



SPECIFICATIONS FOR
BLACK MOUNTAIN ELEMENTARY METAL RETROFIT
ROOF RECOVER PROJECT
BUNCOMBE COUNTY SCHOOL DISTRICT
ASHEVILLE, NORTH CAROLINA



ELEVATING YOUNG MINDS

Project No. FH196034
JHP:cb

ISSUED FOR BIDDING

Terracon Consultants, Inc. 2701 Westport Road Charlotte, North Carolina 28208
P 704.509.1777 F 704.509.1888 terracon.com

Environmental ■ Facilities ■ Geotechnical ■ Materials

TABLE OF CONTENTS

<u>Section</u>	<u>Pages</u>
CONSTRUCTION BID INFORMATION	1
ADVERTISEMENT FOR BIDS	1
STANDARD BID FORM	3
SECTION 00800 – INSTRUCTIONS TO BIDDERS	3
SECTION 01100 – SUMMARY	4
SECTION 01210 – ALLOWANCES	1
SECTION 01250 – CONTRACT MODIFICATION PROCEDURES	3
SECTION 01270 – UNIT PRICES	2
SECTION 01290 – PAYMENT PROCEDURES	3
SECTION 01330 – SUBMITTAL PROCEDURES	5
SECTION 01400 – QUALITY REQUIREMENTS	5
SECTION 01500 – TEMPORARY FACILITIES, CONTROLS AND PROTECTION	5
SECTION 01732 – SELECTIVE DEMOLITION	1
SECTION 01733 – ASBESTOS PRODUCTS	3
SECTION 01770 – CLOSEOUT PROCEDURES	5
SECTION 05440 – STRUCTURAL RETROFIT ROOF SUB-FRAMING SYSTEM	6
SECTION 07000 – ROOFING PREPARATION	4
SECTION 07411 – METAL ROOF PANELS	14
SECTION 07620 – SHEET METAL FLASHING AND TRIM	4
SECTION 07920 – JOINT SEALANTS	4
 DRAWINGS: A-101, A-102, A-103, A-104, A-105	

SECTION 00800 – INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplemental Conditions and other Division 1 Specifications Sections, apply to this section.
- B. Refer to Section 00801 – General Procurement Conditions.

1.2 BID FORM

- A. Base quotations upon the Specifications and Drawings. Include a statement to that effect. Quotations containing qualifying statements will not be considered.
- B. Submit bids on Bid Form included in these specifications.

1.3 BIDDER QUALIFICATIONS

- A. Bidders must be licensed General Contractors for a minimum of five (5) years of the class required by North Carolina Statutes for executing the work being bid. Bidder's name, address, State license number, and date of license must appear on the outside of envelope containing Bidder's proposal.
- B. Bidder shall submit a copy of contractor's license with his Bid. Failure to provide evidence of an appropriate license by any bidder as described herein shall result in that bid, quotation or proposal not being considered.
- C. Bidder must be a Roofing Contractor with at least five (5) years of contracting experience in the type of work involved in this project, and must have performed work similar in scope to the work proposed in this project. Provide evidence of qualifications upon request by Engineer or Owner. The contracting firm's experience will be considered in the enforcement of this paragraph.
- D. All experience must have been acquired by bidding contractor named on the form of proposal. Firms using aliases, or who have changed names during the five year period are subject to disqualification at the discretion of the Owner.
- E. Submit upon request of Engineer or Owner certification from the roofing materials manufacturer that the bidding contractor is acceptable to the roofing system manufacturer as an installer of the manufacturer's system in all regards and no warranties required by the contract documents will be withheld by the manufacturer solely as a result of the bidder's qualifications to perform the work.
- F. Bidder, by submitting a bid for this project, certifies that the bidding contractor is acceptable to the roofing system manufacturer as an installer of the manufacturer's system in all regards

and no warranties required by the contract documents will be withheld by the manufacturer solely as a result of the bidder's qualifications to perform the work.

- G. Any bidder deemed as not qualified will be notified by the Engineer or Owner after the Bid Opening.

1.4 BID SECURITY

- A. Each bid must be accompanied by 1) Cashier's Check or Certified Check of the bidder made payable to the Owner; or 2) a bid bond issued by a surety authorized to do business in the State of North Carolina and acceptable to the Owner. Bid security shall be in an amount not less than 5% of the Base Bid and all add Alternates.

1.5 BID WITHDRAWAL

- A. No proposal shall be withdrawn subsequent to specified time of Bid Opening for a period of sixty (60) calendar days without written consent of Owner.

1.6 WAGE RATES

- A. Bidders shall inform themselves as to local labor conditions, including prospective changes or adjustments of local wage rates, and shall not pay less than the prevailing wage scale in the locality for comparable type of work. No increase in Contract price shall be authorized on account of payment of wage rates in excess of prevailing local rates.

1.7 EXAMINATION OF SITE, PLANS AND SPECIFICATIONS

- A. The Bidder is required, before submitting his proposal, to visit the site of the proposed work and familiarize himself with the nature and the extent of the work and any surface and subsurface conditions that may in any manner affect the work to be done, and the equipment, materials, and labor required, and the cost thereof. Bidder is also required to examine carefully the Plans and Specifications and Contract Documents and to inform himself thoroughly regarding any and all conditions and requirements that may in any manner affect the work to be performed under the Contract.
- B. Ignorance on the part of the Contractor will in no way relieve him of the obligations and responsibilities assumed under the Contract. No information derived from maps, drawings, specifications, or from Employees of the School District, the Engineer, or his assistants, shall relieve the Contractor from any risk or from fulfilling all terms of the Contract.

1.8 INTERPRETATIONS, INCONSISTENCIES AND ADDENDA

- A. No interpretation of the meaning of the Drawings, Specifications or other Contract Documents will be made orally to any bidder. Prospective bidders must request such interpretation in writing from the Engineer. To be considered, such request must be received at least five (5) days prior to the time fixed for the opening of bids.

- B. Any and all interpretations and supplemental instructions will be issued in the form of written addenda, which will be sent by email to all prospective bidders (at the email address furnished by the bidder) not later than three (3) days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addenda shall not relieve any bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

1.9 SUBSTITUTIONS

- A. Brand or manufacturer names are used as standards of quality when no other appropriate reference is available. The Engineer (or Owner) will consider substitution of materials of equal quality and properties provided a written request accompanied substantiating data is received by him at least five (5) days prior to bid date.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 00800

SECTION 01100 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplemental Conditions and other Division 1 Specifications Sections, apply to this section.

1.2 DESCRIPTION OF EXISTING SYSTEM

- A. Information in this Section is provided only to establish general description and is not necessarily accurate. The Contractor is responsible for visiting the site and becoming satisfied as to the existing conditions, size of roof areas, etc. before preparation and submission of bid. Receipt of bid will be considered evidence Contractor has inspected roof or otherwise become satisfied on all details relating to the work.
- B. Existing Systems:
 - 1. Batten strip standing seam roofing (approximately 2.5" tall) over structural steel framing. Lower half is exterior with exposed underside. Upper half is interior with insulation and drop ceiling system.
- C. Roof has an area of approximately 1,400 square feet.
- D. Existing purlin spacings are approximately 4 feet on center.
- E. Slope is approximately 2 inches per foot.
- F. Drainage is to gutter and downspouts to subgrade drain lines.
- G. Eave is approximately nine feet above grade.
- H. Contractor shall be responsible to document all existing damage to facility prior to beginning work and producing documentation acceptable to Engineer prior to starting work. Damage discovered during the project which was not documented and which is not clearly the responsibility of others may be presumed by the Engineer or Owner as the responsibility of the contractor. Documentation may be in the form of written statements and/or drawings but must also be supported with photographs and/or video tape supplied by contractor.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Project generally consists of roof recover of Roof Area indicated on plans and the installation of new through wall flashing within split face CMU and Brick masonry, and installation of new snow and ice guard system on recovered roof system and other higher roof areas as indicated on plans, and all other miscellaneous work associated herein.

1. Project location: Black Mountain Elementary School.
 2. Owner: Buncombe County School District.
 3. Refer to Key Plan KP.
- B. The Owner has elected to designate Terracon Consultants, Inc., Charlotte, North Carolina, as Engineer for this Project.
- C. The terms "Architect" and "Engineer" used in the contract documents are that individual, partnership, or corporation engaged by the Owner for the preparation of certain of the Contract Documents, and referred to in the Contract Documents. The "Architect" or "Engineer" may, however, be an Architect, Architect-Engineer, Engineer or other design professional authorized by the Owner to perform such functions and the terms are interchangeable.
- D. The work under the Base Bid is as follows. Refer to Roof Plans.
1. Metal Retrofit Roof Recover: Work on Area indicated on drawing generally consists of the installation of retrofit underroof framing, installation of new metal panels, flashings, and trim.
 2. Through Wall Flashing: Install new through wall flashings as indicated on plans.
 3. Install Ice and Snow Guard System: Install ice and snow guard system to roof areas indicated.

1.4 START AND COMPLETION

- A. Work on the project under the Base Bid is to be substantially complete within forty five (45) calendar days. Upon arrival at substantial completion, Contractor shall have fourteen (14) calendar days to arrive at final completion.
- B. Prewrite Conference: Prior to start of work there shall be a conference attended by the Contractor, the representative of the Owner, roofing manufacturer's representative, and other parties who may be designated by the Owner, to be convened at the work site for the purpose of reviewing the specifications and job conditions and resolving any questions then arising. Contractor shall advise the office of the Owner of date and time at least one week before the date to allow proper notification of parties.
- C. Work on the project may begin after the date of fully executed contracts and after submittals have been approved. Materials may be delivered to the site prior to the start of work upon Owner approval.
- D. Any extension of contract time considered necessary by the Contractor must be submitted in writing to the Owner with complete details of conditions necessitating extension and specific time of extension requested. Any extension must be specifically authorized by the Owner in writing.
- E. For purposes of this project, a rain day is defined as a day when precipitation equal to or greater than 0.01 inches is recorded at the NOAA or NWS weather station closest to the project. Only that day on which the precipitation occurs will be considered a rain day. The threat of rain, or the occurrence of standing water from previous rain days will not be considered in the evaluation of the contract time to complete the project. In the event, the nearest NOAA or NWS weather station is greater than 15 miles from the project, a rain day

will also be defined as any day during which precipitation occurs at the project and the precipitation is documented daily by the contractor and the daily report is provided to the Engineer within 24 hours.

1. Extensions will not be granted for foul weather unless the number of days of foul weather exceeds that which can reasonably be expected to occur during the construction time period and the contractor can clearly demonstrate to the satisfaction of the Owner that the project was delayed by the additional days of foul weather.
 2. Historic weather data provided by the National Oceanic and Atmospheric Administration (NOAA) and/or the National Weather Service (NWS) will be used as a basis of foul weather which can be and should be anticipated by the contractor.
- F. Substantial completion is defined for this project as the successful installation of every component required under the contract documents to be installed for this project. A punch list may be issued by the Engineer for work complete at this time.
- G. When Owner has certified substantial completion, contractor shall have an additional fourteen (14) calendar days to complete all work under the contract, including any outstanding punch list items established at the substantial completion; any required submittals, including warranties, releases of liens, unit price logs, consents of surety, final pay request, etc. Date of final completion is defined as the date when all work required under the contract has been completed.
- H. Contractor shall begin the Work on the commencement date set forth in the Contract, and shall perform the Work expeditiously with adequate forces and shall complete the Work within the Contract Time.
- I. All time limits stated in the Contract are of the essence with respect to Contractor's obligations hereunder.

1.5 LIQUIDATED DAMAGES

- A. Liquidated damages will apply starting the first calendar day after the date established for final completion and will be assessed at a rate of \$200.00 per day for each calendar day, until such time as all construction is complete and has been accepted by the Owner.
- B. Contractor, by submitting a bid for this project, attests and agrees that the value of liquidated damages as stated are a fair and equitable representation of damages to the Owner in the event project is not completed within the allotted time.
- C. In the event the project extends beyond the contract period (including any extensions to contract, approved by Owner), Owner will back charge the contractor for fees and expenses attributable to additional services by Owner's consultants which are provided solely as a result of the project being extended beyond the contract period. Owner may withhold monies attributable to these fees and expenses from contractor's requests for payment. Where liquidated damages are imposed as a result of the contract between the Owner and Contractor, these fees and expenses will be funded from the liquidated damage payments by the contractor. Owner may withhold monies attributable to these fees and expenses from contractor's request for payment.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01100

SECTION 01250 – CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Sections include the following:
 - 1. Division 1 Section “Unit Prices” for procedures for using unit prices.
 - 2. Division 1 Section “Allowances” for procedural requirements regarding handling and processing allowances.

1.3 MINOR CHANGES IN WORK

- A. Engineer will issue supplemental instructions (field orders) authorizing minor changes in the Work, not involving adjustment to the Contract Sum or Contract Time, on AIA Document G710, “Architect’s Supplemental Instructions.”

