EDIFICE CONSULTING, INC.
A Georgia Corporation

PROJECT MANUAL

SECTION 00 01 01

ALEXANDER II ROOF PROJECT
BIBB COUNTY BOARD OF EDUCATION

MACON, GA

SEPTEMBER 12, 2016

ISSUED FOR:

☐ **PRELIMINARY (NOT FOR CONSTRUCTION)**

☑ **BIDDING AND CONSTRUCTION (100%)**

PROJECT NUMBER: 16BBEJ06RF081

SECTION 00 01 02
PROJECT DIRECTORY

Project:

Alexander II Roof Project
3522 Greenbriar Rd.
Macon, GA. 31204

Owner:

Bibb County Board of Education
484 Mulberry Street, Suite 280
Macon, GA. 31201

Consultant:

Edifice Consulting, Inc.
P.O. Box 1060
Byron, GA. 31008

Email: glenn@edifice.biz

SECTION 00 01 10
TABLE OF CONTENTS

END OF SECTION

SECTION 00 01 15
LIST OF DIAGRAM SHEETS

ROOF PLAN DIAGRAMS

KEY PLAN 1	OVERALL ROOF PLAN
KEY PLAN 2	OVERALL ROOF PLAN – SCOPE OF WORK
KEY PLAN 3	ENLARGED ROOF PLAN
KEY PLAN 4	ENLARGED ROOF PLAN
KEY PLAN 5	ENLARGED ROOF PLAN
KEY PLAN 6	ENLARGED ROOF PLAN

ROOF DETAIL DIAGRAMS

DIAGRAM 1	METAL ROOF EAVE WITH GUTTER
DIAGRAM 2	METAL ROOF RAKE
DIAGRAM 3	METAL ROOF TO LOW SLOPE ROOF TRANSITION
DIAGRAM 4	METAL ROOF EAVE WITH GUTTER
DIAGRAM 5	METAL ROOF TO WALL RIDGE FLASHING AT EIFS
DIAGRAM 6	METAL ROOF TO WALL RAKE FLASHING AT BRICK
DIAGRAM 7	METAL ROOF TO WALL RAKE FLASHING AT EIFS
DIAGRAM 8	METAL ROOF RIDGE
DIAGRAM A	TYPICAL METAL ROOF PIPE PENETRATION

END OF SECTION

SECTION 00 72 00
GENERAL CONDITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams and general provisions of the Contract including General Conditions and other Division 00-48 Specification Sections, and drawing diagrams, apply to this Section.

1.2 INTENT AND INTERPRETATION OF THE CONTRACT DOCUMENTS

A. The intent of these specifications is to describe the materials and methods of construction required for the performance of the work.

B. Where discrepancies exist in the contract documents, the more stringent requirement shall apply. Refer to contract documents for appropriate procedure to obtain clarifications.

1.3 BID PROPOSAL SUBMITTAL

A. Bid proposals may be submitted as directed by the Bibb County School District, Alexander II Roof Project, Request For Proposals (RFP #17-6).

1.4 DEFINITIONS

A. The Owner, the Contractor and the Owner's Representative or Consultant shall be indicated as such throughout these documents.

B. The term “Contractor” as used herein shall designate the successful bidder to whom the roof contract is awarded.

C. The term “Owner” is Bibb County School District.

D. The term “Owner's Representative”, or “Consultant” is Edifice Consulting Inc., Byron, GA

1.5 OWNER REPRESENTATIVE STATUS

A. The Owner's Representative shall have general Rights of Inspection of the work and is the agent of the Owner in all matters pertaining to the work as provided in the Contract Documents.

B. The Owner's Representative has the authority to stop work whenever such stoppage may be necessary to ensure the proper execution of the contract and shall have authority to reject any and all materials, whether worked or unworked, if such materials are not in accordance with the plans and specifications.

1.6 VERIFICATION OF DIMENSIONS AND ELEVATIONS

A. Dimensions and elevations indicated on the drawings in reference to existing structures or utilities are the best available data obtainable but are not guaranteed by the Owner's Representative and the Owner's Representative will not be responsible for their accuracy.

B. Before bidding on any work dependent upon the data involved, the Contractor shall field check and verify all dimensions, grades, lines, levels or other conditions of limitations at the site to avoid construction errors.

C. If any work is performed by the Contractor or any of his/her sub-contractors prior to adequate verification or applicable data, any resulting extra cost for adjustment of work as required to conform to existing limitations, shall be assumed by the Contractor without reimbursement or compensation by the Owner.

1.7 RESPONSIBILITY FOR MEASUREMENTS AND QUANTITIES

A. Contractors who are bidding the project shall be solely responsible for all accuracy of all measurements and for estimating the material quantities required to satisfy these specifications.

1.8 PROTECTION

A. The Contractor shall use every available precaution to provide for the safety of property owner, visitors to the site, and all connected with the work under the specification.

B. Existing facilities shall remain operating during the period of construction. All access roadways must remain open to traffic unless otherwise permitted.

C. In those areas where materials will be raised to the roof area, a protective covering shall be placed from the base of the wall extending up and over the top edge of the roof. This coverage shall be wide enough to assure that the exterior walls do not become stained or soiled during roofing operations

D. Barricades shall be erected to fence off all construction areas from operations personnel.

1.9 HOUSEKEEPING

A. Keep materials neat and orderly.

B. Remove scrap, waste and debris from project area.

1.10 CONDITION OF SITE

A. The bidders shall visit the site before submitting their bids and determine the field conditions affecting their work. In considering the bids, the Owner will assume that the bidders are aware of all items, pertinent to their work and have made allowance for same in their bids.

1.11 INSPECTION

A. Where the drawings or specifications require the inspection and approval of any work in progress by the Owner's Representative, the Contractor shall give that Representative ample notice to allow for scheduling the inspection, which shall be made promptly to avoid delay of work. If work has progressed without the required inspections or approval by the Representative, it shall be uncovered for inspection at the Contractor's expense.

B. Uncovering of work not originally inspected, or uncovering questioned work may be ordered by the Owner's Representative and it shall be done by the Contractor. If examination proves such work to be incorrectly done or not done in accordance with the plans and specifications, the Contractor shall bear all cost of the reexamination. If the work is proven correctly installed, all such expense shall be born by the Owner.

C. The roofing contractor shall notify building owner, in writing of any defects in the substrate, and work shall not proceed until defects have been corrected.

D. Do not install new roofing until all unsatisfactory conditions are corrected. Beginning work constitutes acceptance of conditions.

E. Check projections, curbs, and other penetrations for inadequate anchorage, foreign material, moisture, or unevenness that would prevent quality and execution of new roofing system.

F. Start of work by the roofing contractor shall imply approval of site conditions; and no claim in this respect will be considered valid in case of failure of the roofing components within the guarantee period.

G. Noncompliance with the terms of this specification and ensuing contract can result in either the cancellation of the contract, or complete replacement of the defective areas at the Contractor's expense. In the event of cancellation, the Owner will not be obligated to compensate the Contractor for any work undertaken in a defective manner.

H. Damages caused by water infiltration resulting from the failure of the Contractor to secure each day's work in a weather tight manner, will be corrected at the Contractor's expense. Included as damages will be all labor costs incurred by the Owner as a result of such water infiltration.

I. The Owner will require the Owner's Representative to examine the work in progress, as well as upon completion, in order to ascertain the extent to which the materials and procedures conform to the requirements of these specifications and to the published instructions of the Manufacturer.

J. The authorized Owner's Representative shall be responsible for:

1. Keeping the Owner informed on a periodic basis as to the progress and quality of the work;
2. Calling to the attention of the Contractor those matters he/she considers to be in violation of the contract requirements;
3. Reporting to the Owner any failure or refusal of the Contractor to correct unacceptable practices;
4. Conducting preliminary and subsequent job-site meetings with the Contractor's official job representative;
5. Rendering any other inspection services which the Owner may designate; and

6. Certifying, after completion of the work, the extent to which the Contractor has complied with these specifications as well as to the published instructions of the Manufacturing Company.

