacturer before the beginning of the installation of the standing seam metal roof system.
2. The Contractor's 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 will be present at all times to supervise work whenever standing seam roofing and associated materials are to be installed.

4. The Contractor shall ensure the manufacturer provides the specified on-site technical visits, and agrees to compensate the manufacturer as necessary for any additional on-site visits required or deemed necessary by the Engineer to resolve deficiencies in the Contractor's workmanship.

## **1.08 PRODUCT DELIVERY, STORAGE, AND HANDLING**

### **A. Delivery:**

1. Contractor shall coordinate delivery with Engineer/Owner and occupants on site.
2. Material shall be delivered in the manufacturer's original sealed and labeled shrouds and in quantities to allow continuity application.
3. Contractor shall ensure metal roof system is delivered to the job site properly packaged to provide protection against transportation damage.
4. The Contractor shall be responsible for inspecting materials delivered to the project site. Materials damaged during shipping shall be rejected by the Contractor, and shall not be installed on the project.

### **B. Handling:**

1. Contractor shall exercise extreme care in unloading, storing and erecting metal roof system to prevent bending, warping, twisting and surface damage.
2. The Contractor shall handle materials to prevent scratches, dents, bending, twisting, warping and other damages.
3. Significantly scratched materials, and materials scratched through to the base steel shall be removed from the project and replaced.
4. Dented, bent or damaged materials resulting in improper fit and detracton from intended aesthetics shall be removed from the project and replaced.

### **C. Storage:**

1. Materials shall be stored out of direct exposure to the elements or pallets or dunnage at least 4 inches above ground level. Non-sweating tarpaulins will be placed 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. If conditions do not permit immediate erection, extra care should be taken to protect materials from staining, dirt, dust or water marks. Stained materials shall be cleaned before installation, or replaced.
4. The Contractor shall comply with all fire prevention requirements for the storage of materials. Combustible storage shall be located sufficiently away from buildings and non-building structures to eliminate fire exposures. The Contractor shall protect storage of combustible insulation materials from open flame and fire exposures. The Contractor shall control all project related ignition sources.

## **1.09 JOB CONDITIONS**

- ### **A. Weather Limitations:** Proceed with installation only when existing and forecasted weather conditions permit assembly of metal roof panels to be performed 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.

1. Established Dimensions: 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 that actual building dimensions, locations of structural members, and openings correspond to established dimensions.

## **1.10 WARRANTY**

- A. Contractor shall ensure Manufacturer's Warranty is provided to the Owner upon completion of the project. The Contractor shall ensure the warranty includes all conditions specified herein.
- B. 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.
  1. Warranty Period: 20 years from date of Substantial Completion.
  2. Prorated Conditions: None.
  3. Limitations of liability: Not less than the contract amount.
  4. Wind Speed: not less than 72 mph peak gust or Manufacturer shall not have liability or responsibility for acts of God which are normally covered by hazard insurance.
  5. Include weather tight performance of curbs, equipment supports and pipe portals provided as part of this work.
  6. Include insulation, sub-framing, purlins, clips, fasteners provided as part of this work.
  7. The Manufacturer's warranty shall not include "hold harmless" clause, nor limit liability of Contractor.
  8. Warranty is subject to North Carolina laws
  9. Venue to settle disputes is Buncombe County, NC.
  10. Coating systems are not an approved warranty repair.
  11. The following exclusions will not be accepted in the warranties terms, conditions and/or limitations:
    - a. If a Manufacturer Certified Installer was not present at all times during the installation of the Manufacturer's roof system.
    - b. Failure by the Roofing Contractor to correct all deficiencies listed in the Manufacturer inspection reports.
    - c. If roof leaks are due to ventilators or light transmitting panels.
    - d. Failure to use long-life fasteners in all exposed applications.
- C. Finish Warranty: Provide manufacturer's written panel finish warranty against deterioration of factory applied finishes.
  1. Warranty Period: Minimum period of twenty (20) years from date of Substantial Completion.
  2. Prorated Conditions: None.
  3. Limitations of liability: Not less than the contract amount.
  4. Include all pre-finished components provided by the manufacturer.
  5. The Manufacturer's warranty shall not include "hold harmless" clause, nor limit

- liability of Contractor.
- 6. Warranty is subject to North Carolina laws
- 7. Venue to settle disputes is Buncombe County, NC.
- 8. Coating systems are not an approved warranty repair.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURER**

- A. Manufacturer: Provide standing seam metal roof system meeting the requirements specified herein as manufacturer by:
  - 1. Architectural Integrated Metals, Inc. Aim-Lok
  - 2. American Metal Systems – Loc Seam
  - 3. McElroy - Maxima
  - 4. MBCI BattenLok HS
  - 5. Engineer's Accepted Equivalent

### **2.02 MATERIALS**

- A. Standing Seam Metal Roof Panels:
  - 1. Factory formed only by the specified Manufacturer, no job formed panels shall be allowed.
  - 2. 16" wide, striated panel, with nominal 2" high standing seam rib, utilizing male and female rib configurations, with factory applied hot-melt mastic in female rib.
  - 3. Standing seam shall be formed with the Manufacturer's electric seaming tool to produce a 90 degree rolled seam.
  - 4. AZ50 Galvalume coated steel, meeting ASTM A792-83-AZ50, minimum 24 ga., maximum 22 ga. where required for specified wind uplift resistance.
  - 5. Clip/Fastener Assembly:
    - a. Standard Clip:
      - i. Fasteners: Manufacturer's standard #12 - 14 x 1 1/4" long self-drilling, self-tapping hex head drive screws for metal; noncorrosive base material.
      - ii. UL Rated Clip: Sliding 22 gauge galvanized steel hook in combination with a double fastened 16 gauge galvanized steel base, both at  $F_y$  (min) = 33 ksi. Clip hook shall have a shop installed hot-melt butyl sealant for continuity of seal at clip locations.
- B. Metal Finish:
  - 1. Manufacturer's smooth finish, pre-finished color coatings consisting of full strength 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. All measurements per NCCA Technical Bulletin II-4 or ASTM D1005.
  - 2. Color of finish for panels all associated trim to be selected by Owner from Manufacturer's standard color chart. Previous metal retrofit projects at the school utilized MBCI color "Tundra" roof and wall panels. Manufacturer's other than MBCI will be required to color match to the pre-finished metal color utilized by MBCI on the previous two retrofit projects.

3. Panel Finish shall meet or exceed the following:
  - a. Abrasion Resistance: Shall 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: Finish coat color change shall not exceed 5 NBS units 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.

C. Fasteners:

1. All fasteners associated with the roofing installation shall be supplied by, and/or approved by, the specified metal roofing manufacturer.
  - a. Fastener length and threads and drill point shall be as required for the metal and other substrates being joined. Refer to fastener manufacturer and/or roofing manufacturer published literature.
  - b. All self-tapping/self-drilling fasteners, bolts, nuts, self-locking rivets and other suitable fasteners shall be corrosion resistant, designed to withstand specified design loads.
  - c. Contractor shall ensure fasteners have factory applied coating on the exposed fastener head and washer to match metal roof system color.
  - d. All exposed fasteners shall be provided with neoprene-backed washers.
  - e. The Contractor shall position and space all 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.

D. Curb and Equipment Support units:

1. Acceptable Manufacturers:
  - a. LM Curbs
  - b. KCC International, Inc.
  - c. Approved/Recommended by Standing Seam Roofing Manufacturer, compatible with standing seam roof and seam profile, and accepted by Engineer. Pre-manufactured curb, with cricket to conform to standing seams for watertight fit, meeting specified requirements herein.

2. Fabrication:

- a. Pre-manufactured curb shall be continuous by welded connection, with cricket to conform to standing seams for watertight fit, meeting specified requirements herein.
- b. Curbs shall be 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. Curbs and associated materials shall either be powder coated to match roof panels or factory finished to match the color of the metal roof panels.
- d. Curb assemblies shall have integral base plates and water diverter crickets. The upper flange of the curb shall be a minimum of 18 inches above the water diverter to allow for 12 inches of free area after the panel is lapped over the flange on the high side.
- e. Curbs shall be designed to install under metal roof system on the high side, and over metal roof system on the low side.
- f. Minimum height of prefabricated curb shall be 12 inches above the finished metal roof system at any point.
- g. Curbs shall be constructed to match the slope of the roof and provide a level top surface for mounting equipment.
- h. Curb flanges shall be constructed to match the configuration of the metal roof panels and seams.
- i. Curb manufacturer shall provide all curb structural support necessary to support the existing equipment and curb, and allow for thermal movement of the curb with the roofing system.
- j. Contractor shall submit roof curb manufacturer's shop drawings including curb and framing to metal roof system manufacturer for review prior to fabrication.
- k. Contractor shall ensure standing seam metal roof system Manufacturer reviews and approves roof curb manufacturer's shop drawings for compatibility with metal roof system.

E. 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. Pipe flashings shall be a 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 shall be resistant to ozone and ultraviolet rays.
4. Units shall have a sealed aluminum flanged base ring.