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Owner or 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 Owner are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request 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 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 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.
- C. Change Order proposal shall be submitted by the Contractor to the Engineer with a breakdown suitable for proper review. At a minimum, the breakdown should include line items for materials, labor, insurance, bonds and overhead and profit. If the proposal is approved by the Engineer, a recommendation will be made to the Owner. If approved by Owner, Engineer will provide written confirmation to the Contractor to proceed with proposed work.
- D. The Contractor shall not commence work or purchase materials for such proposed work until written approval is received.
- E. All changes in the work must be reviewed by Engineer and forwarded to Owner.

1.5 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Proposal Request, Engineer will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Engineer may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
- B. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or Contract Time.
- C. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
- D. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01250

SECTION 01270 – UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.
- B. Related Sections include the following:
 - 1. Division 1 Section “Allowances” for procedures for using unit prices to adjust quantity allowances.
 - 2. Division 1 Section “Contract Modification Procedures” for procedures for submitting and handling Change Orders.

1.3 DEFINITIONS

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

1.4 PROCEDURES

- A. Include in unit prices all necessary material, plus cost of delivery, installation, insurance, taxes, overhead and profit.
- B. Owner reserves the right to reject Contractor’s measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner’s expense, by an independent surveyor acceptable to Contractor.
- C. List of Unit Prices: A list of unit prices if included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.
- D. Contractor shall maintain a daily log showing dates, location and exact quantities of unit price work. Contractor is responsible for providing photographic evidence of unit price work installed. Copies of log and appropriate change order forms shall be submitted with each application for payment unless no unit price work is accomplished during the period covered by the application.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

- A. Unit Price No. 1 – Install through wall flashing to existing split face masonry wall.
 - 1. Description: install through wall flashing to split face masonry wall according to Division 7 Section “Roofing Preparation.”
 - 2. Unit of Measurement: Per linear foot.

- B. Unit Price No. 2 – Install through wall flashing to existing brick masonry wall.
 - 1. Description: install through wall flashing to brick masonry wall according to Division 7 Section “Roofing Preparation.”
 - 2. Unit of Measurement: Per linear foot.

END OF SECTION 01270

SECTION 01290 – PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Sections include the following:
 - 1. Division 1 Section “Allowances” for procedures for using unit prices to adjust quantity allowances.
 - 2. Division 1 Section “Contract Modification Procedures” for procedures for submitting and handling Change Orders.
 - 3. Division 1 Section “Unit Prices” for procedures for using unit prices.

1.3 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
 - 1. Prior to start of any work, Contractor must submit to Owner a Schedule of Values on a copy of AIA Document G703 listing each phase of the work and its scheduled value. Contractor must be prepared to verify all material costs by producing supplier invoices, bills of lading, etc. upon request by Owner.
 - 2. Schedule of Values, shall include labor and material line items for all material components with a material value of more than \$2,000.00 or 5% of the contract amount (whichever is least). The schedule of values must include, as a minimum, line items for any of the following which are applicable to this project including separate labor and material line items where applicable.
 - a. Mobilization
 - b. Performance and Payment Bonds
 - c. Demolition
 - d. Retrofit Roofing Sub-Framing
 - e. Metal roof panels
 - f. Sheet Metal Flashing and Trim
 - g. Ice and snow protection
 - h. Site Cleanup

- i. Manufacturer's Inspections
 - j. Unit Price Work
 - k. Guarantee
- 3. Schedule Updating: Update and resubmit the Schedule of Values before the next Application for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.
 - 4. 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.
 - 5. 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.

1.4 APPLICATIONS FOR PAYMENT

- A. Monthly pay estimates shall be submitted to Engineer in triplicate on AIA Document G702 and AIA Document G703.
- B. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Owner will return incomplete applications without action.
 - 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 - 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- C. Applications for payment requesting payment for materials will not be certified or approved unless accompanied with Manufacturer's Certificates of Compliance for those materials. It is suggested that Contractor request material certificates of compliance from material suppliers at the time materials are ordered.
- D. Include a retainage amount of ten percent (10%) for the value of materials stored at the site and work executed.
- E. A payment or payments made to Contractor for work performed shall not constitute acceptance or approval of the work and shall in no way relieve Contractor from the requirements of the Contract.
- F. All sums received by Contractor for any part or parts of the work furnished or performed by a Subcontractor shall be paid promptly to the latter by Contractor, and while in the hands of Contractor, shall constitute trust funds held for the use and benefit of Owner.
- G. If payments are to be made on account of materials or equipment not incorporated in the work but delivered and suitably stored at the Site, or at such other location agreed upon in writing, such payments shall be conditioned upon submission by Contractor of bills of sale or other documents satisfactory to Owner establishing Owner's title to such materials or equipment or otherwise protecting Owner's interest therein including the prepayment of applicable insurance and transportation charges to the Site.
- H. Each Payment Applications shall include a notarized Sales Tax Report.

- I. Contractor warrants and guarantees the title to all work, materials and equipment covered by an invoice, whether or not incorporated in the work, will pass to Owner upon Contractor's receipt of the payment covering such work, materials and equipment, free and clear of all liens or other similar or dissimilar encumbrances in any way affecting Owner's title thereto.
- J. A payment or payments made to Contractor for work performed shall not constitute acceptance or approval of the work and shall in no way relieve Contractor from the requirements of the Contract.
- K. Submit to Engineer digitally. Upon approval, submit three hard copies to Engineer.

1.5 FINAL PAYMENT APPLICATION

- A. Refer to Section 01400 – QUALITY REQUIREMENTS, Paragraph 1.5, Inspection of Work for Final Inspection Requirements and related provisions for final payment and closeout documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01290

SECTION 01330 – SUBMITTAL PROCEDURES

PART 1 - GENERAL

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples and other miscellaneous submittals.
 - 1. Division 1 Section “Payment Procedures” for submitting Applications for Payment and the Schedule of Values.
 - 2. Division 7 Section for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

- A. Shop Drawings: Drawings, diagrams, illustrations, schedules, performance charts, brochures and other data prepared by Contractor or any Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor which illustrate some portion of the work.
- B. Samples: Physical examples furnished by Contractor to illustrate materials, equipment or workmanship and establish standards of work.

1.4 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate the schedule for submittal of shop drawings and samples with progress schedule and the requirements of the Contract. Failure to schedule and submit shop drawings and samples in ample time for checking, correction and rechecking will not justify any delay in the timely performance of the work.
- B. Submittal Schedule: Within two weeks after award of Contract, provide a schedule of the dates for submission of each shop drawing and sample required by the Contract.
- C. Processing Time: Allow sufficient time for an orderly review with reasonable time for checking, correction and rechecking corrections, as well as returning the approved or rejected shop drawings and samples to Contractor and, in turn, any Subcontractor.
- D. Allow a minimum of 10 working days from the date submittal is received until the date the submittal is required to be returned to the Contractor.
- E. If a submittal contains more than 10 shop drawings, indicate which drawings must be returned within the period of 10 working days, and, in such event, allow an additional 10 working days for return of the balance of the submittal.
- F. Identification: Provide each submittal with the following information:

1. Owner's and Engineer's respective project numbers.
 2. Date of submittal.
 3. Submittal number.
 4. Title of project.
 5. Name of Contractor and date of Contractor's approval.
 6. Name of Subcontractor or supplier and date of submittal to Contractor.
 7. Reference to Specification Section and Paragraph and/or Drawing Number.
 8. The specific location of that portion of the work covered by the submission.
 9. Any qualification, departure or deviation from the requirements of the Contract.
 10. Any additional information required by the Specifications for the particular material being furnished.
- G. Provide a space on each shop drawing for the approval stamps of Contractor, Engineer and Engineer's sub-consultants, if any.
- H. Transmittal Form: Use form of transmittal contained at the end of this Section, or a similar form containing the same information.
- I. Numbering: Number each submittal. Retain numbering system throughout all revisions.
- J. Submit all associated shop drawings relating to a complete assembly at the same time, where possible, so that each may be checked in relation to the entire proposed assembly.
- K. Prepare composite shop drawings and installation layouts, when required, to depict proposed solutions for tight field conditions. Coordinate composite shop drawings and field installation layouts in the field with Subcontractors for proper relationship to the work of all other trades involved in the work.
- L. Prior to submission, review, affix a stamp on, and indicate approval of all shop drawings and samples. Determine and verify field measurements and availability of the material, and coordinate each shop drawing and sample with requirements of the Contract.
- M. All submittals are to be submitted electronically to the Engineer.
- N. Engineer will review Shop Drawings and Samples to determine conformance with the design concept of the Project and with the information given in the Contract. Engineer's approval of a separate item shall not be construed to mean approval of the assembly of which such item is a part.
- O. Engineer's approval of Shop Drawings or Samples shall not relieve Contractor of responsibility for any deviation from the requirements of the Contract unless Contractor has informed Engineer in writing of such deviation at the time of submission and Engineer has given written approval to the specific deviation, nor shall Engineer's approval relieve Contractor from responsibility for errors or omissions in the shop drawings or samples.
- P. Make corrections required by Engineer and resubmit corrected copies of shop drawings or new samples until approved. Direct specific attention in writing, or on resubmitted shop drawings, to revisions other than the corrections required by Engineer. The number and distribution of copies shall be the same as in Contractor's first submission.

- Q. In the event that Engineer shall mark shop drawings “approved” or “approved as noted,” make such corrections, if any, as may be noted. Correction shall be made on, and prints for final distribution shall be made from, the drawings bearing Engineer’s notations and impress stamps. Final distribution of prints shall be made by Contractor.
- R. Do not commence any portion of the work requiring a shop drawing or sample until the submission has been approved by the Engineer. All such portions of the work shall be in accordance with approved shop drawings and samples.
- S. Do not commence any work which will result in structural changes in walls, steel, floors and masonry prior to Engineer’s written approval. Fully describe all details of methods, shoring and bracing in submission for such work.
- T. Contractor shall submit a copy of building permit prior to beginning work.

1.5 LIST OF PROJECT SUBMITTALS

- A. Refer to Project Document Checklist at the end of this Section for submittals that will be required from contractor and approved by Engineer prior to start of work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SUBMITTAL TRANSMITTAL

Date: _____

From: _____

To: Terracon Consultants, Inc.
2701 Westport Road
Charlotte, NC 28208

Project Name: Black Mountain Elementary School

Owner: Buncombe County School District, Asheville, North Carolina

Owner's Project Number: _____

Terracon Consultants, Inc. Project Number: FH196034

Submittal Number: _____ No. of Copies: _____

Specification Section and Paragraph Reference(s): _____

Drawing/Detail Reference(s): _____

Location of Work: _____

Product Manufacturer: _____

Supplier/Subcontractor: _____

Date submitted to Contractor: _____

Qualifications/Deviations From Specifications: _____

CONTRACTOR'S APPROVAL

THIS SUBMITTAL HAS BEEN PREPARED BY THE CONTRACTOR OR THOROUGHLY REVIEWED BY THE CONTRACTOR AND IS A CONTRACTOR APPROVED SUBMITTAL SUBJECT TO ANY QUALIFICATIONS MADE HEREON OR ON THE ATTACHMENTS.

SIGNED: _____
NAME: _____

DATE: _____

ENGINEER'S APPROVAL

APPROVED _____; APPROVED AS NOTED _____; NOT APPROVED - RESUBMIT _____;
REVIEWED _____; APPROVED FOR CONSTRUCTION ACCORDING TO NOTATIONS.
REVISE AND RESUBMIT _____; REFER TO APPROVAL STAMP ON ATTACHMENT _____

Checking by Engineer is only for conformance with the design concept of the project and compliance with the information given in the contract documents. Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to the fabrication processes or to techniques of construction, and for coordination of the work of all trades.