K. The presence and activities of the Owner's Representative shall in no way relieve the Contractor of his/her contractual responsibilities.

1.12 SAFETY PRECAUTIONS

A. All owners' safety rules shall be adhered to in the execution of this work. When specific owner safety requirements are not provided in this Project Manual, the contractor is solely responsible for obtaining and conforming to all owner safety requirements.

B. Adequate protection shall be provided, to prevent accidents, injuries, burns and skin irritation, in accordance with safety requirements.

C. Safety Requirements

1. All application, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements.

2. Comply with federal, state, local and owner fire and safety requirements.

3. Advise owner whenever work is expected to be hazardous to owner employees and/or operations.

4. Maintain proper fire extinguisher within easy access whenever power tools are being used.

5. ALL SAFETY REQUIREMENTS OF THE OWNER MUST BE FOLLOWED. NO EXCEPTIONS WILL BE PERMITTED. SAFETY ORIENTATION MEETING REQUIRED PRIOR TO PERFORMING ANY WORK.

6. THE CONTRACTOR SHALL "HOLD HARMLESS" THE DESIGN PROFESSIONAL AGAINST ANY LITIGATION ARISING FROM ANY ACCIDENTS DURING THE COURSE OF THE CONTRACT.

D. The Contractor shall be responsible for guarding against fires, and shall provide suitable fire extinguishers conveniently located at the site.

E. Competent operators shall be in attendance at all times equipment is in use. Materials shall be stored neatly in areas designated by the Owner and dispersed so as to present a minimum fire hazard.

F. Loads placed on the roof at any point shall not exceed the safe load for which the roof is designed.

G. Contractor shall conform to requirements as designated by the United States Federal Government (O.S.H.A.). Contractor shall abide by all regulations as outlined in the O.S.H.A. handbook and shall have a handbook on location at all times.

H. Contractors hereby acknowledged that they and their workers have undergone Safety Training and shall at all times act in compliance with all NRCA recommended safety compliance rules and regulations.

I. The Contractor shall properly notify all employees of conditions relating to roof areas with very poor condition and which will be worked on. After such notification, the Contractor must take all necessary precautions to ensure the safety of his/her employees as well as the building personnel.

1.13 ROOF TRAFFIC

A. After work on roof is started, no traffic will be permitted on the roof other than that necessary for the roofing application and inspection.

1. Materials shall not be piled on the roof to the extent that design live loads are exceeded.
2. Roofing materials shall not be transported over unfinished or finished roofing or existing roofs unless adequate protection is provided.
3. Under no circumstances will roof traffic be allowed on finished roof surfaces.
4. Any damage to existing equipment shall be repaired as directed by building owner at no expense to building owner.

1.14 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Proper storage on or off the site shall be the responsibility of the roofing contractor.

B. Refer to the requirements of individual specification sections of this project manual.

1.15 WORK SEQUENCE

A. Once work is started on a roof or section, it shall continue without undue delay until that section is completed before starting another. The installation of flashings (trim) shall follow application of the roofing immediately.

1.16 MISCELLANEOUS UTILITIES

A. Electrical power will be furnished by the Owner for small tools only. All connections to the electrical system will be furnished by the Contractor.

B. Potable water will be furnished by the Owner. Any connections to the water system shall be the responsibility of the Contractor.

C. At the completion of the work, or when the above connections are no longer required, the Contractor shall remove all connections and leave the facilities in a condition at least as satisfactory as prior to the commencement of his/her work.

D. Toilet facilities will be provided by the Contractor.

1. The Contractor will be responsible for supplying a portable toilet on the job-site.
2. The Contractor's personnel are not permitted to enter the building without proper authorization from the Owner or Owner's Representative.

1.17 CHANGES OR EXTRA WORK

A. The Owner may, without invalidating the original contract, order such changes or additions as may from time to time be deemed desirable. In so doing, the contract price shall be adjusted, as stated below, with all work being done under the conditions of the original contract except for such adjustments in extension of time as may be acceptable to the Owner. The value of such extra work shall be determined in one of the following ways:

1. By firm price adjustment.
2. By cost plus with a guaranteed maximum.
3. By cost with a fixed fee.
4. By unit cost.

B. If agreement is reached that the extra cost shall be handled as per methods 2, 3, or 4, the Contractor shall keep and compile a correct amount of the cost together with such vouchers, etc., as may be necessary to substantiate same for presentation to the Owner.

C. The Owner's Representative shall have authority to make minor job changes or additions as may be necessary to expedite the job providing such changes do not involve additional material cost.

D. No major change or addition shall be made except upon receipt by the Contractor of a signed order from the Owner authorizing such a change. No claims for an extra to the contract price shall be valid unless so authorized.

E. All work covered by unit prices submitted by the Contractor in his/her proposal must be covered by a written work order. The Owner's Representative will prepare the work order in triplicate covering the quantity of work and the total cost of the work. The work order which will be written at the end of the each day, will be signed by the Owner's Representative and the Contractor's foreman and/or superintendent.

1.18 CORRECTION OF WORK PRIOR TO FINAL PAYMENT

A. The Contractor shall promptly remove any work that does not meet the requirements of the plans and specifications or is incorrectly installed or otherwise disapproved by the Owner or the Owner's Representative as failing to meet the intent of the plans and specifications. The Contractor shall promptly replace any such work without expense to the Owner and shall bear the cost of making good all work of other contractors, or the Owner, destroyed or damaged by such removal or replacement.

1.19 CORRECTION OF WORK AFTER FINAL PAYMENT

A. The Contractor shall guarantee all materials and workmanship for one (1) year from date of final payment of the contract by the Owner. Any defects which may arise during this period shall be promptly repaired by the Contractor including any damage done to the Owner's property due to such defects.

1.20 DEDUCTION FOR UNCORRECTED WORK

A. If the Owner deems it unacceptable to have the Contractor correct work, which has been incorrectly done, a deduction from the contract price shall be agreed upon therefore. Such a deduction from the contract price shall in no way affect the Contractor's responsibility for defects, which may occur, nor his/her ability for correcting them, and damage caused by them.

1.21 LIENS

A. The Contractor shall, if required by the Owner, furnish him/her with a release in full of all liens arising out of this contract or in lieu thereof, and receipts in full for all materials and labor on the job.

B. In either case, the Contractor shall furnish an affidavit that the liens or receipts include all the labor and material for which a lien could be filed. In lieu of the above, the Contractor may at his/her option furnish a bond to indemnify the Owner against all hazard of liens.

C. Neither part nor final payment shall in any way release the Contractor from the above obligation and in the event that part or full payment has been made and any lien remains un-discharged, the Contractor shall refund to the Owner the necessary funds to discharge such a lien including all cost and attorney's fees.

1.22 JOB CONDITIONS

A. There is NO SMOKING allowed on the project property, and the Contractor shall be responsible for enforcement of this job rule at all times with his/her personnel.

B. The Contractor should be aware of Owner's property when tearing off the existing roof. This is required for removal of dirt, silt, debris, roof materials and insulation from the roof surface in order to preserve the ecology, eliminate unsightly conditions and protect building surfaces. Specific locations will be discussed at the pre bid conference.

C. Ladders: Any ladders used on this project must be in good condition. The ladder must also be secured at the roofline at all times while in use. All ladders must be O.S.H.A. approved.

D. No drugs or alcoholic beverages are permitted on the grounds.

E. The Contractor shall place necessary barriers and/or protection around or under all work areas where his/her operations involve risk of injury to plant personnel.

F. The Contractor will also protect the building structure from damage in the process of the job. In the event that damage does occur to any property or equipment, or the Owner's work in process, notification must be made within two (2) working days of the incidents to the Owner and Owner's Representative.

G. During the progress of the job, if waste material and rubbish are found or damage resulting from the Contractor's operations is found, or the Contractor does not comply with the requirement by keeping the premises free of accumulations and correct the damage, it shall be the Owner's prerogative to hire personnel to do so; and the cost of this work will be deducted from the balance due the Contractor.