F. Batt Insulation:

1. Un-faced fiberglass insulation shall be installed directly over existing dry low slope roof to provide complete coverage. Thickness shall be 6 inch providing a

minimum “R” value of 30 when tested in accordance with ASTM C 177.  
Acceptable Manufacturers:

- a. Johns Manville
- b. Certainteed
- c. Owens Corning
- d. GAF

G. Accessories:

1. All accessories shall be manufactured, supplied and/or otherwise approved by the standing seam roofing Manufacturer.
  - a. Contractor shall provide all components required per the metal roof system manufacturer's approved shop drawings for a complete metal roof system to include roof panels, panel clips, trim/flashings, fascias, ridge, closures, sealants, seals and any other required items.
  - b. Contractor shall provide all metal closures and trim fabricated from the specified pre-finished metal of the same gauge, finish and color as the roof panels. Refer to Section 07 62 00-Sheet Metal Flashing and Trim for specific requirements.
  - c. Sealant Tape: Pressure sensitive, 3/16” thick by 7/8” wide tri-bead, butyl, non-sag tape sealer. Provide triple bead tape sealer (2.5” wide by 3/16” thick) where indicated in Contract Drawings.
  - d. Butyl Sealant: Shall be gun grade, non-skinning, non-hardening, flexible blend of butyl rubber and polyisobutylene sealant. Provide only where concealed between adjoining metal sections.
  - e. 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.

H. Ridge Vents: Provide minimum 20 sq. inches of NFVA per lineal foot along the ridge.

I. Eave Vents: Provide minimum 10 sq. inches of NFVA per lineal foot along the eave.  
Approved Manufacturers:

1. Cor-A-Vent.
2. Cobra Fascia Vent
3. Metal Roofing System Manufacturer’s approved and Engineers similar equivalent.

## **2.03 FABRICATION**

- A. Roof panels and all associated metal roofing components shall be 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 fabricated trim components shall meet the roofing Manufacturers requirements for watertight fit.
- C. Roof panels shall be factory formed by the specified Manufacturer, not job formed or formed on portable equipment in the Contractor’s shop. Material shall be in-line leveled prior to roll forming panel profile.

1. Roofing panels specified in this section shall be factory roll formed with fixed-base roll forming equipment and in line leveling, assuring the highest level of quality control.
- D. Roof panels shall be roll formed in continuous lengths, full length of detailed runs. Roof panels shall not have laps with fasteners between ridge and eave with no panel end laps.
- E. Fabricate trim, sheet metal flashing and accessories to fit secure and watertight at transitions and details. Improper fit will be rejected and require replacement.
- F. Fabricate roof trim and sheet metal flashing from same specified finish same as roof panel.
- G. Panels and components that result in completed installation being loose, bent or warped shall be replaced and re-fabricated for proper fit.
- H. Surface-applied sealants shall not be accepted to complete poorly fabricated and poorly fitting components. Where components do not fit tight with overlapping metal joints and seams, materials shall be removed and re-installed properly for overlapping, tight and secure fit.

### **PART 3 EXECUTION**

#### **3.01 INSPECTION**

- A. General Inspection:
  1. Contractor shall inspect all substrates and Work to verify the conditions are acceptable and complete such that metal roofing and associated Work may begin.
  2. Pre-existing unsatisfactory, wet or deteriorated roof substrates shall be replaced by the Contractor based on Allowance Quantities and Unit Price. Substrates damaged or altered by the Contractor during the Work shall be repaired, corrected or replaced by the Contractor at no cost to the Owner to meet all requirements specified herein.
  3. Contractor shall inspect all new metal roof panels and all other components before installation. Materials with scratches through the finish shall be repaired or replaced. Damaged and dented materials, and materials scratched through to the steel base material shall be removed from the project, not to be installed.
  4. Contractor shall verify that installation will be in accordance with approved shop drawings and manufacturer's instructions before beginning work. This specifically includes verifying that secondary structural members and/or decking is satisfactory to install metal roofing system.
  5. Contractor shall coordinate with metal roof system manufacturer to insure that reduced clip spacing at eave, rake, ridge and corner areas are accommodated by framing spacing and/or substrate.
  6. Contractor shall inspect substrates and notify Engineer in writing of any deficiencies observed effecting the installation, and effecting the completed roofing system and associated components.
  7. The Contractor shall inspect conditions at the walls. Rotten plywood and wood framing shall be replaced per Allowance Quantity and Unit Price. All loose plywood and wood framing shall be re-fastened by the Contractor, included in Base Bid.
  8. The Contractor shall inspect conditions at each pipe, conduit, fan, stack and curb to determine conditions and work requirements necessary to disconnect services,

remove equipment, re-install equipment and install all structural supports necessary to support the equipment and new curbs. The Contractor shall provide all electrical, plumbing, mechanical and all other services necessary to relocate any and all rooftop equipment and roof penetrations.

9. Commencement of work signifies Contractor's acceptance of substrates. Any defects in roofing work resulting from such accepted substrates shall be corrected to Owner's satisfaction at no additional expense.
10. The Contractor shall reject and replace all materials that have been damaged during shipping, storage or handling.
11. The Contractor shall inspect storage conditions daily to ensure materials remain protected from damage, condensation, dew, rain or other contamination.

### **3.02 PREPARATION**

#### **A. Roof Substrate:**

1. The roof substrate shall be dried and broomed and/or vacuumed clean of all loose gravel, stone, dirt, dust, debris and foreign matter prior to installation of the new roofing system. Blowers shall not be used unless pre-approved by the Engineer/Owner and building Occupants.
2. All free water and wet or damp debris shall be completely removed from deck substrate surface before installing new roofing system.
3. The wall substrates shall be in satisfactory condition before commencement of the Work.

#### **B. Protection:**

1. The Contractor shall 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. The Contractor shall be responsible for completely drying-in the building each day to ensure the building remains watertight. All necessary measures shall be taken to protect the building from weather related exposures during the project.
5. Seal all 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. Damages shall be repaired/replaced to meet pre-construction conditions.

#### **C. Coordination**

1. Contractor shall be responsible for the following Coordination activities:
  - a. Coordinate all work and associated work activities with the Engineer/Owner
  - b. Coordinate curb replacement and installation of new curbs for fans and equipment with the Engineer/Owner in advance. The scheduled outage of equipment shall be limited to one day or less, and the schedule for outages shall be approved in advance by the Engineer/Owner. Weekend or non business hours work may be required to accommodate the Owner and occupancy.
  - c. Coordinate raising or relocating vent pipe/soil stack pipes with the

Engineer/Owner.

- d. Coordinate all interior access and interior work with Engineer/Owner in advance. The Contractor shall not proceed with interior work unless pre-approved 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. The Contractor shall secure all 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.

### 3.03 APPLICATION

A. General:

1. The installation of sheet metal components shall allow for thermal movement, expansion and contraction. Lengths of metal, fastening type and rate, metal joints, and connections shall be installed to meet sheet metal industry recognized standards and published standards including those referenced herein. Refer to standards in References sections.
2. The various sheet metal sections shall be uniform with corners, joints, and angles mitered, sealed and secured for tight fit.
3. Sheet metal counterflashing corners shall be overlapped, riveted and sealed watertight.
4. All exposed metal edges shall be returned (hemmed) for strength and appearance. Sheet metal shall be fitted closely, uniformly and neatly.
5. Sheet metal counterflashings, expansion joints and other applicable components shall have sheet metal end closures fabricated to terminate each end of the detail. The end closures shall conceal the adjacent substrates for watertight closures. The end closures shall conform the adjacent conditions and provide for a minimum 4 inch overlap.
6. The Contractor shall provide all necessary cleats or stiffeners and other reinforcements as required to make all sections rigid and substantial.
7. Sheet metal shall be fabricated, supported, cleated, fastened and joined to prevent warping, "oil canning" and buckling. The Contractor shall be responsible for adjusting substrates, nailers, framing, etc. to ensure finished sheet metal is installed smooth.
8. Sheet metal shall be installed to prevent moisture from entering beyond the detail.
9. All sheet metal transition details shall be provided with watertight redundancy including, but not limited to self-adhering underlayment membrane, concealed sealants, and metal joint back-up plates. This secondary protection shall be installed, sealed, lapped, etc. to ensure if the sheet metal detail fails to shed water, a redundant layer of protection will be in place to shed limited moisture infiltration.
10. Dissimilar metals or other materials shall not make contact. Where dissimilar material is found in-place, galvanic corrosion between existing material and new metal shall be prevented by a separation barrier approved by Manufacturer and Engineer.
11. Galvalume, galvanized and aluminum materials shall not be in contact with

treated wood products. A physical separation, including PVC underlayment membrane or self-adhering underlayment membrane shall be installed to prevent contact.

12. Relocate plumbing vent pipes and vents to center of new metal roof panels.

B. Night Seals/Daily Tie-ins:

1. At end of day's work, or when precipitation is imminent, a water cut-off shall be built at all open edges and penetrations. These tie-ins shall be constructed to withstand extended periods of service, anticipated storms, precipitation and high winds.
2. The Contractor shall be responsible for taking all 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. Building insulation, ceilings, plywood, decking, fixtures, etc. that is wet and damaged during Construction shall be replaced by the Contractor.
4. Damages resulting from water that enters under the new metal roofing and components, and water that enters the building in the work areas during construction, shall be the responsibility of the Contractor.