SIGNED: _____

DATE: _____

PROJECT DOCUMENT CHECKLIST

SUBMITTALS

- Materials List
- Materials Certificate of Compliance
 - Prefinished Galvalume
 - Sealant
 - Structural retrofit system
 - Laminated through wall flashing
 - Metal roof panel system
 - Self-adhering Underlayment
- Manufacturer's Application Procedures
- Sealed Engineering Calculations
- Sealed Shop Drawings
- Copies of Authorizations and Licenses from Authorities having jurisdiction
- AIA Document G703, Schedule of Values
- Material Safety Data Sheets
- Schedule for Removal and Installation
- Written Safety Procedures
- Underwriter's Laboratories, Inc. Class A Roof Covering Certificate from Roofing System Manufacturer
- Shop Drawings
- Metal Samples
- Color Chart
- Documentation of Existing Conditions
- Certification from Manufacturer that Contractor is an Approved Installer
- List of Subcontractors
- List of Contractor Staff Assignments and Qualifications
- Metal Shop Drawings
- Building Permit

END OF SECTION 01330

SECTION 01400 – QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 INSTALLER QUALIFICATIONS

- A. Installer must be licensed General Contractors for a minimum of five (5) years of the class “General Roofing” and/or “Specialty Roofing” required by North Carolina Statutes for executing the work being bid. Bidder's name, address, State license number, and date of license must appear on the outside of envelope containing Bidder's proposal.
- B. Installer shall be a licensed Contractor with at least five (5) years of contracting experience in the type of work involved, and shall have performed work similar in scope to the work proposed in this project. Evidence of qualifications shall be available upon request by Owner. The contracting firm’s experience will be considered in the enforcement of this provision. All experience must have been acquired by the bidding contractor named on the form of proposal. Firms using aliases, or who have changed names during the five (5) year period are subject to disqualification at the discretion of the Owner. Contractor shall demonstrate experience on a minimum of five (5) projects of similar size, scope and complexity to this project.
- C. None but skilled foremen and workmen shall be employed on work requiring special qualifications. Any person employed on the work who fails, refuses, or neglects to obey the instructions in anything relating to this work, or who appears to be disorderly, insubordinate, unfaithful, or incompetent, shall upon the order of the Owner be at once discharged and not again employed on any part of the work. Any interference with, or abusive or threatening conduct toward the Owner or his assistants by the Contractor or his employees or agents, shall be authority for the Owner to annul the Contract and re-let the work.
- D. Bidder shall submit certification from the roofing manufacturer that the bidding contractor is acceptable to the manufacturer as an installer of the manufacturer’s system in all regards and no warranties required by the contract documents will be withheld by the manufacturer solely as a result of the bidder’s qualifications to perform the work.

1.4 SUPERINTENDENT

- A. For the purpose of these Specifications the designation “superintendent” is hereby defined as the individual present on the job site at all times work is being performed.
- B. The superintendent shall not be changed except with the consent of the Owner and Engineer, unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in his employment.
- C. 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. Should the superintendent be absent temporarily from the project at any time, he shall designate a competent foreman to assume his duties.
- D. The superintendent shall have had a minimum of five (5) years continuous experience as a job superintendent.
- E. Only the project superintendent (or the designated foreman in the superintendent’s absence) will be permitted inside the facility, except when accompanied by the superintendent to perform work or in cases of emergency.
- F. The Contractor shall provide the Owner, in writing, the name of the proposed project manager, job superintendent and foreman for approval no later than seven (7) days prior to the prework conference. Also include chronological listing of superintendent’s experience by project name, type system, size and required warranty.
- G. Once approved, neither the project manager nor the superintendent will be changed except with the consent of the Owner unless either proves to be unsatisfactory to the Owner or Contractor, or ceases to be in the Contractor’s employment.
- H. Promotion or reorganization within the company will not be an acceptable cause for reassignment of project manager or superintendent.
- I. 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 or Owner’s representative, and, immediately thereafter, notify the Owner and/or Engineer. No decisions regarding changes in the Work will be made without the Owner’s knowledge.
- J. Each day before work begins, superintendent shall indicate on the Roof Plan the area to be reroofed that day. Color markers are appropriate for this purpose. If changes in the work schedule occur, the Owner shall be notified accordingly.
- K. The job superintendent will have a local contact phone number.

1.5 INSPECTION OF WORK

- A. Work found to be in violation of specifications or not in accordance with established workmanship practices and standards will be subject to complete removal and proper replacement with new materials at Contractor’s expense.

- B. Owner will provide inspection during the work. Such inspection may be periodic or daily.
- C. The words "supervise" and "inspect" wherever used herein in connection with the duties or activity of the Owner shall in no way, expressed or implied, relieve the contractor from his responsibilities for the safety of the workmen, the preservation of the work or proper performance under this contract. The Owner shall not be responsible for the safety of the workmen, the safeguarding of the work, or the proper performance of the Contractor.
- D. No Inspector shall have the power to waive the obligations resting upon the Contractor to furnish good material and do good work as herein prescribed. Any failure or omission on the part of any Inspector or the Engineer to observe, object to or condemn any defective material or work shall not release the Contractor from the obligation to at once tear out, remove, and properly replace or rebuild the same at any time upon discovery of the defect and upon notice from the Owner or Engineer to do so.
- E. Materials stored on site which are marked by the Inspector, Engineer or Owner as not meeting the requirements of the contract documents are to be removed from the site by the contractor immediately.
- F. Top surfacing will be judged by sight. If Inspector's decision is not acceptable to the Contractor he may, at his own expense, take samples and make tests by methods to which both parties agree.
- G. Failure of Owner or Engineer to discover or reject defective work, or work not in accordance with the Contract, shall not be deemed an acceptance thereof, nor a waiver of Owner's rights to Contractor's compliance with the Contract or performance of the work, or any part thereof. No partial or final payment, or partial or entire occupancy, by Owner shall be deemed to be an acceptance of work or of material which is not strictly in accordance with the Contract, nor shall it be deemed to be a waiver by Owner of any of Owner's rights pursuant to this Contract or otherwise.
- H. Substantial Completion Inspection shall be conducted as follows:
 - 1. When Engineer has certified substantial completion, Contractor shall have an additional fourteen (14) calendar days to complete all work under the contract, including any outstanding punch list items established at the substantial completion; any required submittals, including warranties, release of liens, unit price logs, consents of surety, final pay request, etc.
 - 2. Substantial completion is defined for this project as the successful installation of every component required under the contract documents to be installed for this project. A punch list may be issued by the Engineer for work complete at this time.
- I. Final Inspection shall be conducted as follows:
 - 1. Upon final completion, Contractor must notify Engineer and Owner in writing requesting a final inspection.
 - 2. The Engineer and Owner will conduct a final inspection of all work included in the contract as soon as possible after receiving written notification by the Contractor that the work is complete and ready for inspection.
 - 3. The final inspection report shall be prepared by the Engineer and Owner listing observed deficiencies and furnished to the Contractor.

4. Upon satisfactory completion of all deficiencies, Contractor shall initial each item on the report certifying his compliance and return to the Engineer.
5. No portion of the final payment will be made until all items have been satisfactorily corrected and the project closeout documents submitted to the Architect/Engineer.
6. All project completion documents are to be submitted within thirty (30) days following acceptance by the Owner.

1.6 PERMITS

- A. Contractor is responsible for obtaining all necessary licenses and permits required by law in order to accomplish the work. Satisfactory evidence that all licenses and permits have been issued must be submitted to Owner prior to starting work.
- B. Contractor must provide all protective structures, barriers, or other means of protection necessary to assure the public safety and to fulfill all requirements by governmental authorities.
- C. Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and orders of any public authority having jurisdiction of Contractor's performance of the work or any part thereof. If Contractor knows, or should know that any requirement of these Specifications is at variance with any such laws, ordinances, rules, regulations or orders in any respect, Contractor shall promptly notify Engineer in writing and obtain written instructions before proceeding with the portion of the work thereby affected. If Contractor performs any work which is contrary to such laws, ordinances, rules and regulations without receiving Engineer's instructions, Contractor shall assume full responsibility therefor and shall bear all penalties and costs of remedying the work attributable thereto. However, this section shall not be construed to require Contractor to perform detailed engineering calculations normally performed by Engineer except when specifically provided.

1.7 SUBCONTRACTORS

- A. Use of Subcontractors to accomplish such miscellaneous or associated work as structural modifications, plumbing, relocation of conduit, service piping and/or HVAC equipment, etc. is permitted. Do not subcontract any part of the roofing work specified herein without the prior written consent of the Owner.

1.8 PRE-CONSTRUCTION CONFERENCE

- A. Prior to the start of work there shall be a conference attended by the Contractor, the representative of the Owner, and other parties who may be designated by the Owner, to be convened at the work site for the purpose of reviewing the specifications and job conditions and resolving any questions then arising.

1.9 MANUFACTURER'S INSPECTIONS

- A. A technical representative of the roof system manufacturer shall conduct periodic inspections throughout the course of the work. The representative shall prepare a written report for each inspection and shall promptly provide a copy of each report to the Owner, Contractor and Engineer. Each report shall note any deficiencies the representative observes which require correction. A minimum of one (1) inspections is required for this project including a final inspection after contractor has completed installation of all roof system components.

END OF SECTION 01400

SECTION 01500 – TEMPORARY FACILITIES, CONTROLS AND PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes requirements for temporary facilities, controls, protection and disconnects.

1.3 SUBMITTALS

- A. Submit plans for work for approval prior to starting work so that, if necessary, inside operations can be coordinated with the work.

1.4 TEMPORARY UTILITIES

- A. Water Service: Use water from Owner's existing water system without metering and without payment of use charges.
- B. Electric Power Service: Use electric power from Owner's existing system without metering and without payment of use charges.
- C. Sanitary Facilities: Provide temporary toilets, wash facilities and drinking-water fixtures. Locate at sites approved by the Owner. Facilities in existing buildings are off-limits.
- D. Lunchroom Facilities: On-site facilities are not available to Contractor personnel.

1.5 TOBACCO AND VAPORIZING PRODUCTS

- A. Tobacco and vaporizing products will not be allowed on site at any time. Enforce the tobacco policy of the Owner with regard to Contractor's personnel. Non-compliance by any of Contractor's personnel will be justification for removal of those individuals from this project.

1.6 SCAFFOLDING AND PLATFORMS

- A. Contractor shall provide all necessary platforms and scaffolds of ample strength. Inclusive are all hoisting machinery, all appliances and materials such as ladders, planks, ropes, wedges, centers and other tools and materials including the carriage thereof to and from the buildings as required for proper handling and installation and/or erection of materials and equipment included in the work.

-
- B. Prior to starting work, Contractor shall obtain approval of the Owner for locations of work operations at ground level such as material storage, hoisting, dumping, etc. Work will be restricted to approved locations.
 - C. Access to the roof will be by external means only. Access by ladder or scaffolding will be the responsibility of the Contractor.
 - 1. Ladders must be taken down daily and locked in storage or removed from site.
 - 2. Scaffolding must be barricaded to deter unauthorized usage by the public.

1.7 TEMPORARY PROTECTION

- A. Temporary measures shall be provided and maintained by the Contractor to protect the building and its contents from weather and construction related damages. Damaged or disturbed buildings or grounds to be corrected to the Owner's satisfaction prior to final payment.
- B. Protect the existing building, roof, equipment, and grounds from flying or falling debris during the demolition process. Protect so as not to disrupt building operations or cause damage to the building and its contents during construction.

1.8 PROTECTION OF BUILDINGS AND PROPERTY

- A. Note that building will remain occupied during work. Take all precautions necessary to protect building, contents and personnel from damage or injury from operations and from water entry into the building during construction. Keep dust and dirt to a minimum.
- B. At conclusion of each day's work, carefully inspect work including temporary daily tie-offs to ensure system is completely water-tight, all stored materials are suitably protected from the weather and all equipment is stored in such a manner as not to interfere with facility operations.
- C. On normal workdays when no work is accomplished due to inclement weather or other reasons, visit the site no later than normal start time and verify that the system is completely water-tight, all stored materials are suitably protected from the weather and all equipment is stored in such a manner as not to interfere with facility operations. Be prepared to implement emergency repairs as necessary to prevent leakage into the facility.
- D. Prior to starting work, obtain approval from Owner for locations of work operations at ground level, such as material storage, hoisting, dumping, etc. Restrict work to approved locations
- E. Prevent any work which could reasonable be deemed to be hazardous from taking place over or adjacent to occupied areas. Coordinate with the Owner the vacating of such affected areas of all occupants and give the Owner adequate notice to allow time to comply. Post a watchman inside the building in the affected area(s) at all times during the work to ensure no one enters or remains in the affected area(s).
- F. Contractor shall protect adjacent existing and new roof areas from damage. In the event roofing is damaged, Contractor is to restore to the original condition at no cost to the Owner.

-
- G. Remove debris and other material from the site in a timely manner to minimize accumulation.
 - H. Owner reserves the right to judge whether or not debris is being removed in a timely manner. In the event debris is not removed from the site as required to maintain the site in a manner acceptable to the Owner, the Owner reserves the right to engage other contractor(s) or its own forces to clean the areas and deduct costs of such operations from this Contract.
 - I. Protect grounds and landscaping from damage. In the event of damage, restore damaged property to a condition equivalent to that at time of start of operations.
 - J. Document all existing damage to facility prior to beginning work and produce documentation acceptable to Engineer/Owner prior to starting work. Damage discovered during the project which was not documented and which is not clearly the responsibility of others may be presumed by the Engineer/Owner as the responsibility of the Contractor. Documentation may be in the form of written statements and/or drawings but must also be supported with photographs and/or video tape supplied by the Contractor.
 - K. Isolate equipment from non-Contractor personnel by whatever means necessary, including the construction of a six-foot tall chain link fence (which completely surrounds the equipment, bitumen storage and personnel necessary to maintain the equipment) with integral lockable gate. Owner reserves the right to judge adequacy of Contractor's methods to isolate equipment and may, at any time, demand construction of the fence as compliance with this requirement. Should the Owner demand the construction of the fence, such shall be accomplished at no additional cost to the Owner.
 - L. Implement related safety provisions imposed by local fire marshals, etc. Determine what procedures will be acceptable prior to submitting a bid or proposal.
 - M. Initiate, maintain and supervise all safety precautions and programs in connection with the work. Take all necessary precautions for the safety of, and provide the necessary precaution to prevent damage, injury or loss to:
 - 1. All employees on the work and other persons who may be affected thereby.
 - 2. All the work and all materials or equipment to be incorporated therein, whether in storage on or off the site.
 - 3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.
 - 4. Comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. Erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for safety and protection. Remedy all damage, injury or loss to any property caused, directly or indirectly in whole or in part, by the Contractor, and Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

1.9 DISCONNECTS

- A. In the event it is necessary to disconnect any electrical wiring or connections, plumbing lines or other building services, notify the Owner. Do not disconnect or connect services unless authorized in writing by Owner.