H. Existing roof top equipment shall be completely protected by masking or other effective methods.

I. The Contractor is responsible for protecting all materials from the elements. If any material, such as insulation, becomes wet, it cannot be installed and must be replaced at the Contractor's expense. NOTE: Insulation and rolled roofing materials must be covered with waterproof tarps at the end of each workday. Plastic wrappers supplied by the insulation manufacturer are not acceptable substitutes for tarps. The Owner's Representative will reject any covering method or material that does not adequately protect roofing materials.

J. Anyone guilty of willful destruction or unlawful removal of owner's property will be dismissed from the job and is subject to prosecution by law.

K. Any grass lawns damaged by Contractor vehicles will be restored with a stand of grass at the Contractor's expense. Any damaged pavements will likewise be restored and at the Contractor's expense.

L. The Contractor must verify that all materials can be installed to accommodate the building design, governing codes and regulations, and the manufacturer's current recommendations. In the event of a conflict the more stringent shall govern.

1.23 WORKMANSHIP

A. All materials will be securely fastened and placed in a watertight, neat and workmanlike manner. All workmen shall be thoroughly experienced in the particular class or work upon which they are employed. All work shall be done in accordance with these specifications and shall meet the approval of the Owner or Owner's Representative. The Contractor's representative or job supervisor shall have a complete copy of specifications and drawings on the job-site at all times.

B. Contractor shall plan and conduct the operations of the work so that each section started on one day is complete and thoroughly protected before the close of work for that day.

1.24 WORK HOURS AND DAYS

A. When the Contract is awarded, the Contractor will contact the Owner's Representative to arrange the work schedule and the hours of the day that the workers may be on the building.

B. The job is to be bid under the assumption that all work will be performed on a straight time basis.

C. Acceptable construction dates and work hours are to be provided by the Owner.

1.25 COMPLIANCE WITH LAWS

A. The Contractor shall give notices, pay all fees, permits and comply with all laws, ordinances, rules and regulations bearing on the conduct of work.

1.26 OWNER RULES

A. The Contractor and all his/her personnel/agent(s) shall abide by all rules created by the Owner.

B. The Contractor must contact the Owner's Representative for specific information regarding the rules governing all operations of the project.

1.27 ANTI-DISCRIMINATION IN EMPLOYMENT

A. Contractors and subcontractors shall not discriminate against any employees or applicant for employment, to be employed in performance of his/her contract, with respect to his/her hire, tenure, terms, conditions or privileges of employment because of his/her race, color, gender, sexual preference, religion, national origin, or ancestry.

1.28 FINAL INSPECTION

A. Upon completion of the installation, an inspection shall be made by a representative of the roofing manufacturer to ascertain that the roofing system has been installed according to the roofing system warrantor's published specifications and details. The warranty will be issued upon approval of the installation and payment for all materials and fees.

1.29 ADJUSTMENT AND REPAIR

A. Any roofing damaged or misapplication shall be repaired or replaced as designated by the building owner and roofing system warrantor. Repairs or replacement will be made by the contractor at no expense to building owner.

1.30 WITHDRAWAL OR MODIFICATION OF BID

A. Any Bidder may withdraw his/her bid at any time before the scheduled closing date of the bid by appearing in person or by sending an authorized representative of the Bidder.

1. An appointment should first be scheduled by calling the Owner's Representative.
2. The Bidder or his/her representative shall be asked to sign, in writing that the bid was returned to him/her.
3. After the withdrawal, the Bidding Contractor may submit a new bid, up to the bid date and time.

1.31 BID OPENINGS

A. Opening of bids will take place at the pleasure of the Owner.

1.32 QUESTIONS

A. Questions will be presented electronically, by email only, to:

Bibb County School District
Elaine Wilson – Director of Procurement
Email: Elaine.Wilson@bcsdk12.net

B. The deadline to submit questions is listed in the Bibb County School District, Alexander II Roof Project, Request For Proposals (RFP #17-6).

C. Questions submitted in any other format than email will receive no response.

1.33 DISCREPANCIES AND ADDENDA

A. Should a Bidder find any discrepancies in the Drawings and Specifications, or should he be in doubt as to their meaning, he/she shall notify the Owner's Representative at once, who will send a written Addendum to all Bidders concerned. Oral instructions or decisions, unless confirmed by Addenda, will not be considered valid, legal or binding.

1. No extras will be authorized because of the Contractor's failure to include work called for in the Addenda in his/her bid.
2. It shall be the responsibility of all Bidders to call to the Owner's Representative's attention at the pre bid meeting, any discrepancies which may exist between or with any of the contract documents, or any questions which may arise as to their true meaning.
3. Modifications to the specifications (if necessary) will be followed by an addendum; no verbal discussions or agreements shall be recognized.

1.34 START AND COMPLETION DATE

A. As directed by the Owner.

1.35 PAYMENT

A. Payments for the Work of this project will be paid in Progress Payments and/or Final Payments as requested by the Contractor.

B. For Progress Payments, refer to specification Section 01 29 00, “Payment Procedures”.

C. For Final Payments, refer to specification Section 01 77 00.07, “Closeout Procedures”.

1.36 TERMINATION BY THE OWNER FOR CAUSE

A. The Owner may terminate the contract and finish the work by whatever reasonable method he/she deems necessary if the Contractor:

1. Persistently or repeatedly refuses to supply specified materials or to provide enough skilled workers to ensure the project will be completed within the time period indicated on his/her Proposal form;
2. Is guilty of substantial breach of any provision of the project documents.

1.37 TAXES

A. Contractor must comply with all state, federal and local taxes. The Contractor shall accept sole and exclusive responsibility for any and all state and federal taxes with respect to Social Security, unemployment benefits, withholding taxes and sales taxes.

1.38 BUILDING PERMITS

A. The acquisition of the applicable permits and associated costs to obtain said permits will be the responsibility of the successful Contractor.

1.39 JOB COORDINATION

A. Contractor is responsible for daily communication with the Owner or Owner's Representative relating to areas of roof work in order that the Owner may adequately protect tenant's personal belongings, and the people themselves against possible damage or injury. Contractor is also responsible for policing and protecting areas involving removal and replacement of roof projections, or other work involving panel penetration.

B. Seventy-two hours prior to starting of the project and/or delivery of materials, the Contractor shall notify the designated owner's representative.

1.40 GENERAL PROJECT CLEAN-UP

A. Pickup and removal of accumulated waste and debris shall be completed daily by the Contractor to assure maximum safety and sanitation at all times.

B. Refer to the requirements of individual specification sections in this project manual for additional cleaning requirements.

1.41 SUPERINTENDENT

A. The Contractor shall keep a competent non-working superintendent, satisfactory to the Owner and Owner's Representative, on the job at all times when work is in progress. The superintendent shall not be changed without notifying the Owner and the Owner's Representative.

B. The superintendent shall attend all meetings beginning with the pre-installation meeting.

C. The superintendent shall represent the Contractor in his/her absence and all directions and instructions given to the superintendent shall be as binding as if given directly to the Contractor.

D. The superintendent shall be responsible for the conduct of all the Contractor's employees on the premises and shall promptly take necessary measures to correct any abuses called to his/her attention by the Owner.

1.42 ACCEPTABILITY OF COMPLETED WORK

A. The acceptability of completed roofing work will be based on its conformance to the contract requirement.

B. The owner and owner's rep are not obligated to accept non-conforming work, and such non-conforming work may be rejected.

1. The rejected work shall be promptly replaced or corrected in a manner and by methods approved by the owner's rep at the Contractor's expense.

2. The owner's rep will instruct the Contractor's foreman and work crew on the proper methods of installation of the roofing system, and will follow-up on a regular basis to inspect the work being done.

3. Any deficiencies from the specified work noted by the owner's rep will be immediately reported to the Owner, along with recommended corrective actions necessary.

4. The owner's rep will not act in a supervisory capacity, and will not be responsible for the Contractor's errors or omissions.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 11 13.07
SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams, key plans, and general provisions of the Contract including General and Supplementary Conditions and other Division 01-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Roofing work covered by the Contract Documents.
2. Miscellaneous Provisions.