C. Field-Cutting Pre-Finished Metal:

1. The Contractor shall prohibit the use of abrasive/grinding blades, circular saws and reciprocating saws. Any cutting operation that grinds, rips and tears the metal shall be prohibited.
2. Approved cutting tools for Galvalume and pre-finished steel include aviation snips, sheet metal hand shears, electric metal shears and electric nibblers.
3. Galvalume and Pre-finished metal cut using un-approved methods shall be rejected, removed and replaced by the Contractor.

D. Standing Seam Roof Panels:

1. General application shall be 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. Roofing panels shall be continuous, with no joints or seams, except where specified.
5. Install metal roof system so that it is weathertight, without waves, warps, buckles, fastening stresses or distortion, allowing for expansion and contraction.
6. Provide concealed fastener/clips at all panel attachment locations.
7. Exposed fasteners in trim components shall have pre-painted head and washer with EPDM-backed gasket for watertight seal. Fasteners shall be of size and type for metal thickness and substrate material. The Contractor shall follow the fastener manufacturer's published requirements for fastener application and installation instructions.
8. The roof clips shall be installed to allow the completed roofing assembly to accommodate anticipated specified thermal movement.

E. Roof Panel Seams:

1. Roofing panel seams shall be seamed with the specified Manufacturer's electric seaming tool, producing a 90 degree seam.
2. The Contractor shall ensure the roof panel is seamed per the Manufacturer's published instructions.
3. The Contractor shall ensure seam has factory-applied sealant in place prior to seaming.
4. The seaming tool shall be calibrated and serviced by the roofing manufacturer or other approved seaming tool manufacturer/service center. The electric seaming equipment shall be calibrated and adjusted for the metal gage, type and finish. The seaming tool shall not have been in use since last calibration and service.
5. The seam shall be true, straight and aligned to produce the desired seam without bending, warping or scratching through the panel finish.
6. Improper roof panel seaming shall result in rejection of the panel installation and result in panel removal and replacement by the Contractor.

F. Squareness:

1. Aesthetics of completed roofing is of utmost importance.
2. Panels, framing, components and trim shall be aligned true, straight and square.
3. Installation and sequence shall ensure completed installation is square for proper fit of components.
4. Installation tolerance for squareness shall not exceed 1:500 (1.92 inch per 100 ft).
5. Contractor shall maintain modularity and alignment of roof panels to prevent roof panel "stair-stepping" or "fanning".
6. The Contractor shall utilize the Manufacturer's "spacer tools", "module makers" and/or measuring tape to maintain consistent roof panel coverage.
7. The Contractor shall check for squareness after installing no more than every five (5) panels to ensure the panels are laying-up square and remain true.
8. Completed installation of roofing and associated components shall fit watertight, accommodate concealed sealants where specified, and allow for specified thermal movement.
9. Abrupt and sharp transitions in the substrate shall be corrected by the Contractor to prevent crimping, bending or poor fitting sheet metal components that may result in oil canning.
10. Completed roofing, flashing and sheet metal components that do not meet the specified tolerances shall be rejected, and corrections shall be made by the Contractor.

G. Roof components, details and trim:

1. Roof eaves, hips, expansion joints, counterflashings and sheet metal trim and closure materials and components shall be fabricated and supplied by the standing seam roofing Manufacturer, unless otherwise specified.
2. Roof details and flashings shall be pre-approved by the Manufacturer for inclusion in specified warranty.
3. Installation shall be in accordance with Manufacturer's shop drawings, details and published requirements.
4. Details shall be installed with redundancy, including secondary metal flashing, concealed sealant and self-adhering underlayment beneath all details.

H. Fasteners:

1. All fasteners shall be installed as specified, detailed and as published and designed by the fastener manufacturer for the materials being joined.

2. The Contractor shall consult and follow the fastener manufacturer's published literature for proper preparation and installation.
  3. Fastener shall be properly seated, not over-driven or under-driven. Fastener installation techniques shall not bend, dent or warp sheet metal.
  4. Pre-drill substrates where required to properly install fasteners.
  5. Fasteners shall not be installed into exposed exterior horizontal surfaces of sheet metal and roofing unless where specifically required and approved by the Manufacturer.
  6. Improperly driven/installed fasteners shall be removed and replaced with properly sized fastener for each application.
- I. Rivets: #44 stainless steel rivets with stainless steel mandrel. Length of rivet to properly fasten particular sheet metal components. Rivets shall be factory painted to match adjacent sheet metal.
- J. Sealants:
1. Sheet metal joints, and junctures between sheet metal and adjacent substrates, shall be sealed with specified, compatible sealants.
  2. Sheet metal and adjacent substrates shall be cleaned free of dust, debris and incompatible coatings.
  3. Sheet metal and adjacent substrates shall be primed and prepared to meet sealant manufacturers' published literature and recommendations.
  4. Sheet metal joints shall be inspected by the Contractor before sealant application. Joints shall be fastened and/or tightly fitted to prevent sealed joints from buckling or opening.
  5. Environmental conditions shall be dry, and precipitation shall not be anticipated, during or no less than 24 hours after, sealant application. Follow sealant manufacturers' published literature regarding environmental conditions.
  6. Sealant shall be applied and tooled as indicated and recommended in sealant manufacturers' published literature.
- K. Roof Curb Installation:
1. Contractor shall be responsible to ensure new curbs fit accurately to roofing system and equipment. Improperly fabricated, sized and installed curbs shall not be accepted, and shall be replaced with properly sized curbs for accurate fit.
  2. Contractor shall 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. Contractor shall ensure dimensions of curbs and supports fit the existing rooftop equipment, and conform to the metal roofing system for accurate, watertight fit to accommodate thermally induced panel movement.
  4. Contractor shall coordinate curb replacement for fans and other equipment with the Engineer/Owner in advance of work.
  5. The scheduled outage of equipment shall be limited to one day or less unless otherwise approved by the Engineer/Owner. The schedule for outages shall be approved in advance by the Engineer/Owner. Weekend work may be required to accommodate the Owner and occupancy.
  6. The Contractor shall protect equipment and building from damages during construction.
  7. The Contractor shall install all materials and components supplied by curb manufacturer to support the equipment and curb, and allow for thermal

- movement of roofing panels.
8. The curb and seam caps shall be installed and sealed for a permanent watertight detail without relying on exterior applied sealants.
  9. The equipment shall be installed on the curbs, secured and sealed watertight. Re-install equipment to pre-construction operations. Ensure equipment operates to Engineer/Owners satisfaction upon completion of work.
  10. Inaccurate installation and poor fit between curb and roofing panels shall be cause for rejection of curb installation, and require re-installation or replacement.

L. Pre-Fabricated Roof Jacks (pipe boots):

1. The Contractor shall move/relocate and re-secure all pipe penetrations that touch roof panel standing seams to ensure the pipe and new roof jack are installed in the flat of the panel pan. The new roof jacks shall not touch the roof panel vertical standing seams.
2. Refer to referenced standards and applicable State Plumbing Code.
3. The pipes and other equipment shall be re-installed to ensure the vent pipes, etc. are fully operational to pre-construction function.
4. Vent pipes shall be sealed air tight at all new joints and connections.
5. The flange on the new roof jack shall not come in contact with the roof panel vertical seam.
6. Contractor shall ensure old roof jacks are removed and new installed without damages or exposure to building interior to weather exposure.
7. Contractor shall be responsible for all electrical, mechanical, plumbing and related services required to relocate pipe penetrations to ensure the roof jacks do not touch the roof panel standing seams, or flashing/trim.

M. Batt Insulation:

1. Comply with batt insulation and metal roofing manufacturer's installation instructions for particular conditions of installation.
2. Install tightly around framing over existing low slope roof system.

### **3.04 CLEAN UP**

- A. Dispose of excess materials and remove debris from site. Maintain all construction related debris in approved disposal containers.
- B. Clean work in accordance with manufacturer's recommendations.
- C. The Contractor shall protect work against damage until final acceptance. The Contractor shall replace or repair to the satisfaction of the Owner, any 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.
  1. Minor scratches shall be defined as follows:
    - a. Scratches that extend into the paint finish only and not down to the base metal.
    - b. Scratches that do not extend more than 4" in length.
    - c. Where no more than two (2) scratches in lengths of less than 4" are present in a 1' by 1' area of a metal roof panel.

- E. Replace significantly scratched metal panels.
  - 1. Significant scratches shall be defined as follows:
    - a. Scratches that extend down to the base metal.
    - b. Scratches that extend more than 4" in length.
    - c. Where more than two (2) scratches in lengths less than 4" are present in a 1' by 1' area of a metal roof panel.
    - d. 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 such as copper, lead or graphite. Stainless steel shall be "passive stainless steel." Water run-off from dissimilar materials is also prohibited and should be controlled by the Contractor during construction.
- G. Immediately remove all 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. Contractor shall prevent metal chips, shavings, etc. from staining the building, roof and associated fixtures and components. Rust stains shall be removed by the Contractor.
- I. Contractor shall prevent damage during cleaning activities. Cleaning materials and methods shall not damage building, grounds, components or fixtures.
- J. The Contractor shall ensure trash and debris, especially nails and shingles, are removed from the yard and grounds immediately. Nails, shingles, sharp sheet metal scraps and all other construction related debris shall be maintained in suitable waste containers at all times.