- B. Include in Base Bid all costs required for modification of existing service piping, wiring and duct work required in connection with the lifting, removal or relocation of roof-mounted equipment.
- C. All associated work is to be accomplished by appropriately licensed personnel in accordance with all applicable codes and regulations.
- D. Review roof-top equipment usage with Owner and facility user at beginning of project. Disable equipment determined to be essential to the operations of the facility only at those times prescribed by the Owner. This may require work to be done at other than normal operating hours.

1.10 USE OF PREMISES

- A. Use of Site: Limit use of premises to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Owner Occupancy: Allow for Owner occupancy of Project site and use by the public.
 - 2. Driveways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- B. Use of Existing Building: Repair damage caused by construction operations. Protect building and its occupants during construction period.

1.11 OWNER'S OCCUPANCY REQUIREMENTS

- A. Full Owner Occupancy: Owner will occupy site and existing building during entire construction period as this school is on a year round calendar. The construction schedule has been developed around the recess periods for the students. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits, unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
 - 2. Owner Occupancy of Completed Areas of Construction: Owner will occupy the building, before Substantial Completion, as provided in the construction schedule.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01500

SECTION 01732 – SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Removals.
- B. Related Sections include the following:
 - 1. Division 1 Section "Unit Prices and Allowances."
 - 2. Division 7 Section "Roofing Preparation."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REMOVALS

- A. Remove and discard all existing sealants and counter flashings from existing walls within scope.
- B. Remove and store for replacement if in good condition, masonry at through wall flashing locations.
- C. Carefully relocate all electrical, co-axial, telephone, fiber optic, intercom and miscellaneous wires, cables, etc. as required to accomplish work specified herein. Accomplish such relocation without interrupting the service provided by these lines except as specifically authorized by the Owner.
- D. Remove or correct any obstruction which might interfere with the proper application of new materials.

END OF SECTION 01732

SECTION 01733 – ASBESTOS PRODUCTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes procedural requirements relating to asbestos-containing materials.
- B. Related Sections include the following:
 - 1. Division 7 Section 07000 - "Roofing Preparation."

1.3 PROCEDURES

- A. It is the intention of these Specifications that no asbestos-containing materials be incorporated into the work and that, unless specifically designated to remain, no existing asbestos-containing materials incorporated in the existing roof system will remain subsequent to completion of the work. In the event additional hidden or unanticipated asbestos-containing materials are present in the existing roof system, stop all work in the affected area, notify the Engineer and provide temporary protection as required. Costs incurred, if any, due to the presence of hidden and/or unanticipated asbestos-containing materials will be resolved by Change Order to this Contract.

1.4 WARRANTY

- A. Upon completion of the work, and before final payment and/or release of retainage, submit, and obtain from each subcontractor, material supplier and equipment manufacturer and submit, a properly executed Asbestos Free Warranty. Provide Warranty in the form included herein. Ensure forms are signed by a responsible officer of the Contractor, subcontractor, material supplier and equipment manufacturer and are notarized.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

ASBESTOS FREE WARRANTY
(on Contractor's standard letterhead)

Owner: Buncombe County School District

Location of Building: _____

Name of Building: Black Mountain Elementary School

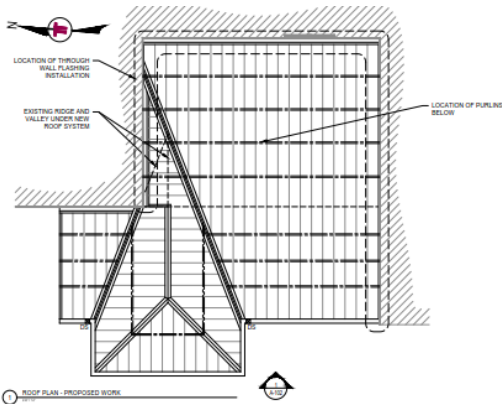
Know all men by these presents that we, _____
(Contractor, Subcontractor, Material Supplier or Equipment Manufacturer)

having furnished labor, materials, equipment and/or supplies; removed roofing, roof insulation, vapor retarder, flashings and/or miscellaneous roof system components; accomplished certain repairs to existing roof system; installed new roofing, roof insulation vapor retarder, flashing and/or miscellaneous roof system components;

from, to and/or on _____ as shown on the roof plan below under
(Buildings, Roof Areas, etc.)

contract between _____ and _____
(Owner and Contractor) (Contractor and/or Subcontractor, Material Supplier or Equipment Supplier)

warrant to Owner with respect to said work that no materials containing asbestos fibers were incorporated into the work, and that, to our knowledge and belief, no materials containing asbestos remain in or are covered by the work.



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

IN WITNESS WHEREOF, we have caused this instrument to be duly executed, this _____ day of _____, 20 _____.

WITNESS:

Company

By

Notary Public

END OF SECTION 01733

SECTION 01770 – CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes procedural requirements relating administrative and procedural requirements for contract closeout, including, but not limited to, the following.
 - 1. Inspection procedures.
 - 2. Warranties.
 - 3. Final cleaning.
- B. Related sections include the following:
 - 1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Complete final cleaning requirements, including touchup painting.
 - 3. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Engineer and Owner will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Owner, that must be completed or corrected before certificate will be issued.
 - 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - 2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

- A. Final Inspection shall be conducted as follows:
 - 1. Contractor will have 14 days from Substantial Completion to reach Final Completion.
 - 2. The Engineer and Owner will conduct a final inspection of all work included in the contract as soon as possible after receiving written notification by the Contractor that the work is complete and ready for inspection.
 - 3. The final inspection report shall be prepared by the Engineer and Owner listing observed deficiencies and furnished to the Contractor.
 - 4. Upon satisfactory completion of all deficiencies, Contractor shall initial each item on the report certifying his compliance and return to the Engineer.
 - 5. No portion of the final payment will be made until all items have been satisfactorily corrected and the project closeout documents submitted to the Engineer. Final payment shall be made within thirty (30) days of receipt of closeout documents.
 - 6. All project completion documents are to be submitted within thirty (30) days following acceptance by the Owner.
- B. Refer to Closeout Document Checklist at the end of this Section for all documents to be submitted and approved by Engineer.
- C. Contractor shall submit a Certificate of Compliance prior to close-out of the project.

PART 2 - PRODUCTS

2.1 MATERIALS

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

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Remove tools, construction equipment, machinery, and surplus material from Project site.

- b. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - c. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - d. Clean transparent materials, including glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish glass, taking care not to scratch surfaces.
 - e. Remove labels that are not permanent.
 - f. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - g. 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.

CLOSEOUT DOCUMENTS CHECKLIST

- Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
- Updated final statement, accounting for final changes to the Contract Sum
- AIA Document G704, "Certificate of Substantial Completion."
- AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
- AIA Document G706A, "Contractor's Affidavit of Release of Liens."
- AIA Document G707, "Consent of Surety to Final Payment."
- Contractor's Warranty
- Metal Finish Warranty
- Manufacturer's Warranty
- Copy of Final Inspection
- Record Drawings
- Certificate of Compliance

RETROFIT METAL ROOFING SYSTEM WARRANTY
(on Contractor's Standard Letterhead)

Owner: Buncombe County School District

Installer: _____

Location of Building: _____

Name of Building: Black Mountain Elementary School

Roof Areas: _____

Date of Substantial Completion: _____

Know all men by these presents, that we, Installer as defined above, having installed insulation, roofing, flashings and sheet metal work, and having accomplished certain other work on the roof areas identified above under contract between Owner and Contractor, warrant to Owner, with respect to said work that for a period of two (2) years from date of Substantial Completion of said work, the roofing including flashings, and sheet metal work, shall be absolutely watertight and free from all leaks, provided however that the following are excluded from this warranty:

Defects or failures resulting from abuse by the Owner.

Defects in design involving failure of (1) structural frame, (2) load-bearing walls, and (3) foundations.

Damage caused by fire, tornado, hail, hurricane, acts of God, wars riots or civil commotion.

We, Installer, agree that should any leaks occur in the roofing we will promptly remedy said leaks in a manner to restore the roof to a watertight condition by methods compatible to the system and acceptable under industry standards and general practice.

We, Installer, 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 including but not limited to open seams, and loose flashings in a manner compatible to the system and acceptable under industry standards and general practice.

IN WITNESS WHEREOF, we have caused this instrument to be duly executed, this _____ day of _____, 20 _____.

(Installer)

WITNESS:

by _____
President

Notary Public

The undersigned named Owner agrees, from the date of acceptance of the project, to maintain the roof in accordance with the manufacturers written requirements and agrees to avoid damage to the roof surface by any parties under his control working or walking on the roof. The Owner recognizes his responsibility to inspect the roof semi-annually.

Owner _____ Date _____

END OF SECTION 01770

SECTION 05440 – STRUCTURAL RETROFIT ROOF SUB-FRAMING SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:

- 1. Sub-purlin framing

- B. Description:

- 1. The structural retrofit roof sub-framing system will provide support for a new metal roofing system constructed over the existing building roof. It shall be engineered in accordance with the specified code and design loading and shall transfer positive acting loads at each attachment location into an existing structural member.
- 2. Furnish labor, material, tools, equipment and services for the fabrication of retrofit roof sub-framing as indicated, in accordance with provisions of the Contract Documents.
- 3. Completely coordinate work with of other trades.
- 4. Although such work is not specifically indicated, the contractor/installer shall coordinate with the metal roof system supplier to furnish and install supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.

- C. Related Sections include the following:

- 1. Division 1 Section "Unit Prices."
- 2. Division 1 Section "Selective Demolition"
- 3. Division 7 Section "Metal Roof Panels."

1.3 QUALITY ASSURANCE AND REFERENCES

- A. ASTM International

- 1. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- 2. ASTM A 1011/A 1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
- 3. ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.

-
- B. American Iron and Steel Institute (AISI)
 - 1. AISI D100-13: Cold-Formed Steel Design Manual, [2013 Edition].
 - 2. AISI S100-16: North American Specification for the Design of Cold-Formed Steel Structural Members, [2016 Edition].
 - C. American Institute of Steel Construction (AISC)
 - 1. ANSI/AISC 360-16: - Specification for Structural Steel for Buildings, [2016 Edition] Florida Product Approval FL9352-R3, FL17626 2015.
 - a. FL 9352.1 22 ga.. 18" Wide 238-T over Roof Hugger Re-Roofing System
 - b. FL 9352.2 26 ga. PBR over Roof Hugger Re-Roofing System.
 - c. FL 9352.3 24 ga. PBR over Roof Hugger Re-Roofing System.
 - d. FL 9352.3 24 ga. PBR over Roof Hugger Re-Roofing System,
 - e. FL 9352.4 22 ga. PBR over Roof Hugger Re-Roofing System.
 - f. FL 9352.5 Super Lok 16-24 over Roof Hugger Re-Roofing System.
 - g. FL 17626.1 24 GA. 18" Wide 238-T over Roof Hugger Re-Roofing System.

1.4 SUBMITTALS

- A. Comply with Section 01 33 00 – Submittals.
- B. Product Data: Submit manufacturer's product data, including installation instructions.
- C. Shop Drawings: Submit manufacturer's shop drawings for sub-purlins indicating gauge, yield strength, flange and web sizes, cut-out dimensions, and punch pattern for attachment holes in base flange.
- D. Design Data: Submit design data from independent engineering firm indicating table of wind uplift capacity of sub-purlins.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened bundles, containers, and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage
 - 1. Store materials in accordance with manufacturer's instructions.
 - 2. Protect sub-purlins from corrosion, deformation, and other damage,
 - 3. Store sub-purlins off ground, with 1 end elevated to provide drainage.

1.6 EXISTING ROOF SYSTEM AND PRE-CONSTRUCTION INSPECTION

- A. The existing roof and framing are described in Section 01100 Summary of Work.
- B. Conduct a detailed inspection of the existing roof(s) to identify any existing roof elements that are a cause for concern such as: panel deterioration, structural deterioration,

equipment curbs, plumbing and electrical penetrations, special flashing requirements, and any other items that should be submitted to the Engineer for review and evaluation.