1.3 GENERAL CLARIFICATION OF WORK COVERED BY CONTRACT DOCUMENTS

A. This project includes a variety of roof system options and installations including complete tear-off, partial tear-off, new roof installation over existing substrates, and recover roof installations over existing roof systems.

B. Refer to specification Section 00 24 13, “Scope of Bids” as well as the project diagrams and key plans for clarification of work to be performed at specific roof areas.

C. Refer to Section 01 22 00.07, “Unit Prices” and Section 01 23 00.07, “Alternates” for clarification of additional project configurations.

1.4 BASE BID ROOFING WORK COVERED BY CONTRACT DOCUMENTS

A. General description of Base Bid roofing work at designated LOW-SLOPE roof areas:

1. Prepare existing roofs to receive the specified roof system. Refer to Section 02 41 19, “Selective Building Demolition” for demolition work.
2. Install new wood nailers, as specified, at roof edges to accommodate new roof system.
3. Install new insulation system over existing low slope roofs, as specified.
4. Install mechanically attached Thermoplastic Polyolefin (TPO) roof system as specified.
5. Replace existing miscellaneous counterflashings, metal trim, and gutters and downspouts with new metal, as specified.

B. General description of Base Bid roofing work at designated STEEP-SLOPE roof areas:

1. Prepare existing roofs to receive the specified roof system. Refer to Section 02 41 19, "Selective Building Demolition" for demolition work.
2. New steep slope metal roof system is intended to be a recover system over the existing asphalt shingle roofs. Remove existing roof system assembly down to the existing structure only as required (i.e. deteriorated, damaged, loose decking or nailers) to install new retrofit standing seam metal roof and wall system, as specified.
3. Install new retrofit framing as specified to provide support for new standing seam metal roof system.
4. Install new standing seam metal roof system as specified.
5. Install specified flashings and accessories.

1.5 MISCELLANEOUS PROVISIONS

A. Without exception, no new product or new material used on the Project will contain asbestos. Contractor is responsible for providing Consultant with manufacturer's written technical data for questionable items. If installed materials are found to contain asbestos, these materials will be removed and replaced with acceptable materials at Contractor's expense.

B. Prior to Substantial Completion, inspect, test and adjust performance of every system of the roofing Work to ensure that overall performance complies with the Project Specifications.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 22 00.07
UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams, key plans, and general provisions of the Contract, including General and Supplementary Conditions and other Division 01-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

1.3 DEFINITIONS

A. A unit price is an amount proposed by Bidders and stated on the Proposal Form as a price per unit of measurement for materials or services that will be added to or deducted from the Contract Sum by Change Order in the event the estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

1. 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 schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1: Replacement Of Existing Deteriorated Wood Blocking, Framing And Nailers, or Wood Plank Decking

1. Description: Removal and replacement of deteriorated and/or damaged wood components and/or nailers, according to Section 06 10 53, “Miscellaneous Rough Carpentry”.
2. Unit of Measurement: Cost per board foot of blocking and/or nailers based on board feet of blocking and/or nailers removed.
3. Work for this unit price shall be performed in accordance with the requirements of this project manual and other contract documents.
4. Contractor to determine need for additional work in conjunction with this unit price and include in the unit price.

B. Unit Price No. 2: Replacement Of Existing Deteriorated Wood Decking

1. Description: Removal and replacement of deteriorated and/or damaged wood blocking and/or nailers, according to Section 06 10 53, “Miscellaneous Rough Carpentry”.
2. Unit of Measurement: Cost per square foot of blocking and/or nailers based on board feet of blocking and/or nailers removed.
3. Work for this unit price shall be performed in accordance with the requirements of this project manual and other contract documents.
4. Contractor to determine need for additional work in conjunction with this unit price and include in the unit price.

C. Unit Price No. 3: Rehabilitation of Existing Metal Deck.

1. Description: Rehabilitation of existing metal deck materials due to deterioration and/or damage, as required. Refer to specification Section 05 31 24, Metal Roof Deck Replacement And Rehabilitation.
2. Unit of Measurement: Cost per square foot of roofing materials based on survey of existing roofing materials rehabilitated.
3. Work for this unit price shall be performed in accordance with the requirements of this project manual and other contract documents.
4. Contractor to determine need for additional work in conjunction with this unit price and include in the unit price.

D. Unit Price No. 4: Existing Metal Deck Removal and Replacement.

1. Description: Removal and replacement of existing metal deck materials due to deterioration and/or damage. Refer to specification Section 05 31 24, Metal Roof Deck Replacement And Rehabilitation.
2. Unit of Measurement: Cost per square foot of roofing materials based on survey of existing roofing materials removed.

3. Work for this unit price shall be performed in accordance with the requirements of this project manual and other contract documents.

4. Contractor to determine need for additional work in conjunction with this unit price and include in the unit price.

E. Unit Price No. 5: Abatement of .Wet Insulation Prior to Recovering With New Roofing

1. Unit of Measurement: Cost per square foot of roofing materials removed.

2. Abatement includes removal of all existing roofing materials down to the roof deck at areas of wet existing insulation, and replacement with new polyisocyanurate rigid insulation in thickness needed to match height of adjacent roof surface.

3. Work for this unit price shall be performed in accordance with the requirements of this project manual and other contract documents.

4. Contractor to determine need for additional work in conjunction with this unit price and include in the unit price.

F. Unit Price No. 6: Abatement of .Wet Roof Membrane System Where Existing Roof Is to Remain

1. Unit of Measurement: Cost per square foot of roofing materials removed.

2. Abatement includes removal of all existing roofing materials down to the roof deck at areas of wet existing insulation, and replacement with new polyisocyanurate rigid insulation, specified cover board, and specified roof membrane in thickness needed to match height of adjacent roof.

3. Contractor to provide watertight tie in between new and existing materials.

4. Work for this unit price shall be performed in accordance with the requirements of this project manual and other contract documents.

5. Contractor to determine need for additional work in conjunction with this unit price and include in the unit price.

END OF SECTION

SECTION 01 23 00.07
ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams, key plans, and general provisions of the Contract, including General and Supplementary Conditions and other Division 01-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

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

1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

1. Execute accepted alternates under the same conditions as other work of the Contract.

C. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. ALTERNATE ONE: Amount to be added to the Base Bid for the rehabilitation of existing soffits, and trim at the Classroom West High Slope roof.

1. Work for this alternate shall be performed in accordance with the requirements of this project manual and other contract documents.
2. Install new metal soffits and trim to match existing components at existing soffits. Refer to project diagrams.
3. Utilize pre-finished, galvanized metal type in gauge recommended by SMACNA, and applicable building codes. Color to be selected by Owner from manufacturer standard colors.
4. Contractor to determine need for additional work in conjunction with this alternate and include in the alternate price.

B. ALTERNATE TWO: Amount to be added to the Base Bid for installation of new recover SBS modified bitumen roof membrane system as specified in Section 07 52 16.11, "Modified Bituminous Membrane Roofing", at the Classroom North Low Slope roof and the Office roof, in lieu of Thermoplastic (TPO) Roof system specified as Base Bid.

1. Work for this alternate shall be performed in accordance with the requirements of this project manual and other contract documents.
2. Contractor is to coordinate roof membrane system requirements with roof membrane system manufacturer.

C. ALTERNATE THREE: Amount to be added to the Base Bid for installation of new recover SBS modified bitumen roof membrane system as specified in Section 07 52 16.11, "Modified Bituminous Membrane Roofing", at the Classroom West Low Slope.

1. Work for this alternate shall be performed in accordance with the requirements of this project manual and other contract documents.
2. Contractor is to coordinate roof membrane system requirements with roof membrane system manufacturer.
3. Raise existing and/or remaining curbs as required to maintain an 8-inch minimum flashing height above finished roof surface. Refer to project diagrams for additional requirements.
4. Contractor to determine need for additional work in conjunction with this alternate and include in the alternate price.

D. ALTERNATE FOUR: Amount to be added to the Base Bid for installation of new recover SBS modified bitumen roof membrane system as specified in Section 07 52 16.11, "Modified Bituminous Membrane Roofing", at the Stair roofs.