**END OF SECTION 07 41 13**

## **SECTION 07 42 13**

### **METAL WALL/SOFFIT PANELS**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Installation of prefinished, prefabricated nonstructural flush seam wall panels with interlocking seams and vented soffit panel providing cladding protection of a weather barrier substrate where indicated.

##### **1.02 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. Roof Retrofit Framing Section 05 54 20
  - 2. Metal Roof Panels Section 07 41 13
  - 3. Sheet Metal Flashing and Trim Section 07 62 00

##### **1.03 REFERENCES**

- A. American Society for Testing and Materials (ASTM):
  - 1. ASTM 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. ASTM A753 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 3. ASTM A792 - Standard Specification for Steel Sheet, 55 percent Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
  - 4. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  - 5. ASTM D523 - Standard Test Method for Specular Gloss.
  - 6. ASTM D659 - Standard Guide for Testing Industrial Water-Reducible Coatings.
  - 7. ASTM D822 - Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
  - 8. ASTM 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, Inc. (SMACNA) - Architectural Sheet Metal Manual.
- E. Underwriters Laboratories (UL) - Building Materials Directory.

##### **1.04 SYSTEM DESCRIPTION**

- A. Design Requirements:
  - 1. Provide factory preformed wall panel system that has been pretested 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.

#### **1.05 SUBMITTALS**

- A. Refer to Section 01 33 00-Submittals.
- B. Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Manufacturer's Product Data Sheets for all materials specified certifying material complies with all specified requirements.
- D. Shop drawings showing all details, trim pieces, transitions and closures necessary to install wall panels.

#### **1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications:
  1. Manufacturer shall have a minimum of 10 years' experience supplying metal siding to the region where the work is to be done.
- 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.

#### **1.07 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, immediately separate sheets, wipe dry with clean cloth, and allow to air dry.
- G. Remove any 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.

**1.08            WARRANTY**

- A. Contractor to provide the manufacturer's twenty (20) year Kynar 500/Hylar 5000 finish warranty.

**PART 2           PRODUCTS**

**2.01            MANUFACTURERS**

- A. Acceptable Manufacturers shall be same as manufacturer of metal roof panels.

**2.02            PRODUCTS**

A. Wall Panel

1. Base Metal: 24-gauge, AZ50 Galvalume coated steel, meeting ASTM A792-83-AZ50.
2. Finish: Manufacturer's smooth finish, pre-finished color coatings consisting of full strength 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.
3. Profile: Shall be exposed fastener panel similar to MBCI PBD Panel.
4. Panel size: 36 inches in width
5. Rib Spacing: 12" on center
6. Nominal 1-1/4 inch rib height
7. Color: As selected by Owner from Manufacturer's standard color chart.

B. Soffit Panel

1. Base Metal: .024, Aluminum coated steel, structural quality ASTM A446, Grade A, G90 hot-dip galvanized conforming to ASTM A525.
2. Finish: Manufacturer's smooth finish, pre-finished color coatings consisting of full strength 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.
3. Face: Fabricate with vented slots.
4. Panel size: 12 inches (305 mm) in width.
5. Seam size: Nominal 1 inch (25 mm) deep interlocking seams with a structurally qualifying open hem on the male leg.
6. Color: White.

**2.03            RELATED MATERIALS**

A. Fasteners

1. Exposed Fastener Screws: Manufacturer's standard #10-16 x 1" long self-drilling, self-tapping pancake head Phillips drive screws with EPDM or PVC washer under heads of fasteners bearing on weather side of metal wall panels. Screw heads to match color of wall panel by means of plastic caps or factory applied coating.
2. Flush Seam Panel Screws: Manufacturer's standard #10-16 x 1" long self-drilling, self-tapping pancake head Phillips drive screws.
3. Blind Rivets: Solid-threaded, sealed stem type with EPDM washer under head. Exposed rivets shall match color finish of panel.

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. 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.

## **2.04 FABRICATION OF SHEET METAL WALL PANELS**

- A. All steel to be 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 panels in full lengths with no end laps.
  2. Fabricate exposed items of prefinished sheet metal, color to match panels.
  3. Hem exposed edges on underside 1/2 inch (12 mm) miter and seam corners.
  4. Provide for thermal expansion and contraction of the Work.
  5. 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. Unless otherwise shown on drawings or specified herein, panels shall be full length. Fabricate flashings and accessories in longest practical lengths.
- E. Wall panels shall be factory formed. Field formed panels are not acceptable.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Substrate:
1. Examine substrate to ensure that is properly secured and prepared to receive metal wall panels.
  2. Ensure substrate is installed flat, free from objectionable warp, wave, and buckle.

### **3.02 INSTALLATION**

- A. Metal Wall/Soffit 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. Field apply sealant to penetrations, transitions, and other locations necessary to prevent water infiltration.

B. Flashing:

1. Follow manufacturer's directions and architect approved Shop Drawings.
2. Install flashings to allow for thermal movement.
3. Remove strippable protective film, if used, immediately preceding flashing installation.
4. Make end cuts and install sealant and flashings to achieve weathertight installation.

C. Accessories

1. Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
2. Install components required for a complete metal wall panel assembly including trim, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.

D. Cutting and Fitting:

1. Neat, square and true. Torch cutting is prohibited where cut is exposed to final view.
2. Openings 6 inches (153 mm) and larger in any 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.

**3.03 PROTECTION**

- A. Protect work as required to ensure metal wall panel system will be without damage at time of final completion.

**END OF SECTION 07 42 13**

## **SECTION 07 53 23**

### **EPDM MEMBRANE REPAIRS**

#### **PART 1 GENERAL**

##### **1.01 WORK INCLUDED**

- A. Flash retrofit framing to existing EPDM roof membrane to create a watertight condition.

##### **1.02 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. Roof Retrofit Framing Section 05 54 20

##### **1.03 REFERENCES**

- A. Refer to the following references, current edition for specification compliance:

- 1. North Carolina Building Code
  - 2. National Roofing Contractors Association - NRCA
  - 3. Underwriters Laboratory - UL
  - 4. Factory Mutual Standard - FM
  - 5. Single Ply Roofing Institute - SPRI

##### **1.04 SUBMITTALS**

- A. Refer to Section 01300 for Submittals.
- B. Manufacturer's Product Data Sheets for all materials specified.

##### **1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING**

- A. All products delivered to the job site shall be in the original unopened containers or wrappings with legible labels and in sufficient quantity to allow for continuity of work.
- B. Handle all materials to prevent damage. Place all materials on pallets and fully protect from moisture, inclement weather and cold or heat in accordance with Manufacturer's recommendations.
- C. All flammable liquids shall be stored and dispensed from appropriate containers. Follow precautions outlined on container or supplied by material Manufacturer/supplier, and all code requirements for storage and handling of flammable liquids.
- D. Any materials that are determined by the Owner's representative to be damaged are to be removed from the job site and replaced by the contractor at no cost to the owner.

##### **1.06 PROJECT CONDITIONS**

- A. Roofing shall not be applied during precipitation.
- B. Only as much of the new roofing as can be made weather tight each day, including all flashing work, shall be installed.

- C. All surfaces to be adhered must be clean and dry before and during roofing application.

## **1.07 QUALITY ASSURANCE**

- A. There shall be no deviation made from the contract specifications or the approved shop drawings without prior written approval by the Owner and the Owner's representative.
- B. Repairs shall be completed in accordance with the most current membrane manufacturer's published repair guidelines, industry accepted standards as published by NRCA and/or SPRI, and as required in the project manual.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Flashing membrane shall meet ASTM D 4637, for Type I, non-reinforced EPDM. 0.045 inch thick, black.
- B. Splice tape consisting of 0.030" thick cured rubber polymer, self adhering tape for splicing EPDM membrane seams.
- C. Flashing tape consisting of uncured, EPDM flashing, nominal 0.045 inch thick, laminated to nominal 0.045 cured rubber polymer tape.
- D. Bonding adhesive for adhering membrane to wood, metal, masonry and other substrates for adhered application.
- E. Splice adhesive for adhering flashings to prepared membrane surfaces, and to metal surfaces.
- F. Lap sealant by membrane manufacture for seam edge treatment.
- G. Water block seal for concealed, compression sealant.
- H. Sealant. Sonneborne Sonolastic NP-1, or approved equivalent for exposed caulk seal for metal, masonry, CMU and as required.
- I. Membrane Pre-wash: Detergent washing solution, or industry accepted, approved, membrane pre-cleaning agent.
- J. Splice wash. Solvent based cleaner.
- K. Primer. Synthetic rubber polymer primer for cleaning and priming EPDM membrane surfaces.

## **PART 3 EXECUTION**

### **3.01 SUBSTRATE PREPARATION**

- A. Verify that the substrate is dry, clean, smooth, and free of loose material, oil, grease, or other foreign matter.
- B. Where damaged/deteriorated components are determined to be an unacceptable substrate for membrane/flashing repair, the Engineer shall be notified, and acceptable repairs shall be made to the substrate.

- C. The membrane and flashing repairs shall be installed over the properly prepared substrate. The repair area shall be cleaned at least 3 inches beyond the repair area.
  - 1. Scrub membrane surface with detergent and water or other industry accepted method pre-cleaner.
  - 2. Apply splice wash to remove residue from membrane using natural fiber, white cloth.
- D. Prime membrane surface using manufacturer's approved primer.
- E. Apply splice adhesive to all surfaces that do not have self adhesive surface. Apply using a solvent resistant paint brush, minimum 3 inch wide, or as required by manufacturer.