- C. Perform a detailed survey of the existing roof(s) and confirm the existing panel dimensions, type and profile. In the case of existing standing seam roofing it should be determined if the existing roof employs standard or tall clips. If high panel clips are existing, the standoff dimension must be determined.
- D. Record field measurements on the existing roof geometry including width, length, eave height, roof pitch and purlin spacing. This information is to be forwarded to the retrofit sub-framing system manufacturer for coordination and integration into the design and installation documents.

1.7 DESIGN REQUIREMENTS

A. General:

- 1. Design for approval and installation in accordance with the Contract Documents, a complete retrofit sub-framing and metal roof panel assembly as a structural package.
- 2. Engineer and factory fabricate sub-framing system in accordance with applicable references.
- 3. Coordinate design with the retrofit sub-framing manufacturer and the metal roof panel manufacturer to perform as one engineered structural package where the metal roof system controls the placement of sub-framing members.
- 4. Any additions/revisions to sub-framing members as a result of field conditions and/or demands, shall be the contractor's responsibility, and shall be submitted for review and approval by the manufacturer.

B. Engineering Design Criteria:

- 1. Building Code: *2018 North Carolina Existing Building Code*
- 2. Minimum Roof Snow Load: *20 PSF.*
- 3. Ground Snow Load: *30 PSF.*
- 4. Wind Speed: *120 MPH, 3 Second Gust.*
- 5. Exposure Category: *B.*
- 6. Enclosure: *Partially Enclosed*

PART 2 - PRODUCTS

2.1 MANUFACTURER QUALIFICATIONS

- A. Manufacturer shall have a minimum of five years' experience in manufacturing and fabrication of retrofit sub-framing systems of this nature.
- B. Light-gauge steel sub-framing components specified in this section shall be produced in a factory environment by roll forming and press-brake equipment assuring the highest level of quality control.
- C. Acceptable Manufacturers:

1. Roof Hugger, LLC., PO Box 1027, Odessa, Florida 33556. Toll Free Phone (800) 771-1711. Toll Free Fax (877) 202-2254. Phone (813) 909-4424. Fax (813) 948-4742. Website: www.roofhugger.com. E-Mail: sales@roofhugger.com.
2. Other manufacturers must submit a request for approval prior to the established bid date according to applicable Division 1 Section(s) and shall be equal to Roof Hugger, LLC.

2.2 RETROFIT STEEL SUB-PURLINS

A. Standard Retrofit Factory-notched Sub-Purlins: "Roof Hugger".

B. Description:

1. One-piece, custom-notched and punched, Z-shaped section.
2. Pre-punched to nest over existing through-fastened, low clip and high clip standing seam roof panel ribs for low-profile attachment.
3. Pre-punched for attachment fasteners.
4. Integrally formed Anti-Rotational Arm as required for high clip standing seam panels.
5. Fastens directly into existing purlins, joists or structural decking with fasteners.

C. Material:

1. Galvanized steel, ASTM A 653 or A 1011, G-90, yield strength 50 KSI.
2. Thickness: *0.060inch minimum, 16-Gauge*.
3. Web Height: 2 1/2 inches.
4. Base Flange Width: Pre-punch base flange to manufacturer's standard unless otherwise specified.
5. Top Flange Width: Nominally 2 inches with 0.25-inch minimum stiffening lip unless otherwise specified.
6. Length: Nominally 10 feet long, plus an additional +/- 1 inch top flange extension for part lap or per manufacturer's recommendations.

D. Attachment Fasteners/Anchorage:

1. "Standard" Roof Hugger Sub-Purlin:
 - a. Attachment to Existing Purlins/Joist/Decking: two- 1/4"-14 x 2 inch], DP3 self-drilling screws.
 - b. Existing Purlin Strengthening, Top Flange Lap Connection: four- #10-16 x 1-inch pancake head screws through overlapping sub-purlin top flanges, joining them into a continuous member, per lap connection or as specified.
 - c. Mid-Span Hugger Sub-Purlin to Sub-Rafter: two, 1/4"-14 1 inch, DP3 self – drilling on each side of cutout and one #10-16 x 1-inch pancake head screw installed through sub-purlin top flange, into sub-rafter.
 - d. Mid-Span Hugger Sub-Purlin to Existing Panel: #17-14 fasteners shall be installed through the mid-span of sub-purlin into the existing roof panels as specified or per standard details (over-drilling of pre-punched hole will be required).
 - e. Fastener Length: As required to penetrate existing purlins in accordance with fastener attachment standards.

-
2. "Special" Roof Hugger Sub-Purlin w/ Anti-Rotational Arm:
 - a. Attachment to Existing Purlins/Joist/Decking: Typical 2-1/4"-14 x 2inches DP3 self-drilling fastener with 1inch standoff or as specified.
 - b. Attachment of Anti-Rotational Arm to Existing Panel: #17-14 fastener or as specified.
 3. Integral Sub-Rafters beneath the rib cut out in the sub-purlin: 1/4inch-14 threads per inch, DP3 self-drilling fasteners install through the sub-purlin, through the integral sub-rafter, through the existing panel and into the existing purlin, rafters or joist; quantity as specified by design (typically 4 per intersection)..
 4. Sub-Rafter Hat Channels for designated high load areas:
 - a. Attachment to Existing Purlins, Trusses, Rafters or Joist: 1/4"-14 threads per inch DP3 self-drilling screws.
 - b. Length as required for minimum required penetration into truss, rafter or joist.
 5. Sub-Purlin Hat Channels: Attachment to installed sub-rafters: 1/4 inch-14 threads per inch, DP3 self-drilling fasteners, quantity as specified.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine existing roof areas to receive sub-purlins. Notify Architect Engineer if areas are not acceptable or structurally adequate. Do not begin installation until unacceptable conditions have been corrected.
- B. Verify existing purlins and eave struts are in good serviceable condition, without rust-thru of flanges.
- C. Field Verify Before Ordering of and Installation of Sub-Purlins:
 1. Existing panel profile and panel rib dimensions
 2. Existing panel run-out by measuring roof over several 20-foot areas to confirm panels were installed on module and in-square. Note variations.

3.2 INSTALLATION OF SUB-FRAMING AND OTHER ROOFTOP APPURTENCES

- A. Install sub-purlins in accordance with manufacturer's instructions at locations indicated on the standard details or Engineered Drawings if provided.
- B. Limit installation of sub-purlins to amount that can be roofed over each day.
- C. Install two (2) fasteners per linear foot or as directed by Manufacturer.
- D. Install sub-purlins directly over existing purlins and fasten to existing purlin through existing panel pan section.

- E. If integral sub-rafters are used, loosely lay Sub-rafters over the existing panel high ribs and between the existing purlins. Sub-rafter spacing and number of fasteners shall be as specified on the engineered Drawings.
- F. Press the Roof Hugger sub-purlins over the sub-rafters on the existing purlin lines in areas where they are specified and install 1/4"-14 DP3 screws through the base flange of the sub-purlin, through the sub-rafter and then into the existing purlins being careful to maintain the alignment of the sub-rafters.
- G. Install sub-purlins onto the integral sub-rafters between the existing purlins as specified with 1/4"-14 threads per inch, DP3 fasteners, typically one fastener on each side of the sub-rafter unless otherwise specified.
- H. Where the sub-purlin is attached to the existing roof panel the pre-punched base flange hole should be drilled out to the correct diameter to allow for the installation of a #17-14 fastener through the Roof Hugger and into the existing roof panel.
- I. Where the sub-purlin passes over the fitted sub-rafter, fasten through the top flange of the sub-purlin with a #10-16 pancake head fastener into the top of the new fitted sub-rafter.
- J. Removal of Existing Roof Fasteners: Do not remove existing roof fasteners unless installation of sub-purlins over fasteners causes sub-purlins to "roll" or "porpoise". Some distortion of base flange of sub-purlins caused by existing roof fasteners is normal.

END OF SECTION 05440

SECTION 07000 – ROOFING PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Preparations
 - 2. Through wall flashing
 - 3. Connects and disconnects
- B. Related Sections include the following:
 - 1. Division 1 Section "Allowances."
 - 2. Division 1 Section "Unit Prices."
 - 3. Division 6 Section "Rough Carpentry."

PART 2 - PRODUCTS

2.1 FASTENERS

- A. Self-Drilling Fasteners: Stainless steel of sufficient length to secure steel such as #12 diameter TEKS 5.
- B. Masonry fasteners: Tapcon or approved equal. Sized to fit through termination bar.

2.2 MISCELLANEOUS MATERIALS

- A. Single Component Polyurethane Sealant: ASTM C 920, Type S, Grade NS, Class 25, Use NT, M, A and O.
- B. Primer: As recommended by sealant manufacturer.
- C. Primer: Sherwin Williams Kem Kromik Universal Metal Primer rust-inhibitive primer.
- D. Weep Vents: polypropylene in conformance with ASTM D2240. Sized to fit within head joint of brick.

2.3 WALL FLASHING

- A. Flashing: Five (5) layer asphaltic copper composite sheet, 5 oz. copper, such as Copper Fabric Flashing Thru-Wall Flashing as manufactured by Advanced Building products, Inc. or approved equal; meeting ASTM B 370.
 - 1. Waterproof, flexible, high tensile strength, resistant to mortar acid and alkali action, allowing minimum thermal cold flow through structure, and textured surface promoting mortar joint bonding.
- B. Flashing Mastic: Fibrated, trowel grade mastic consisting of asphalt, mineral stabilizers, and interfiber complying with ASTM D 2822, Type 1; Cop-R-Tite Flashing mastic as manufactured by Advanced Building Products, Inc. or approved equal.

2.4 CEMENTITIOUS MATERIALS

- A. Mortar Net; Dove tail nylon, high density polyester with 90% open mesh, 10" high by 2" thick as manufactured by Mortar Net or approved equal.
- B. Portland Cement: ASTM C 150-92, Type I. Lime: ASTM C 207-91, Type N.
- C. Sand: ASTM C 144.
- D. Wall Ties: Meeting ACI 530-1/ASCE 6/TMS 602. Provide minimum 2 inch embedment into mortar. POS-I-Tie[®] Triangle Wire Tie as manufactured by Heckmann Building products, Inc. or approved equal:
 - 1. Wire 3/16 inch diameter.
 - 2. Hot dipped galvanized.
- E. Brick and concrete masonry units to match existing.

PART 3 - EXECUTION

3.1 PREPARATION, GENERAL

- A. Prior to commencement of any work, inspect and thoroughly water test all existing downspout boots for free flow operation with Owner's maintenance personnel present. Report drain restrictions to Engineer and Owner. Owner's maintenance personnel shall perform repairs to remove any restrictions found. Should drains become clogged at any time after the start of work, correct the condition at no additional expense to the Owner.
- B. Prior to the installation of any new roofing, flashings, and metal flashings, clean surfaces of all dust, dirt and other foreign matter.

3.2 CONNECTS AND DISCONNECTS

- A. In the event it is necessary to disconnect any electrical wiring or connections, plumbing lines or other building services, notify the Owner. Contractor shall not disconnect or connect services unless authorized in writing by Owner.
- B. Modification of existing service piping, wiring and duct work required in connection with the lifting, removal or relocation of roof mounted equipment shall be accomplished by this Contractor and is to be included in the Proposal price.
- C. All costs required in connection with electrical and/or mechanical service connections/disconnections, including satellites and weather stations, are to be included in the Bid price. All associated work is to be accomplished by appropriately licensed personnel in accordance with all applicable codes and regulations.
- D. Contractor shall review roof top equipment usage with Owner and facility user at beginning of project. Equipment determined to be essential to the operations of the facility may only be disabled at those times prescribed by the Owner. This may require the contractor to work at other than normal operating hours.

3.3 THROUGH-WALL FLASHING

- A. All through-wall flashing work shall be accomplished prior to installation of new roofing contiguous with the wall.
- B. The through-wall flashing is to be raised on areas where indicated on plans.
- C. Contractor is to provide any and all means necessary to protect existing roof cover and flashings from puncture or any other damage. Contractor will be responsible for all damage caused by this project at no additional expense to the Owner.
- D. Begin removing brick or CMU in 4 foot long sections. Alternate 4 foot long work sections so that, at no time, are any two sections closer than 3 feet apart. Do not remove brick or CMU in one section around corners.
- E. Remove up to three (3) courses or as designated on drawings of masonry in each work section.
- F. All masonry for this project shall be performed by a qualified mason and under the supervision of a licensed general contractor.
- G. Prior to installation of through-wall flashing, install metal receiver. Refer to Division 7 "Sheet Metal Flashing and Trim."
- H. Furnish and install new asphaltic copper composite flexible through-wall flashings as shown in Drawings. Seal bottom of lower edge of through-wall using sealant approved by through-wall manufacturer.
- I. Lap material by a minimum of 4 inches and coat contact surfaced with cement.
- J. Provide end dams at flashing termination at walls for control of drainage.