1. Work for this alternate shall be performed in accordance with the requirements of this project manual and other contract documents.
2. Contractor is to coordinate roof membrane system requirements with roof membrane system manufacturer.
3. Contractor to determine need for additional work in conjunction with this alternate and include in the alternate price.

E. ALTERNATE FIVE: Amount to be added to the Base Bid for installation of new recover SBS modified bitumen roof membrane system as specified in Section 07 52 16.11, "Modified Bituminous Membrane Roofing", at the Hallway roof.

1. Work for this alternate shall be performed in accordance with the requirements of this project manual and other contract documents.
2. Contractor is to coordinate roof membrane system requirements with roof membrane system manufacturer.
3. Contractor to determine need for additional work in conjunction with this alternate and include in the alternate price.

F. ALTERNATE SIX: Amount to be added to the Base Bid for installation of new recover SBS modified bitumen roof membrane system as specified in Section 07 52 16.11, "Modified Bituminous Membrane Roofing", at the Gym roof.

1. Work for this alternate shall be performed in accordance with the requirements of this project manual and other contract documents.
2. Contractor is to coordinate roof membrane system requirements with roof membrane system manufacturer.
3. Contractor to determine need for additional work in conjunction with this alternate and include in the alternate price.

G. ALTERNATE SEVEN: Amount to be added to the Base Bid for the complete tear-off of the existing standing seam metal roof panel roof system assembly at four Building Entrance Roofs, followed by installation of new standing seam metal roof panel roof system assembly specified in Section 07 52 16.15.

1. Work for this alternate shall be performed in accordance with the requirements of this project manual and other contract documents.
2. New metal standing seam roof system to include rain diverters at outside corners and gutter and downspout system with concrete splash blocks.
3. Contractor is to coordinate new metal roof system requirements (i.e. cover boards, nailers, etc.) with roof membrane system manufacturer.
4. Contractor to determine need for additional work in conjunction with this alternate and include in the alternate price.

H. ALTERNATE EIGHT: Amount to be added to the Base Bid for the rehabilitation of existing wall cladding system at the Classroom West Low Slope Roof.

1. Work for this alternate shall be performed in accordance with the requirements of this project manual and other contract documents.

2. Install new metal wall system to match existing components at three boundary walls. Utilize pre-finished, galvanized metal type in gauge recommended by SMACNA, and applicable building codes. Color to be selected by Owner from manufacturer standard colors.

3. Contractor to determine need for additional work in conjunction with this alternate and include in the alternate price.

END OF SECTION

SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams, key plans, and general provisions of the Contract, including General and Supplementary Conditions and other Division 01-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Progress Payments.

B. For Final Payments, refer to specification Section 01 77 00.07, “Closeout Procedures”.

1.3 DEFINITIONS

A. Progress Payment: Any payment made by the Owner to the Contractor prior to Final Payment at project closeout.

B. Final Payment: The payment made by the Owner following successful project closeout.

C. Applications for Progress Payments: The documentation used to request a payment by the Owner prior to Final Payment. Refer to procedures in this specification section.

D. Project Closeout: The procedures used to complete the project in its entirety and execute Final Payment from the Owner to the Contractor for Work performed. Refer to specification Section 01 77 00.07, “Closeout Procedures”.

E. Retainage: Portion of the agreed upon contract price that will be withheld until all conditions of Section 01 77 00.07, “Closeout Procedures” has been met.

1.4 SCHEDULE OF VALUES FOR PROGRESS PAYMENTS

A. Payments made by the Owner prior to Final Payment at Project Closeout must be submitted as required by this specification section. Requests for payment that do not follow the format and requirements of this specification section will be rejected and not paid.

1. The Owner will withhold a Retainage amount of 15% of the total Contract value regardless of the percentage of project completion.

2. Applications for Progress Payments that include the final 15% of total Contract value will not be paid.

B. Coordination: Coordinate preparation of a Schedule of Values for progress payments with the project construction schedule and the Owners accounts payable schedule.

1. Submit the Schedule of Values no later than seven days before the Owners monthly accounts payable deadline.

C. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each specification section.

1. Identification: Include the following Project identification information on the Schedule of Values for Progress Payments:
   a. Project name and location.
   b. Name of Owner.
   c. Owners project number.
   d. Name of Consultant.
   e. Contractor's name and address.
   f. Date of document submittal.
2. Arrange the Schedule of Values for Progress Payments in tabular form with separate columns to indicate the following for each item listed:
   a. Related Specification Section or Division.
   b. Detailed description of the Work that payment is requested for.
   c. Name of subcontractor, if applicable.
   d. Name of material manufacturer or fabricator.
   e. Name of material supplier.
   f. Any contract items such as Unit Prices, Alternates, Allowances, or Change Orders that affect value. List the specific applicable contract item number.
   g. Total dollar value of payment request as well as the percentage of the total Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Progress Payments. Coordinate with the Project Manual table of contents.
   a. Payment requests that do not provide adequate detail for the Owner to review will not be approved.
4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
5. Do not include materials or equipment purchased or fabricated and stored, but not yet installed.
6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Each item in the Schedule of Values for Progress Payments shall be complete.

1.5 APPLICATIONS FOR PROGRESS PAYMENT

A. Each Application for Progress Payment shall include the Schedule of Values for Progress Payment and be consistent with previous applications and payments paid for by Owner.

B. Payment Application Schedule: The date for each progress payment is on a 30-day payment schedule established by the Owner.

C. Transmittal: Submit three signed and notarized original copies of each Application for Progress Payment to Owner by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

D. Waivers of Lien: With each Application for Progress Payment, submit waivers of lien from every entity who is lawfully entitled to file a lien arising out of the Contract and related to the Work covered by the payment.

1. When an application shows completion of an item, submit final or full waivers.

2. Owner reserves the right to designate which entities involved in the Work must submit waivers of lien.

3. Submit each Application for Payment with Contractor's waiver of mechanic's lien for construction period covered by the application.

E. Final Payment Application: Refer to Section 01 77 00.07, “Closeout Procedures”.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 31 00.07
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams, key plans, and general provisions of the Contract, including General and Supplementary Conditions and other Division 01-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. Coordination Drawings.
2. Project meetings.
3. Requests for Interpretation (RFI).

B. Related Sections include the following:

1. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

1.4 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components.

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

C. Preparation of Contractor's Construction Schedule.

1. Preparation of the Schedule of Values.
2. Delivery and Processing of Submittals.
3. Progress Meetings.
4. Pre-installation Conferences.
5. Project Closeout Activities.

1.5 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

B. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Consultant, Architect, and General Contractor of scheduled meeting dates and times.

C. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.

D. Minutes: Record significant discussions and agreements achieved.

1. Distribute the Meeting Minutes to everyone concerned, including Owner and Consultant, within three (3) days of the meeting.

E. Preconstruction Conference: Schedule a Preconstruction Conference before starting construction, at a time convenient to Owner and Consultant, but no more than ten (10) days prior to start commencement of roofing work. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Owner, Consultant, Contractor, and relevant subcontractors shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Discuss items of significance that could affect progress, including the following:

a. Tentative construction schedule.

b. Critical work sequencing and long-lead items.

c. Designation of key personnel and their duties.

d. Procedures for processing field decisions and Change Orders.

e. Procedures for RFI's.

f. Procedures for testing and inspecting.

g. Procedures for processing Applications for Payment.

h. Use of the premises and existing building.

i. Work restrictions.

j. Owner's occupancy requirements.

k. Responsibility for temporary facilities and controls.

l. Construction waste management and recycling.

m. Parking availability.

n. Work and storage areas.

o. Equipment deliveries and priorities.

p. First aid.

q. Security.

r. Progress cleaning.

s. Working hours.

3. Minutes: Record and distribute meeting minutes.

4. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

F. Progress Meetings: Contractor is required to be present at any project progress meetings requested by the Owner and/or Consultant.

1. The location, time and agenda for Progress Meetings will be set by the Owner and/or Consultant.

2. Contractor shall have their Project Superintendent and any other personnel or representatives present, as requested by the Consultant.