### **3.02 MEMBRANE AND FLASHING REPAIRS**

- A. General membrane repair:
  - 1. Clean and prepare membrane.
  - 2. Prime membrane contact surfaces.
  - 3. Apply splice adhesive to membrane contact surfaces that do not have self adhesive.
  - 4. Apply bonding adhesive to membrane and substrate.
  - 5. Install EPDM target to extend beyond existing flashing, or strip with flashing tape, or equivalent accepted repair method.
  - 6. Flash penetration utilizing approved product.
  - 7. Apply lap sealant as required.

### **3.03 CLEAN UP**

- A. Remove all debris and excess material from the roof area. Pick up all loose fasteners and sheet metal scraps.
- B. Insure the water tightness of the entire system.
- C. Protect all roof surfaces from damage from other trades.

**END OF SECTION 07 53 23**

## SECTION 07 54 23

### THERMOPLASTIC-POLYOLEFIN ROOFING

#### **PART 1 GENERAL**

##### **1.01 WORK INCLUDED**

- A. Area C3 (Alternate No. 1), Area C4 (Alternate No. 2), Area C5 (Alternate No. 3) and Area M2 (Alternate No. 4): Provide a fully adhered, thermoplastic-polyolefin (TPO) membrane and flashings to provide a permanently watertight system.

##### **1.02 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. Rough Carpentry Section 06 10 00
  - 2. Preparation for Reroofing Section 07 01 50
  - 3. Roof Insulation Section 07 22 16
  - 4. Sheet Metal Flashing and Trim Section 07 62 00

##### **1.03 REFERENCES**

- A. Refer to the following references, current edition for specification compliance:
  - 1. NC State Building Code
  - 2. American Society of Testing Materials (ASTM)
  - 3. National Roofing Contractors Association (NRCA)
  - 4. Underwriters Laboratory (UL)
  - 5. FM Global
  - 6. Single Ply Roofing Institute

##### **1.04 SUBMITTALS**

- A. Refer to Section 01 33 00-Submittal Procedures for Submittals.
- B. Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Manufacturer's Product Data Sheets for all materials specified.
- D. Certifications by manufacturers that all materials supplied comply with all requirements of the identified ASTM and other industry standards or practices.

##### **1.05 DELIVERY, STORAGE AND HANDLING**

- A. All products delivered to the job site shall be in the original unopened containers or wrappings bearing all seals and approvals.
- B. Handle all materials to prevent damage. Place all materials on pallets and fully protect from moisture.
- C. Follow manufacturer's requirements for storing of membrane rolls. Membrane rolls shall be stored lying down on pallets and fully 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 that may affect the ease of membrane weldability.

- D. All adhesives shall be stored at temperatures required by the manufacturer.
- E. All flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined on containers or supplied by material manufacturer/supplier.
- F. All materials which are determined to be damaged by the Engineer, Owner's Representative or membrane manufacturer are to be removed from the job site and replaced at no cost to the Owner.

#### **1.06 PROJECT CONDITIONS**

- A. Roofing shall not be applied during precipitation and shall not be started in the event there is a probability of precipitation during application.
- B. Only as much of the new roofing as can be made weathertight each day, including all flashing and detail work, shall be installed. All seams shall be cleaned and heat welded before leaving the job site that day.
- C. All work shall be scheduled and executed without exposing the interior building areas to the effects of inclement weather. The existing building and its contents shall be protected against all risks.
- D. All surfaces to receive new insulation, membrane or flashings shall be dry. Should surface moisture occur, the Applicator shall provide the necessary equipment to dry the surface prior to application.
- E. All new and temporary construction, including equipment and accessories, shall be secured in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.
- F. Uninterrupted waterstops shall be installed at the end of each day's work and shall be completely removed before proceeding with the next day's work. Waterstops shall not emit dangerous or unsafe fumes and shall not remain in contact with the finished roof as the installation progresses. Contaminated membrane shall be replaced 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, the Applicator shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas. A protection layer of plywood over insulation board shall be provided for all new and existing roof areas that receive rooftop traffic during construction.
- H. Prior to and during application, all dirt, debris and dust shall be removed from surfaces, either by vacuuming, sweeping, blowing with compressed air and/or similar methods.
- I. Contaminants, such as grease, fats, oils, and solvents, shall not be allowed to come into contact with the roofing membrane. All rooftop contamination that is anticipated or that is occurring shall be reported to the Engineer and membrane manufacturer to determine the corrective steps to be taken.
- J. If any unusual or concealed condition is discovered, the contractor shall stop work, notify

Engineer of such condition immediately, and in writing within 24 hours.

- K. The roofing membrane shall not be installed 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. Any exterior wall has 10% or more of the surface area comprised of opening doors or windows.
  - 3. The wall/deck intersection permits air entry into the wall flashing area.
- L. Precautions shall be taken when using membrane adhesives at or near rooftop vents or air intakes. Adhesive odors could enter the building. Coordinate the operation of vents and air intakes in such a manner as to avoid the intake of adhesive odor while ventilating the building. Keep lids on unused cans at all times.

## **1.07 QUALITY ASSURANCE**

- A. Manufacturer Requirements:
  - 1. Manufacturer must have written contractor/installer approval program.
  - 2. The product must have a continuous manufacturing history with the current product formulation of no less than ten (10) years in the United States of America.
  - 3. Products manufactured by other manufacturers and private labeled are not acceptable.
  - 4. See materials section for general product description and specified requirements.
- B. Contractor Requirements:
  - 1. This roofing system shall be applied only by a Contractor authorized by the membrane manufacturer prior to bid.
  - 2. Application of the roofing system shall be accomplished by a primary roofing contractor, his roofing foreman, and sufficient applicator technicians who all have been trained and approved by the manufacturer of the single ply roofing system. Contractor to submit evidence of qualification from the manufacturer.
- C. Upon completion of the installation an inspection shall be made by a representative of the membrane manufacturer to review the installed roof system and list all deficiencies.
- D. There shall be no deviation made from the Contract Documents or the approved shop drawings without prior written approval by the Owner, the Owner's Representative and the membrane manufacturer.
- E. All work shall be completed by personnel trained and authorized by the membrane manufacturer.
- F. Contractor to provide manufacturer written verification indicating all seams have been probed and are watertight.
- G. Install roofing system to meet UL 790 Class A Fire Rating.
- H. Wind Design: Install roofing system to meet or exceed the wind uplift pressures listed below. Roof system shall be a tested assembly tested to ultimate pressures which shall be 2 times greater than the allowable pressures listed below:
  - 1. Field of Roof: - 26 psf.

2. Perimeter of Roof: - 43 psf.
3. Corner of Roof: - 65 psf.

## **1.08 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). Warranties requiring the Owner's signature will not be acceptable.
1. Warranty to include but not be limited to membrane, insulation, adhesives, fasteners, sealants, flashings, polymer clad sheet metal, etc.
  2. Warranty Period: Twenty years from date of Substantial Completion.
  3. Wind Speed: Warranty to remain in effect for wind speeds up to and including the design wind speed (90 MPH).
  4. The Manufacturer's warranty shall not include "hold harmless" clause, nor limit liability of Contractor.
  5. Warranty is subject to North Carolina laws
  6. Venue to settle disputes is Buncombe County, NC.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURER**

- A. Membrane materials shall be manufactured by the following:
1. Carlisle SynTec, Inc.
  2. Firestone Building Products
  3. Johns Manville
  4. Engineers Accepted Equivalent

### **2.02 MEMBRANE MATERIALS**

- A. Membrane: Shall be an 80 mil nominal thickness thermoplastic-polyolefin membrane with polyester reinforcement.
1. Membrane shall conform to ASTM D 6878 with thickness measured in accordance with ASTM D 751 and thickness above reinforce tested in accordance with ASTM D 4637.
  2. Color: Light Grey.
- B. Flashing:
1. Reinforced 60 mil. thick, TPO membrane for walls and curbs.
  2. Unsupported 60 mil. thick, TPO membrane shall be supplied for field-fabricated vent stacks, pipes, drains and corners.

### **2.03 RELATED MATERIALS**

- A. Adhesive: Shall be membrane manufacturer's solvent based adhesive.
- B. T-joint Patch: Shall be membrane manufacturer's circular patch welded over T-joints formed by overlapping thick membranes.