- K. At concrete block wall locations behind wall cavity, secure upper edge of through-wall flashing using termination bar with 6 inch pre-punched holes and secure with specified fasteners. Seal termination with permanent non-shrinking sealant.
- L. Install dove tail mortar net in cavity behind masonry.
- M. Furnish and install new brick or CMU above the through-wall flashing to match existing as specified herein:
1. Brick/CMU is to match existing.
 2. Use Type N prehydrated lime and portland cement mortar which is thoroughly mixed. Mortar shall match existing as closely as possible.
 3. Install new wall ties at block courses above through-wall flashings at 16 inches on center. Secure wall ties to block wall behind cavity with appropriate fasteners. Seal all fastener heads with permanent non-shrinking sealant.
 4. Tool exposed joints with a round jointer, slightly larger than width of joint. Flush cut all joints not tooled.
 5. Contractor shall remove all excess mortar from joints on the interior side of the new brick wall and ensure excess mortar does not fall into wall cavity and onto new through-wall flashings. Install mortar nets in accordance with manufacturer's installation instructions.
 6. Lay brick plumb and true to lines.
 7. Lay with completely filled mortar joints.
 8. Provide mortar nets sized appropriately for cavity size.
- N. Upon completion of the 4 foot long work sections, allow mortar to cure for three (3) days (minimum). Remove the other sections and install new through-wall flashings as specified herein.
- O. Use prefabricated inside and outside corner flashings.
- P. Omit head joints of mortar to provide as weeps.
1. Contractor is to utilize any and all procedures necessary to ensure cavity walls, through-wall flashings and weeps are clear of mortar and/or other debris.
 2. Space weeps maximum of 16 inches on center.
 3. Install open cell head joint weep vents.
- Q. Thoroughly wire brush all areas involved in project to remove excess mortar and other debris.

END OF SECTION 07000

SECTION 07413 – METAL ROOF PANELS

PART 1 - GENERAL

1.1 SUMMARY – SECTION INCLUDES

- A. Standing-seam metal roof and wall panels, including trim and accessories
- B. Insulation
- C. High Temperature Self-Adhering Underlayment
- D. RELATED SECTIONS
 - 1. Section 05440 – Structural Retrofit Roof Sub-Framing System
 - 2. Section 076200 - Sheet Metal Flashing and Trim
 - 3. Section 079200 - Joint Sealants

1.2 REFERENCES

- A. AISI S-100 – North American Specification for the Design of Cold-Formed Steel Structural Members:
- B. ASCE-7: American Society of Civil Engineers -Minimum Design Loads for Buildings and Other Structures; version adopted by local Building Code authority having jurisdiction
- C. ASTM A792 - Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
- D. ASTM E1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding System by Uniform Static Air Pressure Difference
- E. ASTM E1646 - Standard Test Method for Rate of Water Penetration Through Exterior Metal Roof Panel Systems By Uniform Static Air Pressure Difference
- F. ASTM E1680 - Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
- G. ASTM E2140 - Standard Test method for water penetration of metal roof panel systems by static water pressure head
- H. Factory Mutual 4471 Appendix G - Susceptibility to Leakage Test Procedure for Class 1 Panel Roofs.
- I. UL 580 - Tests for Uplift Resistance of Roof Assemblies.
- J. UL 1897 - Uplift Tests for Roof Covering Systems

1.3 ADMINISTRATIVE REQUIREMENTS

A. Pre-installation Meetings:

1. Schedule meeting to discuss roof project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements before start of work onsite.
2. Required attendees: Contractor, metal deck & roof installer, and any other subcontractors who have equipment penetrating the roof or Work that requires roof access or traffic

1.4 SUBMITTALS

A. Product Data: Manufacturer literature indicating product specifications, installation instructions, and standard construction details for specified products

B. Materials List: Give written notification of the brand name and manufacturer of each material proposed for use and include a statement that all proposed materials meet the specifications requirements. Obtain approval prior to placing orders.

C. Shop Drawings: To be prepared by metal roof system manufacturer.

1. Submit roof plan showing panel layout, profiles, components, accessories, finish colors, gutters and downspouts as applicable.
 - a. Indicate layout of roofing panels and roof panel sizes, including custom fabricated roofing panels if indicated, indicate each trim condition
 - b. Include details of each condition of installation, including the locations and types of fasteners, sealants and accessories. Indicate locations, gauges, shapes, and methods of attachment of all panels, accessories and trim
 - c. Indicate products/materials required for construction activities of this section not supplied by manufacturer of products of this section
 - d. Indicate locations of field applied sealant
 - e. Indicate locations of field worked conditions
2. Roof Panel Attachment:
 - a. Roof plan with wind uplift pressure calculations at field, corner and perimeter areas according to version of ASCE-7 referenced by locally-adopted Building Code and the authority having jurisdiction.
 - b. Roof plan indication roof clip spacing pattern at field, corner, perimeters and where panels are to be fixed from thermal movement.
 - c. Roof panel attachment plan must be stamped by licensed engineer in State in which project is constructed, certifying roof attachment meets local Building Code requirements for wind uplift.

D. Samples:

1. Submit two samples, 12" long, full width panel, showing metal gage, and seam
2. Two samples each for roof panel clip, bearing plate and clip fastener
3. Submit color samples for Architect's selection

4. Submit sample warranties
 - a. Manufacturer Finish Warranty
 - b. Manufacturer Weathertightness Warranty complying with this Specification
 - c. Installer Warranty

- E. Certificates:
 1. Submit roof panel manufacturer's certification that fasteners, clips, backup plates, closures, roof panels and finishes meet the specification requirements.
 2. Submit roof panel manufacturer's certification that installer meets requirements to install roof system and is qualified to obtain required warranties.

- F. Delegated Design Submittals: Submit engineering calculations indicating wind uplift pressure calculations according to local building code for project location with respect to appropriate Importance Factor, Exposure category and Safety Factor. Calculations shall be sealed by a professional engineer licensed to practice structural engineering in the state in which project is located.

- G. Test and Evaluation Reports - Certified test results that indicate roof system meets or exceeds design and performance criteria. Testing to include:
 1. Static Water Testing Certification: Manufacturers test data, signed and sealed by a registered professional engineer, in accordance with FM4471 Appendix G, and pass with no leakage. The test specimen must successfully withstand being submerged under 6" of water for a minimum period of 7 days.
 2. ASTM E1680 - Manufacturer's test data, signed and sealed by a registered professional engineer, for air infiltration rates meeting the following:
 - a) 16" panel width - 0.0028 cfm/sf maximum at a differential pressure of +/-20 pounds per square foot.
 - b) 18" panel width - 0.0025 cfm/sf maximum at a differential pressure of +/-20 pounds per square foot.
 - c) 24" panel width - 0.0019 cfm/sf maximum at a differential pressure of +/-20 pounds per square foot.
 3. ASTM E1646 - Manufacturer's test data, signed and sealed by a registered professional engineer, indicating no water penetration up to 20 pounds per square foot differential pressure.
 4. ASTM E1592 - Manufacturers test data, signed and sealed by a registered professional engineer, substantiating that roof system will meet the allowable wind pressures using an appropriate Factor of Safety in accordance with AISI S-100.
 5. ASTM E2140 - Manufacturers test data, signed and sealed by a registered professional engineer, on a test specimen with no end lap, indicating that no water leakage was observed during the testing period of 6 hours with a 6" water head on the specimen.

- H. Qualification Statements: For Manufacturer and Installer.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Manual indicating requirements and recommendations, to maintain the roof system, in good working condition.
- B. Warranty Documentation: Submit final warranties required in this section.

1.6 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer Qualifications: Manufacturer shall have a minimum of ten years' experience in the manufacturing of metal roof systems similar to those required for this project. Manufacturer must have a current installer training program.
 - 2. Installer Qualifications: Installer ("roofer") to perform the work of this section, shall have no fewer than 5 years of successful experience with the installation of metal roof systems similar to those required for this project. The installer shall be qualified by the roof panel manufacturer for installation of manufacturer-warranted systems
- B. Field Measurements: Prior to fabrication of panels, take field measurements of structure or substrates to receive panel system. Allow for trimming panel units, where final dimensions cannot be established prior to fabrication.
- C. Mock-Ups: Install a 30-foot-wide, quality control area of metal roofing, for review by the Architect. The Architect shall approve the quality of installation for the roof, prior to installing additional metal panels.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements: Deliver panels to jobsite properly packaged to provide protection against transportation damage. Panels too long to ship shall be site formed onto the roof by manufacturer's factory personnel using manufacturer's factory roll forming equipment.
- B. Storage and Handling Requirements:
 - 1. Exercise care in unloading, storing and erecting panels to prevent bending, warping, twisting, and surface damage.
 - 2. Store all material and accessories above ground on well skidded platforms. Store under waterproof covering. Provide proper ventilation to panels to prevent condensation build-up between each panel.
 - 3. Remove from site and replace panels which are damaged or become water-stained during storage and handling.

1.8 WARRANTIES

- A. Manufacturer Warranties:

1. Panel Material: Furnish manufacturers 25-year warranty covering the panel against rupture, structural failure, or perforation.
2. Panel Coating: Furnish manufacturer's 40-year warranty panel coating warranty covering cracking, checking, and peeling, and 30-year warranty covering fade and chalk.
3. Metal Roof Weathertightness Warranty:
 - a) Manufacturer's Single Source Weathertightness Warranty
 - (1) Warranty term: 20 years commencing on date of substantial completion
 - (2) Total manufacturer's liability: NRL (No Repair Limit)/ sq. ft
 - (3) Warranty must cover: Pipe and Curb Penetrations; Wind Speeds up to 75 mph
 - (i) Pipes must be centered in pan or a pipe curb must be used. Pipe must be flashed with an EPDM dektite.
 - (ii) Curbs must be all welded aluminum or stainless steel.
 - (iii) Manufacturer must supply engineered installation drawings signed and sealed by an engineer registered in the state in which the project is located.
 - B. Installer Warranty: Installer to provide warranty agreeing to repair or replace metal roof panels, trim, or accessories that fails due to poor workmanship or faulty installation.
 1. Warranty 5 years commencing on date of substantial completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. For purposes of these documents, the roof system manufacturer is defined as the manufacturer of the primary roof membrane. The roof system is intended to encompass, but is not necessarily limited to, all components above the structure including roof insulation, metal panels, membrane and metal flashings and any proprietary flashing/components of the system manufacturer. Subject to compliance with the material specifications of these documents, all materials are to be supplied by the same manufacturer.
- B. All materials used in systems to be covered by a Manufacturer's Guarantee must be supplied by the same manufacturer, unless the manufacturer issuing the guarantee waives this requirement in writing.
- C. The following material manufacturers are approved for this project. Such approval does not relieve the Contractor from the requirement to supply materials which meet all other requirements of these Specification.
 1. McElroy Metal, Inc.
 2. Imetco.
 3. Tremco.

2.2 ROOF/WALL PANEL SYSTEM

- A. Basis of Design: 238T by McElroy Metal, Inc. Bossier City, LA.
- B. Acceptable Equivalents:
1. Series 300 by Imetco
 2. TremLock T-238 by Tremco.
- C. Substitution Limitations:
1. Requests for approval must be submitted in writing at least ten (10) days prior to bid date and are accompanied by all related test reports and design calculations listed in section 1.4 and Design and Performance criteria Section 2.2.
 2. Substitute manufacturers will be approved by written addendum to all bidders. Voluntary alternates will not be considered. Substitutions will not be permitted after the bid date of this project.
 3. Roof panels proposed for substitution shall fully comply with specified requirements in appearance, assembly, and performance.
- D. Product Options:
1. Factory-formed panel, width of 16 inches. Panels shall be symmetrical in design and shall be mechanically seamed with a field operated electric *seaming* machine approved by the manufacturer.
 2. Minimum seam height 2 3/8 inches. Integral seam, double lock and snap together type panels are not acceptable. Seam cap matching panel finish with two rows of integral factory hot applied sealant. Sealant should not come in contact with clip, and clip should not require sealant to maintain a weathertight condition.
 3. Seam cap matching panel finish with two rows of integral factory hot applied sealant. Sealant should not come in contact with clip, and clip should not require sealant to maintain a weathertight condition.
 4. Galvalume coated sheet steel, Type AZ-50, Grade 50 as described in ASTM A792; 24 gauge.
 5. Finish: Two coat coil applied, baked-on full-strength (70% resin, PVF2) fluorocarbon coating consisting of a nominal 0.25 mil dry film thickness primer, and a nominal dry film thickness of 0.7 - 0.8 mil color coat for a total 0.9 to 1.1 mil total system dry film thickness. Finish to be selected from manufacturer's standard color selection. The back side of the material should be 0.25 mil primer and 0.25 mil polyester wash coat.
 - a. Color to be selected by Owner from Manufacturer's Standard Color Chart.
 6. Roof panel system must allow individual roof panel removal and replacement from any point on the roof without damage to adjacent roof panel(s). Roof panel system must be approved by manufacturer to be installed on slopes as low as 1/2:12.
 7. Panels must be furnished and installed in continuous lengths from ridge to eave with no overlaps. Panels too long to ship will be manufactured on site using manufacturer's employees and equipment. Panel surface characteristics to be Striated.
 8. Manufacturer weathertightness warranty meeting requirements of this Section.