1.6 REQUESTS FOR INTERPRETATION (RFI)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.

1. RFI shall originate with Contractor. RFI submitted by entities other than Contractor will be returned with no response.

2. Coordinate and submit RFI in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:

1. Project name.

2. Date.

3. Name of Contractor.

4. Name of Consultant.

5. RFI number, numbered sequentially.

6. Specification Section number and title and related paragraphs, as appropriate.

7. Drawing number and detail references, as appropriate.

8. Field dimensions and conditions, as appropriate.

9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.

10. Contractor's signature.

C. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings and other information necessary to fully describe items needing interpretation.

D. Consultant's Action: Consultant will review each RFI, determine action required and return it. Allow seven (7) working days for Consultant's response for each RFI. RFI's received after 2:00 P.M. EDST will be considered as received the following working day.

1. The following RFI will be returned without action:
   a. Requests for approval of submittals.
   b. Requests for approval of substitutions.
   c. Requests for coordination information already indicated in the Contract Documents.
   d. Requests for adjustments in the Contract Time or the Contract Sum.
   e. Requests for interpretation of Consultant's actions on submittals.
   f. Incomplete RFI's or RFI's with numerous errors.
2. Consultant's action may include a request for additional information, in which case Consultant's time for response will start again.
3. Consultant's action on RFI's that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section "Contract Modification Procedures."
4. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Consultant in writing within ten (10) days of receipt of the RFI response.
5. On receipt of Consultant's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Consultant within seven (7) days if Contractor disagrees with response.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 33 24
SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams and general provisions of the Contract, including General and Supplementary Conditions and other Division 00-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing roofing submittals.

1. Use of the word 'submittal' constitutes a requirement whether or not use of the word 'requirement' is specifically stated in the project manual.

B. Types of submittals include the following:

1. Prior to Mobilization of Work
2. During Construction

C. Related Sections include the following:

1. Refer to specification Section 01 29 00, "Payment Procedures" for progress payments required prior to project closeout and Final Payment.
2. Refer to specification Section 01 77 00.07, "Closeout Procedures" for submittals required at project completion.
3. Refer to specification sections 00-48 for items of work covered by submittals.

1.3 PROCEDURES FOR SUBMITTING

A. Number of sets: one (1), except where noted

B. Provide all submittals on 8.5" X 11" paper

C. Use a cover page to separate and clearly identify each submittal. Cover page will list Job name, job number, contractor name, submittal number, and submittal title. Submittals without cover pages will be rejected, with no further review.

D. Cause all pages of each individual submittal to be connected to the cover page.

E. Product data sheets with multiple product listing shall have the product submitted clearly marked and otherwise identified.

F. Multiple page submittals shall be submitted in order, so should the submittal package.

1.4 SUBMITTALS PRIOR TO MOBILIZATION OF WORK

A. Due: Minimum five working days prior to preconstruction meeting.

B. Format and delivery: Do not staple, fold, spindle, bend, hole-punch, or otherwise physically alter the paper on which the submittal is printed in any way that would slow or jam a high-speed scanner. Properly package submittals to protect them during shipping. Damaged documents will be returned without review.

1. Deliver to Glenn Howell, Edifice Consulting, Inc., P.O. Box 1060, Byron, GA. 31008

C. Base Bid Standing Seam Metal Roof Submittal Content:

1. Manufacturer's application manuals for all materials
2. A list of subcontractors that will be utilized on the project
3. Submit sample warranties:
    a. Coating Warranty, Manufacturer Water Tightness Warranty complying with this Specification, Installer Warranty.
4. Shop Drawings: To be prepared by metal roof system manufacturer.
5. Submit roof plan showing panel layout, gutters and downspouts as applicable.
    a. Provide metal roof flashing, gutter and downspout shop drawings. Indicate gage and finish of materials. Indicate fastener type, finish and spacing. Indicate locations of field applied sealant. Indicate location size and gauge of all back up plates.
6. 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 indicating 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.
7. Engineering Calculations:
    a. Submit wind uplift pressure calculations according to ASCE 7 Wind Speed for project location with respect to appropriate Importance Factor, Exposure category and Safety Factor.
    b. Calculations shall be sealed by a professional engineer licensed to practice structural engineering in the state in which project is located.

8. Samples:
   a. Submit two samples, 12" long, full width panel, showing metal gage, seam and required finish.
   b. Two samples each for roof panel clip, bearing plate and clip fastener.
   c. Submit color samples for Architect's selection.
9. Certification:
   a. Submit roof panel manufacturer's certification that fasteners, clips, backup plates, closures, roof panels and finishes meet specification requirements, wind uplift requirements.
   b. Submit roof panel manufacturer's certification that installer meets requirements to install roof system and is qualified to obtain required warranties.
10. Test Reports: Certified test results that indicate roof system meets or exceeds design and performance criteria.
11. Uplift Testing
   a. Underwriters Laboratory: Submit documentation that panel System has been tested for uplift in accordance with Underwriters Laboratories UL-580 and UL 1897 and has been tested to failure.
   b. ASTM E 1592. Submit documentation that panel System has been tested for uplift in accordance with ASTM E 1592 and has been tested to failure.
   c. Test reports for each prepared by independent test laboratory and stamped by a professional engineer substantiating that roof system will meet the allowable wind pressures with a safety factor of 2.0.
12. Static Water Testing Certification:
   a. The panel system shall be tested 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.
13. Air and Water Testing Certification
   a. ASTM E1680 – Manufacturer's test data for air infiltration rates up to 20 pounds per square inch differential pressure. ASTME1646- Manufacturer's test data for water infiltration rates up to 20 pounds per square inch differential pressure.

D. Base Bid TPO Roof Membrane System Submittal Content:
1. Manufacturer's application manuals for all materials
2. A list of subcontractors that will be utilized on the project
3. Product Data Sheets: Rust Inhibitive Paint (for steel deck rehabilitation).
4. Product Data Sheets: Primer.
5. Product Data Sheets: Insulation.
6. Product Data Sheets: Membrane Adhesive.

7. Product Data Sheets: Fasteners.
8. Product Data Sheets: TPO Roof Membrane.
9. Product Data Sheets: TPO Flashing Membranes and Accessories.
10. Product Data Sheets: Sealants.
11. Product Data Sheets: Sheet Metal.
12. Product Data Sheets: Edge Metal.
13. Product Data Sheets: Pourable Filler.
14. Copy of the roofing contractors warranty, which meets all specified requirements.
15. Copy of the sheet metal paint manufacturers warranty, which meets all specified requirements.
16. Fastening Patterns for TPO Roof System: Include patterns for insulation, and roof membrane at the field, perimeter and corners for all project roof areas.
17. Safety Data Sheets: Rust Inhibitive Paint (for steel deck rehabilitation).
18. Safety Data Sheets: Primer.
19. Safety Data Sheets: Flat Insulation.
20. Safety Data Sheets: Tapered Insulation.
21. Safety Data Sheets: Cover Board.
22. Safety Data Sheets: Membrane Adhesive.
23. Safety Data Sheets: Fasteners.
24. Safety Data Sheets: TPO Roof Membrane.
25. Safety Data Sheets: TPO Flashing Membranes and Accessories.
26. Safety Data Sheets: Sealants.
27. Safety Data Sheets: Sheet Metal.
28. Safety Data Sheets: Edge Metal.
29. Safety Data Sheets: Pourable Filler.
30. Copy of the roofing contractors warranty, which meets all specified requirements.
31. Copy of the sheet metal paint manufacturers warranty, which meets all specified requirements.

E. Alternate SBS Modified Bitumen Roof Membrane Submittal Content:

1. Manufacturer's application manuals for all materials
2. A list of subcontractors that will be utilized on the project
3. Product Data Sheets: Rust Inhibitive Paint (for steel deck rehabilitation).
4. Product Data Sheets: Primer.