- C. Corner Flashing: Shall be membrane manufacturer's pre-formed inside and outside flashing corners that are heat-welded to membrane or polymer clad metal base flashings.
- D. Termination Bar: Shall be manufacturer's 1/8" by 1" mill finish extruded aluminum bar with pre-punched slotted holes.
- E. Counter Flashing Bar: Shall be a prefabricated extruded aluminum metal counter flashing and termination bar. 0.10"-0.12" thick bar with 2-1/4" profile, pre-drilled holes 8" on center and sealant kick out at top edge.
- F. Sealant: Shall be manufacturer's multi-purpose sealant.
- G. Fasteners:
  - 1. Flashing and Membrane Termination Screws: #12 hot dipped galvanized, corrosion resistant hex or pan head screws with length required to penetrate substrate a minimum of 1-1/2".
  - 2. Concrete and Masonry Flashing Membrane Termination Anchors:
    - a. 1/4" diameter metal based expansion anchor with stainless steel pin of length required to penetrate substrate a minimum of 1-1/2".
    - b. Masonry screws, approved by membrane manufacturer, 1/4 inch minimum diameter, corrosion resistant, with Phillips flat head. Length required to provide minimum 1.5" embedment into substrate.
- H. Primary Membrane Cleaner: Shall be a high quality solvent cleaner provided by membrane manufacturer and approved by engineer for use as a general membrane cleaner.
- I. Pre-weld Cleaner: Shall be a high quality solvent based seam cleaner with moderate evaporation rate provided by membrane manufacturer.
- J. Polymer Clad Metal: Refer to Section 07 62 00-Sheet Metal Flashing and Trim.

## **PART 3 EXECUTION**

### **3.01 SUBSTRATE PREPARATION**

- A. Verify that the substrate is dry, clean, smooth, and free of loose material, oil, grease, or other foreign matter. Sharp ridges and other projections and accumulations of bitumen shall be removed to ensure a smooth surface before roofing.
- B. Asphalt roofing substrates shall be removed, covered or flashed using compatible, approved materials. PVC shall not come in contact with substrates containing asphalt materials.
- C. Any deteriorated substrate shall be repaired.
- D. Beginning installation means acceptance of prepared substrate.
- E. Provide necessary protection from adhesive vapors to prevent interaction with foamed plastic insulation.

### **3.02 MEMBRANE INSTALLATION**

- A. The surface of the insulation or substrate shall be inspected prior to installation of the

roof membrane. The substrate shall be clean, dry, free from debris and smooth with no surface roughness or contamination. Broken, delaminated, wet or damaged insulation boards shall be removed and replaced.

- B. Position membrane over the properly installed and prepared substrate.
- C. Fold membrane back lengthwise so half the underside of the membrane is exposed.
- D. Adhesive shall be applied using solvent-resistant 3/4" nap paint rollers. The adhesive shall be applied to the substrate and back side of the membrane at a rate according to the membrane manufacturer's requirements. The adhesive shall be applied in smooth, even coatings with no gaps, globs, puddles or similar inconsistencies. Allow the adhesive to dry until it is tacky but will string or stick to a dry finger touch.
  - 1. The Applicator shall count the amount of pails of adhesive used per area per day to verify conformance to the specified adhesive rate.
  - 2. No adhesive shall be applied in seam areas. All membrane shall be applied in the same manner.
- E. Roll the adhesive coated membrane into the coated substrate while avoiding wrinkles. Brush down the bonded section of the membrane immediately after rolling the membrane into the adhesive with a soft bristle broom to achieve maximum contact.
- F. Fold back the unbounded half of the sheet lengthwise and repeat the bonding procedures. This process is repeated throughout the roof area.
- G. Position adjoining sheets to allow a minimum overlap of 2" and hot-air weld.
- H. Weld membrane coverstrips at all feltback membrane seams without a factory selvage edge.
- I. Terminate membrane at all walls as shown in the contract drawings.
  - 1. Wood Substrate: Membrane shall be turned up wall one inch and mechanically terminated using approved screws eight (8) inches on center with a termination bar.
  - 2. Concrete/Masonry Substrate: Membrane shall be turned up wall one inch and mechanically terminated using approved anchors eight (8) inches on center with a termination bar.
- J. Terminate membrane at all penetrations as shown in the contract drawings.
  - 1. Membrane shall be terminated six inches on center or a minimum of four (4) fasteners per penetration into the structural deck using fasteners and plates as approved by the membrane manufacturer for the deck substrate.
- K. Membrane shall extend over roof edge a minimum of 2" below the perimeter wood blocking. If fleece-back membrane is utilized, trim membrane flush with outside edge of roof and hot-air weld a non-fleece back flashing membrane to extend over the roof edge.

### **3.03 FLASHING INSTALLATION**

- A. General
  - 1. All flashings shall be installed concurrently with the roof membrane as the job progresses.

2. No temporary flashings shall be allowed without the prior written approval of the Engineer and Manufacturer. Approval shall only be for specific locations on specific dates. If any water is allowed to enter under the newly completed roofing, the affected area shall be removed and replaced at the Contractor's expense.
3. Seams shall not be "taped" as temporary measure but shall be fully completed before the end of each day.
4. Flashing shall be adhered to compatible, dry, smooth, and solvent-resistant surfaces.
5. Where substrates are incompatible with adhesives and PVC materials, the Contractor shall remove the incompatible materials and replace it 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, flashing adhesive shall be applied according to instructions found on the Product Data Sheet. The membrane adhesive shall be applied in smooth, even coats with no gaps, globs or similar inconsistencies.
2. Only an area which can be completely covered in the same day's operations shall be flashed. The bonded sheet shall be pressed firmly in place with a hand roller.
3. No adhesive shall be applied in seam areas that are to be welded. All panels of membrane shall be applied in the same manner, overlapping the edges of the panels required by welding techniques.

C. All flashings shall mechanically terminated a minimum of 8 inches above the finished roofing surface using approved fasteners and counter flashing bar unless otherwise indicated in the Contract Drawings. Flashing heights less than 8" shall be accepted in writing by the Manufacturer's Technical Department.

D. All flashing membranes shall be consistently adhered to substrates. All interior and exterior corners and miters shall be cut and hot-air welded into place. No bitumen shall be in contact with the (roof) membrane.

E. All flashings shall be hot-air welded at their joints and at their connections with the (roof) membrane.

F. All flashings that exceed 30 inches (0.75 m) in height shall receive additional securement. Consult Manufacturer's Technical Department for securement methods.

G. Corners shall be flashed using the membrane manufacturer's pre-formed corners.

H. Polymer Clad sheet metal incorporated into the roofing system shall be sealed off with a heat welded stripping ply. The stripping ply shall extend four inches beyond sheet metal onto roof membrane and fit closely to fit closely to edge of sheet metal.

I. Soil Pipe/Pipe Penetration:

1. Provide field wrapped pipe penetration flashing as shown in detail drawing.
2. Apply aluminum tape to penetration if asphalt contamination is present.
3. Extend existing pipe to obtain a minimum 8" finished flashing height.
4. Cut existing pipe to obtain a maximum 12" finished flashing height.
5. Horizontal flashing membrane shall be hot-air welded a minimum of four inches onto the membrane.
6. Vertical flashing membrane shall be fully adhered to pipe penetration and extend

a minimum of 1.5" horizontal at the base of penetration. Hot-air weld vertical flashing membrane to horizontal flashing membrane.

7. Install stainless steel draw band and sealant or hot-air weld flashing cap to terminate top edge of pipe flashing.

### 3.04

#### **HOT-AIR WELDING OF SEAM OVERLAPS**

##### A. General

1. All seams shall be hot-air welded. Seam overlaps should be 3 inches (75 mm) wide when automatic machine-welding and 4 inches (100 mm) wide when hand-welding, except for certain details.
2. Welding equipment shall be provided by or approved by the membrane manufacturer. All mechanics intending to use the equipment shall have successfully completed a training course provided by a membrane manufacturer's technical representative prior to welding.
3. All membrane to be welded shall be clean and dry.

##### B. Hand-Welding

1. Hand-welded seams shall be completed in two stages. Hot-air welding equipment shall be allowed to warm up for at least one minute prior to welding.
2. The back edge of the seam shall be welded with a narrow but continuous weld to prevent loss of hot air during the final welding.
3. The nozzle shall be inserted 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 1½ inch (40 mm) wide nozzle is recommended for use. For corners and compound connections, the ¾ inch (20 mm) wide nozzle shall be used.

##### C. Machine Welding

1. Machine welded seams are achieved by the use of automatic welding equipment. When using this equipment, instructions from the manufacturer shall be followed and local codes for electric supply, grounding and over current protection observed. Dedicated circuit house power or a dedicated portable generator is recommended. No other equipment shall be operated 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 Welded Seams

1. The Applicator shall check all 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. On-site evaluation of welded seams shall be made daily by the Applicator to locations as directed by the Engineer or membrane manufacturer's representative. One inch (25 mm) wide cross-section samples of welded seams shall be taken at least three times a day. Correct welds display failure from shearing of the membrane prior to separation of the weld. Each test cut shall be patched by the Applicator at no extra cost to the Owner.

- E. Apply unreinforced flashing membrane over all cut edges of reinforced membrane after seam probing has been completed. Cut edge sealant will not be acceptable.

- F. Install T-joint patch at all T-seam locations.

### **3.05 TEMPORARY CUT-OFF**

- A. All flashings shall be installed 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. An 8" strip of flashing membrane shall be welded 4" to the new field membrane. The remaining 4" of flashing membrane shall be sealed to the deck and/or the substrate so that water will not be allowed to travel under the new or existing membrane. The edge of the membrane shall be sealed in a continuous heavy application of pourable sealer of 6 inch width. When work resumes, the contaminated membrane shall be removed and disposed of. None of these materials shall be reused in the new work.
- C. If inclement weather occurs while a temporary water stop is in place, the Contractor shall provide the labor necessary to monitor the situation to maintain a watertight condition.
- D. If any water is allowed to enter under the newly-completed system, the affected area shall be removed and replaced at the Contractor's expense.