2.3 PERFORMANCE/DESIGN CRITERIA

- A. 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.
- B. Roof panel and trim attachments will be designed to satisfy the requirements of the roof design (shown in shop drawings).
- C. Maximum wind uplift capacity of roof system shall be determined using ASTM E 1592 test results, with an appropriate Factor of Safety in accordance with AISI S-100.
- D. Panel system shall be designed in accordance with the local building code and ASCE7 for project location with respect to appropriate Exposure category, Importance Factor and Factor of Safety in accordance with AISI S-100.
- E. Tested and listed by Underwriters Laboratories to comply with UL 580 for wind uplift Class 90 rating.

2.4 ACCESSORIES

- A. Panel Clip Screw - screw required in wind uplift rating requirements and design specification for application, with corrosion-resistant coating, in length necessary to penetrate substrate minimum 3/4 inch., as supplied by roof panel manufacturer.
- B. Roof Panel Clip:
 - 1. Intermittent Clip: 16-gauge galvanized steel, one-piece, designed to allow roof panel thermal movement and not contact roof panel cap, as supplied by roof panel manufacturer, meeting wind uplift requirements and design criteria of this section.
 - 2. Intermittent Clip Bearing Plate: If required, in gauge, size and finish as supplied by and approved by roof panel manufacturer for use in roof panel manufacturer's full assembly warranted systems.
 - 3. Multi-Span Clip: as provided by roof panel manufacturer for full assembly warranted systems.
- C. Trim and flashing will be of the same gauge and finish unless approved otherwise by the metal roof system manufacturer.
 - 1. Ridge closures, consisting of metal channel surrounding factory precut closed cell foam, will not be secured through the field of the panel.
 - 2. Trim will be installed specifically as displayed in the manufacturer provided shop drawings. Proposed changes must be approved in writing by the metal roof system manufacturer.
- D. Concealed supports, angles, plates, accessories and brackets: gauge and finish as recommended, and furnished by manufacturer.

- E. Accessory Screw: Size and screw type as provided by panel manufacturer for each use, with prefinished hex washer head in color to match panels where exposed to view.
- F. Rivets: full stainless steel, including mandrel, in size to match application.
- G. Field Sealant:
 - 1. Exposed Sealant: Color coordinated urethane or polymer sealant as supplied by panel manufacturer.
 - 2. Non-exposed Sealant: Non-curing, non-skinning, butyl tape or tube sealant as supplied by manufacturer.
- H. Sealant Tape: non-drying, 100 percent solids, high grade butyl tape, as supplied by panel manufacturer, in sizes to match application.

2.5 SNOW GUARDS

- A. To be clamped to vertical ribs.
- B. Use the following or an approved equal:
 - 1. SnowGem
 - 2. S-5!
- C. Snow Guards shall match the floor of the metal roof panels.

PART 3 - EXECUTION

3.1 INSTALLERS

- A. Must be certified and qualified by Manufacturer.

3.2 EXAMINATION

- A. Verification of Conditions:
 - 1. Ensure surfaces are ready for panel application.
 - 2. Inspect and ensure surfaces are free from objectionable warp, wave, and buckle before proceeding with installation of pre-formed metal roofing.
 - 3. Ensure substrate is ready to receive metal roofing. Report items for correction and do not proceed with metal roof panel system installation until resolved.

3.3 GENERAL INSTALLATION REQUIREMENTS

Inspect all surfaces to which metal is to be applied. Do not install metal unless surfaces are even, sound, clean, dry and free from defects that might affect the application.

-
- A. Follow recommendations of Sheet Metal and Air Conditioning Contractors National Association Architectural Sheet Metal Manual Seventh Edition, 2012 for fabricating in-shop and on-site, and for installation, unless otherwise specified herein or on Drawings.
 - B. Follow published instructions of the product manufacturer for installation of extruded or proprietary metal products, unless otherwise specified herein or on Drawings.
 - C. Use nails, screws, bolts, cleats or other fasteners of the same material or, if approved by Engineer, of material chemically compatible with the contacted metal.
 - D. Cleats are to be a minimum of one gauge heavier than fascia metal.
 - E. Secure cleats to substrate with fasteners specifically manufactured for the purpose at spacings of 6 inches, on center. Fasteners are to be manufactured of metal chemically compatible with the contacted metal. Fasteners are to be located as close to hem of cleat as practical but no more than 2 inches from hem unless specifically indicated otherwise herein or on drawings. Do not place dissimilar metals in direct contact or in positions where water sheds across both metals.
 - F. Where aluminum is in contact with masonry or concrete, coat the contacting surface with bituminous paint.
 - G. Install metal to be water and weathertight with lines, arises and angles sharp and true and with plane surfaces free of waves or buckles. All raw edges of exposed or finish sheet metal shall be hemmed.
 - H. Shop form all metal shapes, which are to be formed of prefinished metal, with protective plastic film in place. Do not remove plastic film until just prior to (or, if possible, after) installation.
 - I. Form faces of perimeter edge fascia with vertical faces of sufficient width to extend a minimum of 1 inch below wood blocking.
 - J. Deliver all materials to site in original containers bearing manufacturers' name and type of material. All materials used in roof covering must have appropriate UNDERWRITERS' LABORATORIES, INC. labels.
 - K. Brand or manufacturer names are used as standards of quality where no other appropriate reference is available. The Engineer (or Owner) will consider substitution of materials of equal quality and properties provided a written request accompanied by substantiating data is received by him at least 10 days prior to bid date.
 - L. All materials used in systems to be covered by a Manufacturer's Guarantee must be supplied by the same manufacturer, unless the manufacturer issuing the guarantee waives this requirement in writing. Where a generic product or a general manufacturer's product is specified and more than one such product is offered by the manufacturer, it is understood that only the manufacturer's premium materials are approved for this project.
 - M. Contractor shall install metal roofing system free of any exposed fasteners.
 - N. Contractor shall obtain from the roofing system manufacturer all touch-up paint to be used on the metal roofing system and all metal components fabricated. Touch-up paint color shall

match that of the roofing panels. Contractor must provide to the Owner, prior to use of touch-up paint, evidence that touch-up paint was supplied by roofing system manufacturer and designed for that purpose.

- O. Prior to start of work, Contractor shall submit to Owner sealed engineering calculations in accordance with ASCE-7 from the manufacturer for wind uplift load capacities based on the clip spacings recommended by the manufacturer using recommended manufacturer clips. All loading conditions must be addressed, including perimeters, corners, etc.
- P. Under no circumstances shall Contractor remove more existing roof panels than new roof panels can be installed that same workday.

3.4 PREPARATION

- A. Install substrate boards, hat channels, purlins, or furring channels in accordance with manufacturer's recommendations.
- B. Coordinate Work, with installation of other associated Work, to ensure quality application.
- C. Coordinate Work with installation of associated metal flashings and building walls.
- D. Coordinate Work to minimize foot traffic and construction activity on installed finished surfaces.
- E. Coordinate location of pipe penetrations to allow centering of pipe in panel.
- F. Coordinate location of roof curbs, to allow proper integration with roof panel seams.

3.5 INSTALLATION

- A. Comply with and install roofing and flashings in accordance with all details shown on manufacturer's approved shop drawings and manufacturer's product data, instructions, and installation manuals, within specified erection tolerances.
- B. Install field panels in continuous lengths, without end laps.
- C. Do not install panels damaged by shipment or handling.
- D. Install intermittent clips with bearing plates, if required, and continuous clips, if required, according to the engineered design pattern in the field, perimeter, and corner areas of the roof.
- E. Fix panels at location depicted on reviewed shop drawing(s). Fold up pan of panel at ridge, hip and headwalls. Commonly referred to as bread panning.
- F. Allow for required panel clearance at penetrations for thermal movement.
- G. Install concealed supports, angles and brackets as furnished by manufacturer to form complete assemblies.

- H. Remove roof panel and flashing protective film prior to extended exposure to sunlight, heat, and other weather elements.
- I. Field-apply sealant tape and gun-grade sealant according to reviewed shop drawings and manufacturer's requirements for airtight, watertight installation.
- J. Ensure sealant beads and tapes are applied prior to sheet metal installation to achieve a concealed bead. Neatly trim exposed portions of sealant without damaging roof panel or flashing finish.
- K. Align pipe penetrations to occur at center of roof panel. Report and have corrected improperly-placed penetrations before proceeding with panel installation. Remove and replace roof panels which have improperly-placed penetration flashings.
- L. Align roof curbs to fit roof panel module and overlap standing seam(s). Allow for proper drainage on both sides of curb.
- M. Install sheet metal flashings according to manufacturer's recommendations, reviewed shop drawings and in accordance with provision of Section 07 62 00.

3.6 SYSTEM SCHEDULE

- A. Refer to Table 1 for a general schedule of the primary roof components (described from the bottom up) for each roof area. Methods of installation and related materials are in other sections of these specifications.

Over Existing Metal Roof
New Purlins
New metal roof panels

3.7 PANEL INSTALLATION

- A. Install panels in strict accordance with manufacturer's instructions and approved shop drawings, once all underlying components have been installed.
 - 1. Panel layout shall be such that roof penetrations at panel seams are avoided or minimized.
- B. Secure panels to substrate with concealed panel clips. Secure clips with two (2) fasteners per clip.
- C. Conceal all fasteners where practical. Where exposed fasteners are required, install through waterproof washers and finish to match roof panels.
- D. At the top and bottom of the panel, the clip spacing shall not exceed 6 inches from the end of the panel. Clip spacing shall be determined from uplift calculations. Clip spacing shall not exceed 4 feet on center unless approved in shop drawings by Engineer.

1. In the event additional clips are necessary at corners and perimeters, Contractor's bid is to include the necessary costs.
- E. Fabricate panels in continuous full lengths from eave to ridge. Horizontal seams are unacceptable.
- F. Secure panels with panel clips along each standing seam. Close seams with mechanized equipment approved by the manufacturer and specifically designed for closing the metal panel standing seam. Metal panels damaged by seamer shall be replaced by Contractor.
- G. Provide pan fold at end closures and terminations.
- H. Where metal panel termination does not allow for the installation of a full-width panel, the Contractor is to cut and bend roof panels as necessary to allow metal roofing system to terminate at walls or raked edges. Refer to the materials manufacturer design guide and Project Drawings.
- I. Fix all panels at the ridge using four (4) specified fasteners per panel. Allow for thermal expansion at eaves.

3.8 EAVE FLASHING

- A. Install new eave flashings at eaves as specified herein.
- B. Refer to Sheet Metal Schedule for gauge and metal type.
- C. Fascia is to be fabricated with flange not less than 4 inches. All work shall be neat.
- D. Engage formed drip at lower edge of face with continuous cleat where shown on Drawings.
- E. At gutters, extend fascia into gutter not less than 4 inches past back edge. Notch fascia around gutter spacers approximately 1/8 inch wider than spacer and turn tab out over spacer.
- F. Notch and lap sections a minimum of 4 inches and seal with approved sealant.
- G. Fasten with screws through flange near center. Space screw 6 inches on center in a staggered pattern. Refer to SMACNA Architectural Sheet Metal Manual Figure 2-1.

3.9 RIDGE AND HIP CAP INSTALLATION

- A. Furnish and install new ridge and hip cap as specified herein.
- B. Refer to sheet metal schedule for gauge and metal type. Refer to panel manufacturer's instructions and Drawings.
- C. Furnish panel end stiffeners, closures and all other materials as required to install cap as specified by panel manufacturer. Provide tape sealant at all connections.
- D. Engage both sides of cap to Z-closures and secure with appropriate fasteners on one side. Space fasteners at 8 inches on center. Z-closure is to be set in sealant tape and secured to

substrate using specified fasteners (4 minimum, evenly spaced per panel). Lap ridge caps no less than 6 inches. Seal laps with two (2) rows of sealant tape; one at each lap edge.

- E. Where ridge cap terminates at walls, turn ridge cap up and behind counterflashing a minimum of 4 inches.
- F. At ridge cap intersections, fabricate 24 inch long cap to lap over adjoining ridge caps a minimum of 6 inches and seal.

3.10 APRON FLASHING

- A. Install new metal apron flashings as specified.
- B. Refer to Drawings. Refer to sheet metal schedule for gauge and metal type.
- C. Lap joints a minimum of 6 inches and seal with tape sealant.
- D. Engage lower end of apron flashing with Z-closure. Z-closure is to be set in sealant tape and secured to substrate using minimum four (4) evenly spaced fasteners per panel.
- E. Secure vertical section of apron flashing to substrate using specified fasteners spaced at 6 inches on center.
- F. Extend upslope termination up wall a minimum of 6 inches.
- G. Counterflash as specified in "Counterflashing Installation" section.