5. Product Data Sheets: Cover Board.
6. Product Data Sheets: SBS Field Base Ply.
7. Product Data Sheets: SBS Field Cap Ply.
8. Product Data Sheets: SBS Flashing Base Ply.
9. Product Data Sheets: SBS Flashing Base Ply.
10. Product Data Sheets: SBS Stripping Base Ply.
11. Product Data Sheets: Sealants.
12. Product Data Sheets: Sheet Metal.
13. Product Data Sheets: Edge Metal.
14. Product Data Sheets: Cant Strip Adhesive.
15. Product Data Sheets: Membrane Adhesive.
16. Product Data Sheets: Fiberglass Mesh
17. Product Data Sheets: Roof Cement.
18. Copy of the roofing contractors warranty, which meets all specified requirements.
19. Copy of the sheet metal paint manufacturers warranty, which meets all specified requirements.
20. Copy of the manufactured gravel stops and fascia warranty, which meets all specified requirements.
21. Fastening Patterns for SBS Roof System: Include patterns for insulation, and roof membrane at the field, perimeter and corners for all project roof areas.
22. Safety Data Sheets: Rust Inhibitive Paint (for steel deck rehabilitation).
23. Safety Data Sheets: Primer.
24. Safety Data Sheets: Insulation.
25. Safety Data Sheets: Cover Board.
26. Safety Data Sheets: SBS Field Base Ply.
27. Safety Data Sheets: SBS Field Cap Ply.
28. Safety Data Sheets: SBS Flashing Base Ply.
29. Safety Data Sheets: SBS Flashing Base Ply.
30. Safety Data Sheets: SBS Stripping Base Ply.
31. Safety Data Sheets: Sealants.
32. Safety Data Sheets: Sheet Metal.
33. Safety Data Sheets: Edge Metal.
34. Safety Data Sheets: Insulation Adhesive.

35. Safety Data Sheets: Cover Board Adhesive.
36. Safety Data Sheets: Membrane Adhesive.
37. Safety Data Sheets: Fiberglass Mesh
38. Safety Data Sheets: Roof Cement.
39. Safety Data Sheets: Asphaltic Cold Fluid Applied Membrane.
40. Copy of the roofing contractors warranty, which meets all specified requirements.
41. Copy of the sheet metal paint manufacturers warranty, which meets all specified requirements.
42. Copy of the manufactured gravel stops and fascia warranty, which meets all specified requirements.

1.5 SUBMITTALS DURING WORK

A. Due: Within three (3) business days of all manufacturer site visits.

B. Format and delivery: Electronic Adobe PDF format.

1. Deliver to by email to Glenn Howell, glenn@edifice.biz

C. Content:

1. One (1) copy of the roofing system manufacturers field inspection report.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 40 00
QUALITY CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams and general provisions of the Contract, including General and Supplementary Conditions and other Division 00-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for quality control on this project.

1.3 QUALITY CONTROL

A. Contractor shall:

1. Provide a payment and performance bond equal to 100% of the bid amount.
2. Be experienced and well versed in:
    a. TPO Thermoplastic Roofing, mechanically attached.
    b. Modified Bitumen Roofing, cold adhesive applied.
    c. Standing Seam Metal Roof, recover systems.
    d. Working in public school environments.
    e. Roofing sheet metal.
3. Be acceptable to owner.
4. Have operated under the same name, without court order protection from creditors, for no less than seven years.
5. Maintain the specified liability insurance.
6. Be approved by the manufacturer issuing the warranty, for the proposed system, prior to the bid date.
7. At modified bitumen systems, pass a pre-cap inspection by the owner's representative before installation of the cap sheet. Base ply membranes capped without the expressed approval and consent of the owner's representative shall be removed and replaced with a new membrane that conforms.

B. Roofing manufacturer shall:

1. Be an Associate Member in good standing with National Roofing Contractor's Association (NRCA).
2. Be recognized in roofing industry.
3. Be approved by owner.

1.4 SUBMITTAL REQUIREMENTS CONSTITUTE QUALITY CONTROL REQUIREMENTS

A. Submittal requirements in this project manual constitute quality control requirements for the project. Anything required as a submittal is understood to be a requirement for the project.

1.5 RANDOM SAMPLING

A. During course of work, owner/owner's representative, may secure samples of materials being used from containers at job site and submit them to an independent laboratory for comparison to specified material.

B. If test results prove that a material is not functionally equal to specified material:

1. Contractor shall pay for all testing.

2. Work will be replaced with material that meets the standard, at the Contractors full expense.

PART 2 - PRODUCTS

2.1 GENERAL

A. Comply with Quality Control, References, Specification, and Manufacturer's data. Where conflict may exist, more stringent requirements govern.

B. Provide primary products, including each type of roofing, miscellaneous flashing materials, underlayment, and sheet metal components from a single manufacturer, which has produced that type of product successfully for not less than three (3) years. Provide secondary products (mechanical fasteners, lumber, etc.) only as recommended by manufacturer of primary products for use with roofing system specified.

C. All flashing work will comply with SMACNA Standards, at a minimum. Consultant may have additional requirements.

PART 3 - EXECUTION

3.1 SUBMITTALS

A. Meet submittals requirements listed in SECTION 01 33 24 of this project manual.

END OF SECTION

SECTION 01 61 00
PRODUCT WARRANTY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams, key plans, and general provisions of the Contract, including General and Supplementary Conditions and other Division 01-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes project warranty requirements for specific components and systems.

1.3 STANDING SEAM METAL ROOF AND WALL SYSTEM WARRANTY

A. Manufacturer Warranties:

1. Panel Coating: Furnish manufacturer's 20-year warranty panel coating warranty covering checking, crazing, peeling, chalking, fading, and adhesion.
2. Metal Roof Manufacturers Weathertightness Warranty:
    a. Manufacturer’s Weathertightness Warranty: Joint 20-year, No Dollar Limit, commencing on date of substantial completion.
    b. Warranties supplied by metal roof installer or 3rd Party Warranties are not acceptable.
3. Coverage includes all components of standing seam metal roof system including roof panels, roof flashing, roof penetrations and roof curbs.

1.4 EXPOSED SHEET METAL FACTORY APPLIED FINISH WARRANTY

A. Special Warranty on Factory Applied Finishes: Where painted exposed metal is used, Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Finish: Deterioration includes, but is not limited to, the following:
    a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
    b. Chalking in excess of a No. 8 rating when tested according to ASTM D 659-74.
    c. Cracking, checking, peeling, or failure of paint to adhere to the bare substrate.
2. Finish Warranty Period: 20 years from date of Substantial Completion.

1.5 TPO ROOF SYSTEM WARRANTY

A. The Contractor is to provide both a Manufacturer's Roof System Warranty, and Contractor Roof Warranty.

1. Warranties which contain language regarding the governing of the warranty by any state other than the State of Georgia, must be amended to exclude such language, and substituting the requirement that the laws of the State of Georgia shall govern all such warranties.

B. Manufacturer's Warranty: Manufacturer's TOTAL SYSTEM WARRANTY, "No Dollar Limit" (NDL) "Without Monetary Limitations", in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.

1. Special warranty includes the following items when used; roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners, cover boards, and manufactured gravel stops and fascia.

2. Warranty Period: Twenty (20) years from date of Acceptance.

C. Contractor Roof Warranty: Standard Contractor's Roof Guarantee covering Work of this Project.

1. Warranty Period: One (1) year from date of Substantial Completion.

1.6 COLD APPLIED MODIFIED BITUMINOUS SYSTEM WARRANTY (IF AWARDED)

A. The Contractor is to provide both a Manufacturer's Roof System Warranty, and Contractor Roof Warranty.

1. Warranties which contain language regarding the governing of the warranty by any state other than the State of Georgia, must be amended to exclude such language, and substituting the requirement that the laws of the State of Georgia shall govern all such warranties.

B. Manufacturer's Warranty: Manufacturer's TOTAL SYSTEM WARRANTY, "No Dollar Limit" (NDL) "Without Monetary Limitations", in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.

1. Special warranty includes the following items when used; roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners, cover boards, and underlayment boards.