### **3.06 CLEANING AND PROTECTION**

- A. The Contractor shall be responsible for protecting the roof from construction related damages during the Work.
- B. The Contractor shall ensure trash and debris is removed from the roof daily.
- C. Metal scraps, nails, screws and other sharp damaging debris shall be kept off of the roof membrane surface during construction.
- D. The Contractor shall clean off/remove excess adhesive, sealant, stains and residue on the membrane and flashing surfaces.
- E. The Contractor shall repair or remove and replace damaged membrane, flashings and other membrane components. Repairs shall be in accordance with the membrane manufacturers repair instruction to comply with the specified warranty.
- F. The Contractor shall remove temporary coverings and masking protection from adjacent work areas upon completion. Remove construction debris from the project site on a planned and regular basis.

**END OF SECTION 07 54 23**

## **SECTION 07 62 00**

### **SHEET METAL FLASHING AND TRIM**

#### **PART 1 GENERAL**

##### **1.01 WORK INCLUDED**

- A. Fabrication and installation of new sheet metal flashings and trim to provide a permanently watertight condition.

##### **1.02 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. Rough Carpentry Section 06 10 00
  - 2. Metal Roof Panels Section 07 41 13
  - 3. Metal Wall/Soffit Panels Section 07 42 13
  - 4. Thermoplastic Polyolefin Roofing Section 07 54 23

##### **1.03 REFERENCES**

- A. Refer to the following references for specification compliance:
  - 1. NC State Building Code
  - 2. American Society for Testing and Materials (ASTM)
  - 3. National Roofing Contractors Association (NRCA)
  - 4. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
  - 5. ANSI/SPRI ES-1

##### **1.04 SUBMITTALS**

- A. Latest edition of the Manufacturer's current material specifications and installation instructions.
- B. Manufacturer's Product Data Sheets for all materials specified.
- C. Pre-finished sheet metal color chart.
- D. Shop Drawings for any transitions and/or terminations not depicted in Contract Drawings.

##### **1.05 QUALITY ASSURANCE**

- A. Installation shall comply with the current SMACNA Architectural Sheet Metal Manual.
- B. Fabricate metal edge (where no gutter is present) and coping in accordance with ANSI/SPRI ES-1 requirements.
- C. Workmanship shall be first-class in every respect. The various sections shall be uniform with joints at corners and angles mitered and the different sections accurately fitted and rigidly secured. Completed work will be free of leaks under all weather conditions.

##### **1.06 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 or approved 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.

## **1.07 PROJECT CONDITIONS**

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

## **1.08 WARRANTY**

- A. Manufacturer's Finish Warranty: Shall be same as and provided under metal roof panel warranty.

## **PART 2 PRODUCTS**

### **2.01 PRE-FINISHED GALVALUME**

- A. Shall be same as metal roof panels specified in Section 07 41 13-Metal Roof Panels.
  - 1. 24 gauge
    - a. Gutter
    - b. Downspouts
    - c. Eave Closure
    - d. Expansion Joint Cover
    - e. Expansion Joint Cleat
    - f. Rake Flashing
    - g. Wall Panel Sill
    - h. Wall/Soffit Panel Closures
    - i. Ridge Zee
    - j. Ridge Cap

### **2.02 GALVALUME STEEL**

- A. AZ50 Galvalume coated steel, meeting ASTM A792-83-AZ50, mill finish.
  - 1. 22 gauge:
    - a. Continuous Cleat
  - 2. 16 gauge:
    - a. Gutter Top Hanger
  - 3. 12 gauge:

- a. Gutter Bottom Hanger
- 4. Downspout Hangers: Powder coat to match gutter, or clad in gutter material. If powder coating, form brackets prior to coating.
  - a. 1/16" x 1"

## **2.03 POLYMER CLAD METAL (TPO)**

- A. Polymer Clad Metal – Heat-weldable, 24 gauge, AISI G90 galvanized steel sheet with a 20 mil unsupported TPO membrane coating to match the flashing membrane composition laminated on one side . Polymer-Clad metal shall be manufactured by, and included in the warranty of, the single-ply membrane Manufacturer. Color shall be selected by Owner.
  - 1. Metal Edge
  - 2. Base Flashing Closure
  - 3. Polymer Clad Base Flashing

## **2.04 STAINLESS STEEL**

- A. Type 304 as tested in accordance with ASTM A 167.
  - 1. Gutter Hangers (for low slope roof area): 1/8" thick by 2" wide

## **2.05 FASTENERS**

- A. Refer to Specification Section 07 41 13-Metal Roof Panels.
- B. Screws: #12 stainless steel, low profile pancake head with length to penetrate substrate a minimum of 1-1/2".
- C. Roofing Nails: 11 or 12 gauge stainless steel ring shank roofing nails with diamond point, minimum 3/8" diameter head and 1-1/4" length.

## **2.06 RELATED MATERIALS**

- A. Sealant: Refer to Specification Section 07 41 13-Metal Roof Panels.
- B. Sealant Tape: Refer to Specification Section 07 41 13-Metal Roof Panels.

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A. Coordinate with other work for correct sequencing of items which make up the entire system.
- B. Ensure substrates are installed, secured and modified to accommodate sheet metal flashings.
- C. Deficiencies associated with the sheet metal substrates shall be reported to Engineer before beginning sheet metal work. All such deficiencies shall be corrected before installing sheet metal flashings.

## A. General:

1. All joints to be locked and sealed or soldered.
2. Provide for thermal movement (expansion and contraction) of all exposed sheet metal.
3. Where dissimilar metals contact, galvanic action shall be prevented by means of heavy coat of asphalt paint.
4. Various sheet metal sections shall be uniform with corners, joints and angles mitered, sealed and secured.
5. Exposed edges shall be returned (hemmed); both for strength and appearance, and sheet metal shall be fitted closely and neatly.
6. Provide cleats or stiffeners and other reinforcements to make all sections rigid and substantial.
7. Sheet metal shall be fabricated, supported, cleated, fastened and joined to prevent warping, "oil canning", and buckling.
8. All sheet metal details shall provide for redundancy including but not limited to sheet metal underlayment and/or sealants. This secondary protection shall be installed, sealed, lapped to ensure a redundant layer of protection will shed moisture infiltration in the sheet metal fails.
9. Adjoining sheet metal sections shall be end lapped a minimum of 4" and a minimum of two beads of sealant/sealant taped installed in the lap area. Components shall be notched for a tight fit.

## B. Fasteners: Shall be size and type required.

1. All fasteners to be rust resistant and compatible with materials to be joined.
2. All exposed fasteners shall be stainless steel screws with washers fastened through 5/16" predrilled oversized holes.
3. All exposed fasteners into concrete or masonry shall be metal based expansion anchor with stainless steel pin with washers fastened through 11/32" predrilled oversized holes.
4. All exposed fasteners shall have factory painted heads to match the sheet metal color.
5. Exposed horizontal surface fasteners are not acceptable.

## C. Sheet Metal Laps (General): Unless otherwise indicated provide sheet metal as follows:

1. Fabricate various components as shown in detail drawings in 10' lengths.
2. Secure as indicated in detail drawings.
3. Notch and lap ends of adjoining sheet metal sections not less than 4"; apply sealant tape between sections.
4. Lap miters at corners a minimum of 1 inch and apply sealant between laps. Rivet at 2" on center.

## D. Gutters

1. Fabricate to profile shown in Contract Drawings.
2. Gutters shall be formed in 10' lengths. Joints in gutters must be lapped a minimum of 1 inch, riveted 1 inch on center. Install sealant tape between gutter sections and sealant at exposed inside edge and on rivets. Lap joints in the direction of water flow 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 shall be 50'.

4. Provide downspout outlets in downspout locations. Refer to SMACNA Manual Figure 1-33B. Gutter outlet tubes to be tabbed a minimum of 1", set in a full bead of sealant and secured to gutter with a minimum of two rivets per tab.
5. Provide hangers as shown in detail drawings. Spacing shall be 32" on center or every other panel rib on standing seam metal roofs.
6. Provide hangers as shown in detail drawings. Spacing shall be 32" on center or every other panel rib on standing seam metal roofs and 24" on low slope roofs. Provide a minimum of two fasteners per hanger to secure hanger to standing seam and one fastener to secure hanger to gutter.
7. Provide two fasteners to secure each lower hanger to gutter.
8. Hang gutters level.

E. Downspouts:

1. Fabricate downspouts in 10' lengths. Refer to SMACNA Architectural Sheet Metal Manual Figure 1-32B.
2. Downspouts shall tie into existing below grade storm drainage system or if no below grade system is applicable downspouts shall kick-out above grade onto concrete splash blocks. Fill in soil to provide slope away from building.
3. Each downspout shall be secured to the structure with two-piece hangers spaced no more than 8' apart with a minimum of two hangers per downspout with a hanger located within 12" from bottom. Hangers shall be primed and painted to match downspouts. Refer to SMACNA Architectural Sheet Metal Manual Figure 1-35H.
4. Downspouts are to be fashioned so as to run back to (at overhangs) and parallel to the facility walls.
5. Provide discharge elbow at the base of downspout.
6. Install splash pans on 18" by 30" walk pads where downspouts discharge onto an adjacent roof area. Splash pan shall be fabricated to meet SMACNA Figure 1-36.