3.11 VALLEY FLASHING

- A. Install new metal valley flashings as specified.
- B. Refer to Drawings. Refer to sheet metal schedule for gauge and metal type.
- C. Provide a vee crimp at the bottom of the valley. Vee shall be a minimum of 2 inches high.
- D. Roof panels shall terminate no closer than 10 inches to center of valley. Provide edge stiffening as required.
- E. Lap valley sections a minimum of 8 inches in the direction of flow. Secure the top of each section to the valley plate.
- F. Engage valley flashing to 24 gauge galvalume cleats fastened with two (2) steel fasteners spaced 12 inches on center.

3.12 METAL PANEL INSTALLATION

- A. Furnish and install new metal panel as specified herein. Refer to Drawings.
- B. Refer to Sheet Metal Schedule for gauge and metal type.

1. Contractor to submit to Engineer a copy of manufacturer's latest printed instructions.

3.13 COUNTERFLASHING RECEIVER INSTALLATION

- A. Furnish and install new counterflashing receiver as specified herein. Refer to Drawings.
- B. Refer to Sheet Metal Schedule for gauge and metal type.
- C. At wall below sloped roof extension, extend vertical flange or receiver behind panel a minimum of 4 inches and secure to hat channels at 9 inches on center.

3.14 COUNTERFLASHING INSTALLATION

- A. Install new counterflashing as specified herein. Refer to Drawings.
- B. Refer to Sheet Metal Schedule for gauge and metal type.

3.15 RAKE WALL FLASHING INSTALLATION

- A. Install new rake wall flashing as specified herein. Refer to Drawings.
- B. Refer to Sheet Metal Schedule for gauge and metal type.
- C. Fasten new rake wall flashing prior to the installation of new counterflashing using appropriate fasteners fastened at 6 inches on center.
- D. Provide new sealant where J-closure comes into contact with new rake wall flashing prior to securing with pop rivets.
- E. Fasten new rake wall flashing to new J-closure using pop rivets at 8 inches on center.

3.16 SNOW GUARD INSTALLATION

- A. Install snow guards onto standing seams according to manufacturer's latest written instructions in one row.
- B. Snow guards are to be installed at all steep slope roofs indicated on key plan.

END OF SECTION 07413

SECTION 07620 – SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Sheet metal flashing and trim.
- B. Related Sections include the following:
 - 1. Division 7 Section "Roofing Preparation."
 - 2. Division 7 Section "Metal Roof Panels."

1.3 SUBMITTALS

- A. Materials List: Give written notification of the brand name and manufacturer of each material proposed for use and include a statement that all proposed materials meet the specification requirements. Obtain approval prior to placing orders.
 - 1. Submittal of catalog cut sheets, etc. in lieu of the materials list required above is not acceptable.
- B. Submit shop drawings of all specified types of metal shapes, showing details of proposed installation where appropriate.
- C. Submit two 6-inch long samples of each metal shape.
- D. Manufacturer Certificates: Original document signed by a responsible officer of the manufacturing firm, notarized, on manufacturer's standard letterhead, certifying materials furnished for project comply with the referenced standard. Certificate shall specifically reference the project and applicable compliance standard.
- E. Obtain approval of shop drawings, samples and certifications prior to fabrication and installation.
- F. No sheet metal item is to be purchased, fabricated, or installed until all required shop drawings and related submittals for each item are approved. Items purchased, fabricated and/or installed which are not in compliance with approved shop drawings are subject to immediate removal from the project at contractor's expense.
- G. Color Chart: Manufacturer's standard range of colors for prefinished metals, including available gauges.

1.4 STORAGE

- A. Restrict on-site storage to minimum for work in progress. Protect all stored metal from exposure to weather and physical damage.

1.5 WARRANTIES

- A. Special Warranty on Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal that shows evidence of deterioration of factory-applied finishes within specified warranty period.
- B. Finish Warranty Period: Twenty (20) years from date of Substantial Completion.
- C. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
 - 1. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - 2. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - 3. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

PART 2 - PRODUCTS

2.1 SHEET METAL MATERIALS

- A. Prefinished Galvalume: Aluminum-zinc alloy-coated steel sheet meeting ASTM A 792, Class A 750, Coating designation, Grade 40 (Class AZM 150 coating designation, Grade 275, Structural quality with Kynar 500.
 - 1. Color: To be selected from manufacturer's standard color chart.
- B. Stainless Steel: ASTM A-167, chromium-nickel steel sheet, AISI Type 304.
- C. Lead: 4 lb. soft lead.
- D. Solder: ASTM B 32, with 50% lead and 50% tin unless otherwise specified herein.

2.2 AUXILIARY MATERIALS

- A. Sealant: ASTM C 920, Type S, Grade NS, Class 25, one-part polyurethane sealant.

2.3 SHEET METAL SCHEDULE

- A. Counterflashing: 24-gauge prefinished galvalume
- B. Cleats: 22-gauge prefinished galvalume
- C. Drip Edge: 24-gauge prefinished galvalume
- D. Metal Receiver: 24-gauge prefinished galvalume

PART 3 - EXECUTION**3.1 INSTALLATION, GENERAL**

- A. Inspect all surfaces to which metal is to be applied. Do not install metal unless surfaces are even, sound, clean, dry and free from defects that might affect the application.
- B. Follow recommendations of Sheet Metal and Air Conditioning Contractors National Association Architectural Sheet Metal Manual (Seventh Edition, 2012) for fabricating in-shop and on-site, and for installation, unless otherwise specified herein or on Drawings.
- C. Follow published instructions of the product manufacturer for installation of extruded or proprietary metal products, unless otherwise specified herein or on Drawings.
- D. Use nails, screws, bolts, cleats or other fasteners of the same material or, if approved by Engineer, of material chemically compatible with the contacted metal.
 - 1. Use stainless steel fasteners at all locations in contact with pressure-treated lumber.
- E. Fabricate cleats to be two (2) gauges heavier than metal to be secured by cleat unless otherwise noted.
 - 1. Secure cleats to substrate with fasteners specifically manufactured for the purpose at spacings of 6 inches, on center. Fasteners are to be manufactured of metal chemically compatible with the contacted metal. Fasteners to be used in wood substrates are to be ring shank. Fasteners are to be located as close to hem of cleat as practical but no more than 2 inches from hem unless specifically indicated otherwise herein or on drawings.
- F. Solder metal, where required, using standard industry techniques in accordance with the requirements of the metal manufacturer and the SMACNA Architectural Sheet Metal Manual for the types of metal to be soldered. Joints shall be thoroughly sweated to ensure full penetration of solder in the joint and to ensure a secure connection. Riveted joints shall be fully soldered to eliminate rivet holes or potential for corrosion.
- G. Install metal to be water and weathertight with lines, arises and angles sharp and true and with plane surfaces free of waves or buckles. All raw edges of exposed or finish sheet metal shall be hemmed.
- H. Install shop-formed flashings in 10 foot lengths maximum and with minimum number of pieces in each straight run.
- I. Do not place dissimilar metals in direct contact or in positions where water sheds across both metals.
- J. Miter and seal all inside and outside corners of coping cap and eave metal. Shop fabricated corner pieces are preferable
- K. Shop form all metal shapes, which are to be formed of prefinished metal, with protective plastic film in place. Do not remove plastic film until just prior to (or, if possible, after) installation.

- L. Form faces of coping cap with vertical faces of sufficient width to extend to specified length as shown in the details.

3.2 COUNTERFLASHING INSTALLATION

- A. Install new counterflashing at walls as specified herein. Refer to Drawings.
- B. Refer to sheet metal schedule for gauge and metal type.
- C. At masonry walls, furnish and install new counterflashing into through wall receiver as specified herein.
- D. At areas where through wall flashings was not installed, install raggel type counterflashing. Refer to SMACNA Architectural Sheet Metal Manual Figure 4-4B and Drawings.
 - 1. Insert upper edge of counterflashing in raggle. Secure with driven lead wedges not over 18 inches on center. Fabricate wedges from lead wool.
 - 2. Fill raggle to full depth with permanent, non-shrinking sealant.
- E. At standing seam metal panels, insert upper edge of counterflashing in metal receiver. Bend receiver neatly and snugly to face of counterflashing and fasten to receiver every 6 inches on center.

3.3 METAL DRIP EDGE/RECEIVER INSTALLATION

- A. Install new metal drip edge as specified herein. Refer to SMACNA Architectural Sheet Metal Manual Figure 4-4D.
- B. Refer to sheet metal schedule for gauge and metal type.
- C. Lap ends 4 inches and seal with specified sealant.

END OF SECTION 07620

SECTION 07920 – JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Replacing sealant at masonry control joints.
- B. Related Sections include the following:
 - 1. Division 1 Section 01732 - "Selective Demolition."

1.3 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

- A. Submit manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- B. Samples for Verification: For each kind and color of joint sealant required, provide samples with joint sealants in 5/8 wide joints.
- C. Installation Instructions: Submit manufacturer's latest written installation instructions.

1.5 WARRANTIES

- A. Materials List: Give written notification of the brand name and manufacturer of each material proposed for use and include a statement that all proposed materials meet the specification requirements.
- B. Installer's Warranty: Installer's warranty, on form at end of this Section, signed by sealant Installer, properly executed and printed on Installer's letterhead form.
 - 1. Warranty Period: Five (5) years from date of Substantial Completion.
- C. Manufacturer's Warranty:

1. Warranty Period: Twenty (20) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SEALANTS

- A. Listed in this section are materials required generally for use in accomplishing the work specified. Materials not listed may also be required.
 1. Masonry control joints: Single-component silicone sealant, ASTM C 920, Type S, Grade NS, Class 100/50, Use T, NT, M, G, A and O.
 - a. Dow Corning 790 Silicone Building Sealant
 - b. Percora 890
 - c. Tremco Spectrum 2
 - d. Or approved equal
 2. Color: To be selected by Owner from manufacturer's full range of colors.

2.2 MATERIALS

- A. General: Provide sealant backings of materials and type that are non-staining; are compatible with joint substrates, sealants, primers, and other joint filler; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Bond-Breaker Tape: Polyethylene tape with adhesive strip on one side.
- C. Cylindrical Sealant Backing: ASTM C 1330, Type C (closed-cell), of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance; do not use materials impregnated with oil, bitumen or similar materials.
- D. Primer: As recommended by sealant manufacturer.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

- A. Use solvents to clean equipment, tools and smears that are recommended by the sealant manufacturer. Solvents such as mineral spirits, kerosene or paint thinner shall not be used. Such cleaning should be accomplished as work progresses.
- B. Do not apply materials on wet or damp surfaces, over dust, dirt, oils or other contaminants.

- C. Do not apply materials when ambient air temperature is below 40°F without approval of Engineer or Owner.
- D. Store all materials in dry storage at temperatures above 40°F. Wet or damaged materials or containers shall not be used.
- E. Apply new sealant under pressure with power actuated or manual gun. Gun must have correct nozzle size and pressure to fill joint completely. Install backer rod with a blunt object. Damaged backer rod must be replaced with new materials. Size backer rod so that it will compress to 25 percent when installed into joint. Do not lap ends and do not have gaps greater than 1/8 inch between sections. Do not twist backer rod pieces together to fill gap.
- F. Do not place polyurethane sealants in contact with silicone sealants during application.
- G. Do not use an air blower to clean out dust and debris. Only clean rags or brushes are acceptable.
- H. Remove all existing sealant and backer rod down to original substrate. Removal of sealant with knife alone is not acceptable. Grind all concrete or masonry joints and solvent wipe all joints.
- I. Prime all joints to be sealed with sealant manufacturer's approved primer. Do not apply excessive amounts of primer to joints. Allow primer sufficient time to dry.
- J. Install new closed-cell backer rod in joint to a depth of half the width of joint (minimum).
- K. Tool joints immediately with a rounded wood or metal spatula. Do not use wet tool method. Tooling must be accomplished before sealant begins to skin.
- L. All finished work must be uniform, clean, neat and free of overlapping.
- M. At areas where dimensions do not allow for backer rod, apply cove bead.
- N. Manufacturer shall provide a minimum of three (3) pull tests accompanied by a report documenting results.
 - 1. Test Method: Test joint sealant according to Method A, Field Applied Sealant Joint Hand Pull Tab – ASTM C 1521-13.

3.2 MASONRY CONTROL JOINTS

- A. Remove existing sealant at locations specified.
- B. Clean joints thoroughly with grinder to remove sealant from edges. Clean joint with solvent and wipe clean with clean rags.
- C. Install new backer rod/bond breaker tape into joint.
- D. Install new sealant and tool.

END OF SECTION 07920