F. Rake Edge

1. Fabricate rake edge as shown in detail drawings in 10' lengths. Refer to SMACNA Manual Figure 2-1.
2. Install continuous cleat as indicated in detail drawings fastened to substrate 6" on center. Locate fasteners no greater than 2" from the bottom hem.
3. Lock rake edge onto continuous cleat and secure at 12" on center.
4. Notch and lap ends of adjoining sheet metal sections not less than 4"; apply sealant between sections.
5. Hand tong all of metal edge onto continuous cleat.

G. Expansion Joint

1. Fabricate expansion joint cover and cleat as shown in detail drawing in 10' lengths. Refer to SMACNA Architectural Sheet Metal Manual Figure 5-5A.
2. Install sheet metal underlayment up and over expansion joint.
3. Provide continuous expansion joint cleat fastened to the expansion curb 12" on center.
4. Lock expansion joint cover onto cleat and fasten remaining vertical leg of cover at 12" on center.
5. Notch and lap ends of adjoining sheet metal sections not less than 4"; apply butyl

sealant between sections. Laps shall be installed in shingle fashion.

H. Metal Edge (Thermoplastic)

1. Fabricate metal edge without vertical gravel stop at drainage edges as shown in detail drawings in 10' lengths. Refer to SMACNA Manual Figure 2-1.
2. Provide fascia cover secured to wood blocking 12" on center where indicated in detail drawing. Notch and lap ends of adjoining fascia cover sheet metal sections not less than 4"; apply sealant tape between sections.
3. Provide gutter as indicated above.
4. Secure flange of metal edge to wood blocking 3" on center staggered and not within 1/2" from inside edge and 3/4" from outside edge.
5. Strip flange of metal edge with hot-air welded stripping membrane as specified in the Contract Drawings.
6. Metal Edge Joints:
  - a. Leave a 1/4" 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 entire joint opening (flange and face).
  - c. Hot-air weld 4" wide strip of stripping membrane over entire joint.
  - d. Strip in flange of metal edge as described above.

I. Polymer Clad Base Flashing

1. Fabricate as shown in detail drawings in 10' lengths.
2. Leave a 1/4" opening between sheet metal sections.
3. Center aluminum tape over entire joint opening.
4. Hot-air weld 4" wide strip of stripping membrane over entire joint.
5. Strip flange of base flashing as indicated in the Contract Drawings.

J. Base Flashing Closure (Thermoplastic)

1. Install new closures where base flashings abruptly end.
2. Completely solder or seal all joints to be watertight.
3. Install closures over membrane and under finish ply of base flashing.
4. Extend closures up under counterflashings or copings.
5. Install closures to completely seal ends of base flashings, membrane and cants as well as end joints of edge metal.

**3.03 CLEANING AND PROTECTION**

- A. All sheet metal work shall be thoroughly cleaned of all asphalt, flux, scrapes and dust.
- B. Scratches through the metal finish shall be replaced to the Owner's satisfaction.

**END OF SECTION 07 62 00**

## **SECTION 07 72 00**

### **ROOF ACCESSORIES**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Provide snow guard system along gutter edge of Areas A2-A7.
- B. Provide twelve (12) mill finish aluminum standing seam roof anchors certified for 5,000 lbs. by OSHA/ANSI in locations as determined by Owner. Install and tighten in accordance with manufacturer's printed installation instructions.

##### **1.02 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. Metal Roof Panels Section 07 41 13

##### **1.03 REFERENCES**

- A. ASTM International
- B. American National Standard Institute (ANSI)
  - 1. ANSI Z359.1-2007 – Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
- C. Occupational Health And Safety Administration (OSHA)
  - 1. OSHA 1926.502 – Fall Prevention Systems Criteria and Practices

##### **1.04 FALL PROTECTION SYSTEM DESCRIPTION**

- A. General: Provide fall protection anchoring point capable of withstanding loads as provided under OSHA and ANSI provisions as well as other applicable safety codes. Provide removable standing seam anchor point without penetrating the seams.
- B. Design Requirements: Standing seam anchor point of following types:
  - 1. Standing Seam Roof Anchor (SSRA1), for individual worker, capable of withstanding load as allowed by OSHA/ANSI 5,000 lbs. standards with a safety factor of 2.
- C. Performance Requirements: Anchor and components tested for the following loads:
  - 1. Fall Restraint: 1 User
  - 2. Fall Arrest: 1 User
  - 3. Design standing seam anchor to resist a 5,000 lbs. load from any direction.

##### **1.05 SUBMITTALS**

- A. Refer to Section 01 33 00-Submittals.

- B. Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Manufacturer's Product Data Sheets for all materials specified certifying material complies with all specified requirements.
- D. Shop Drawings: Provide stamped engineered drawings by Licensed Engineer in the project State.
- E. Maintenance Data: Instructions for use and care of devices should be included in the User Manual with each device.
- F. Test Reports: Provide independent 3<sup>rd</sup> party test results to assure compliance with all safety standards.

## **1.06 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.

## **1.07 PROJECT CONDITIONS**

- A. Field Measurements: Verify all dimensions required.

## **1.08 WARRANTIES**

- A. Snow Guard: All roof accessories shall be included in the specified roof system manufacturer's warranty.
- B. Fall Protection: Provide lifetime manufacturer's warranty against defects under normal working conditions and proper care.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Snow Guard: Shall be S-5! Colorgard, Sno-Gem Sno Barricade Clamp-On, or Engineer's accepted equivalent.
  - 1. S-5! Colorgard shall consist of the following:
    - a. Clamps:
      - i. Manufactured from 6061-T6 Aluminum extrusions conforming to ASTM B221 or aluminum castings conforming to ASTM B85 and to AA Aluminum Standards and Data.
      - ii. Clamp Model: Shall be as designed for attachment to metal panel seam configuration.
      - iii. Set Screws: 300 series stainless steel, 18-8 alloy, 3/8" diameter, with round nose point.

- iv. Attachment Bolts: 300 series stainless steel, 18-8 alloy, 10 mm diameter, with flat washers.
  - b. Cross Members:
    - i. Manufactured from 6061-T6 alloy and temper aluminum extrusions conforming to ASTM B221 and to AA Aluminum Standards and Data.
    - ii. Receptacle face to receive color-matched metal strips.
    - iii. Provide splice connectors ensuring alignment and structural continuity at end joints.
  - c. Color Strips:
    - i. Shall be same material and finish as roof panels, obtained from roof panel manufacturer.
  - d. Snow and Ice Clips: Aluminum, with rubber foot, minimum 3" wide.
- B. Fall Protection
- 1. Manufacturer: Provide standing seam anchor fall protection system manufactured by Action Manufacturing, and distributed by:
    - a. Fall Protection Distributors, LLC. 7436 Evesborough Lane New Port Richey, FL 34655 [www.FallPD.com](http://www.FallPD.com) 863.703.4522
    - b. Due to the unique, patented abilities of this device, substitutions are not allowed.
  - 2. Materials.
    - a. Anchor Body: 6061-T6 Aluminum
    - b. Top Bolts: Type 316 Stainless Steel
    - c. Lock Washers: Type 316 Stainless Steel
    - d. Set Screws: Stainless Steel
    - e. D-Ring: Plated, non-corrosive steel
  - 3. Manufactured Assembly
    - a. Standing Seam Roof Anchor SSRA1
  - 4. Fabrication
    - a. Manufacture to precise dimensions and free of defects to assure proper performance and appearance.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verification of Conditions: Examine subsurfaces to receive Work and report detrimental conditions in writing to Architect. Commencement of Work will be construed as acceptance of subsurfaces.

- B. Coordination: Coordinate with other Work which affects, connects with, or will be concealed by this Work

### **3.02 SNOW GUARD**

- A. S-5! Colorgard:
  - 1. Comply with contract drawings for location and with Manufacturer's instructions for installation and recommended layout.
  - 2. Ensure panel seaming and attachment is complete prior to installation.
  - 3. Clean areas to receive attachments; remove loose and foreign matter that could interfere with installation or performance.
  - 4. Place clamps at 16" on center in straight aligned rows or at maximum indicated spacing as recommended by manufacturer.
  - 5. Place both set screws on same side of clamp and tighten to manufacturer's recommended torque.
  - 6. Insert color match metal strips into cross members, staggering strips to cover cross member joints.
  - 7. Attach cross members to clamps, tighten bolts to manufacturer's recommended torque.
  - 8. Install splice connectors at cross member end joints.
  - 9. Do not cantilever cross members more than 3" beyond last clamp at ends.
  - 10. Install one snow clip per panel between seams.

### **3.03 FALL PROTECTION**

- A. On-site competent person to determine that the standing seam roof system is structurally sound and capable of withstanding full loading of the anchor system. Competent Person to determine proper location of each anchor paying special attention to avoid swing falls.
- B. Install anchors according to the Competent Person's recommendations and follow all safety guidelines included in the Owner's Manual. The torque of the set screws is of utmost importance. All cupped tip screws are to be torqued to 90 in/lbs. and all nylon tipped set screws are to be torqued to 180 in/lbs.

### **3.04 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 07 72 00**