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

C. Contractor Roof Warranty: Standard Contractor's Roof Guarantee covering Work of this Project.

1. Warranty Period: One (1) year from date of Substantial Completion.

1.7 PART 2 – PRODUCTS (NOT USED)

1.8 PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 77 00.07
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams, key plans, and general provisions of the Contract, including General and Supplementary Conditions and other Division 01-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes 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. Section 01 29 00, "Payment Procedures" for requirements for Applications for Payment prior to Final Completion (prior to project closeout).
2. Divisions 02-48 "Sections" for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 PROJECT CLOSEOUT SUBMITTALS

A. Close out Submittals: Two (2) copies of close out submittals of which receipt and acceptance are pre-requisites for final payment shall include, but not necessarily be limited to, the following:

1. Evidence of Payments and Release of Liens.
2. Contractors Roof Warranty.
3. Manufacturers Warranty.
4. Final Application for Payment.

1.4 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting a Final 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. Prepare and submit project record documents, operation and maintenance manuals, and any requested final completion construction drawings.

3. Deliver any requested extra materials and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
4. Terminate and remove temporary facilities from Project site, including mockups, construction tools, and similar elements.
5. Complete all final cleaning requirements, including touchup painting.
6. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

1.5 FINAL INSPECTION

A. Inspection: Submit a written request for a Final Inspection for Substantial Completion. On receipt of request, Consultant will either proceed with inspection or notify Contractor of unfulfilled requirements. Consultant 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 Consultant that must be completed or corrected before certificate will be issued.

1.6 WARRANTIES

A. Final payment will not be made to contractor until all specified warranties have been delivered and approved by the Consultant.

1.7 LIST OF INCOMPLETE ITEMS

A. Preparation: Following the Final Inspection the Consultant will prepare a list of incomplete (Punch List) items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

B. Re-Inspection: After completion of Punch List items, submit a written request to the Consultant for re-inspection. Final Application for Payment cannot be issued until all items have been satisfactorily completed.

1.8 FINAL COMPLETION

A. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications and similar documents.

B. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction drawings.

C. Provide a complete set of As-Built drawings, which vary from the original contract documents showing all locations where modifications and alterations where made, deck infill, equipment removed, etc.

1.9 EVIDENCE OF PAYMENTS AND RELEASE OF LIENS

A. Contractor shall submit:

1. Contractor's Affidavit of Payment of Debts and Claims
2. Contractor's Affidavit of Release of Liens.
3. Consent of Surety to Final Payment.

B. All submittals shall be duly executed before delivery to the Consultant.

1.10 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit final statement of accounting to the Consultant. Statement shall reflect all adjustments, including, but not necessarily limited to, the following:

1. Original Contract Sum.
2. Additions and deductions resulting from:
3. Previous change orders.
4. Cash allowances.
5. Unit Prices.
6. Other adjustments.
7. Deductions for uncorrected work.
8. Penalties and bonuses.
9. Deductions for liquidated damages.
10. Total Contract Sum, as adjusted.
11. Previous payments.
12. Sum remaining due.

B. The Consultant will prepare final change order, rejecting approved adjustment to Contract Sum not previously made by change order.

1.11 FINAL APPLICATION FOR PAYMENT

A. Contractor shall submit final application in accord with requirements of General and/or Supplementary Conditions, and all applicable requirements of this project manual.

B. Final payment will not be made to contractor until all specified warranties have been delivered and approved by the Consultant.

1.12 FINAL CERTIFICATE FOR PAYMENT

A. The Consultant will issue final certificate in accord with provisions of General Conditions. Should final completion be materially delayed through no fault of Contractor, the Consultant may issue a Semi-Final Certificate for Payment, in accord with provisions of General Conditions, and other applicable requirements of this project manual.

1.13 ONE YEAR INSPECTION

A. Twenty (20) days prior to expiration of one (1) year from date of "Final Acceptance" Contractor shall notify the Consultant, in writing, of year-end inspection.

B. The Consultant will make visual inspection of project in company with Owner and Contractor to determine whether correction of work is required, in accordance with provisions of General Conditions.

C. For warranties beyond one (1) year, Consultant will make inspections at request of Owner, after notification to Contractor. The Consultant will promptly notify Contractor, in writing, of any observed deficiencies.

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. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

1. Clean Project site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter and other foreign substances.
2. Sweep paved areas broom clean. Remove petrochemical spills, stains and other foreign deposits.
3. Remove tools, construction equipment, machinery and surplus material from Project site.
4. Remove discarded fasteners, metal trimmings, and other construction debris from roofs and gutters.
5. 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.
6. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

C. Comply with safety standards for cleaning. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION

SECTION 02 41 19.14
SELECTIVE ROOF DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams, key plans, and general provisions of the Contract, including General and Supplementary Conditions and Division 01-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building, e.g. existing roof system, sheet and sheet metal flashings, as indicated in the Contract documents.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

C. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

D. Replace: Remove items of existing construction, dispose of materials off- site, unless otherwise indicated and install new material as indicated.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Where noted, historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value (i.e. copper and other valuable metals) to Owner that may be uncovered during demolition remain the property of Owner. When the value or relevance of a particular item is not clear to the Contractor, it is the Contractors responsibility to request clarification from the Owner prior to removal and disposal.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 FIELD CONDITIONS

A. Owner will occupy the building during roof removal. Should it be deemed unsafe to the building occupants during the roof removals, the Contractor will coordinate with the Owner for roof removal to take place when the building is not occupied. Otherwise, conduct selective demolition so Owner's operations will not be disrupted.

1. Conditions existing at time of inspection for bidding purposes will be maintained by Owner as far as it is practical.

B. Existing site conditions are to be maintained by the Contractor during and through the completion of the project. Contractor shall restore all site conditions including landscaping, grassing, and planting to the pre-installation status upon completion of the work. Contractor shall include the furnishing of all necessary ground protection mats as necessary to protect the existing grounds during all phases of construction.

1. Pre-demolition Photographs or Videos showing existing conditions of adjoining facilities, site improvements and building construction, including finish surfaces and equipment that might be misconstrued as damage caused by demolition and/or construction operations shall be taken and submitted before the work begins.

2. Notify Consultant of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

3. Storage or sale of removed items or materials on-site is not permitted.

C. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

D. Hazardous Materials: It is not expected that asbestos-containing materials will be encountered in the Work.

1. If additional materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Consultant and Owner

2. The cutting, handling, bagging, removal of any asbestos containing materials shall be in strict compliance with Federal Regulation, OSHA, Title 29 Subtitle B Part 1926, Chapter 1926.58; all regulations and restrictions governing the handling, removing, altering and disposal as imposed by all local, state and national governing authorities shall apply, i.e. Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA). Use standard current forms of applicable agency as required. Original copies of the disposal manifests shall be submitted to the Owner.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

1. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.

C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

1. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Consultant.

D. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or videos.

1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

E. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.

2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.

3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.

4. Cover and protect furniture, furnishings, and equipment that have not been removed.

5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

3.3 DEMOLITION, EXISTING CONDITIONS

A. All existing materials and assemblies described herein are those expected to be encountered during the work of this project, based on anecdotal evidence.

1. The Owner, and Owner Representatives cannot verify the materials and configurations listed as “existing” on this project.

2. The Contractor and their representatives are required to verify all existing materials, products, systems, and conditions on this project prior to bid submittal, prior to executing the Contract to perform work, and prior to and during the time work is completed for the Project.

3.4 SELECTIVE DEMOLITION, GENERAL

A. Demolition Guidelines: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Evaluate all projections and penetrations to ensure that each item is secured to the building structure. Any item not considered to be secured to the structure shall be brought to the owner’s attention prior to job start, or immediately upon discovery during roofing operations.

2. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.

3. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.

4. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

5. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, animal-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
10. Dispose of demolished items and materials promptly.
11. Removed and Reinstalled Items:
12. Clean and repair items to functional condition adequate for intended reuse.
13. Pack or crate items after cleaning and repairing. Identify contents of containers.
14. Protect items from damage during transport and storage.

B. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Consultant, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

D. No roofing materials will be removed or installed under adverse weather conditions. All work shall be scheduled and executed without exposing interior building areas to the effects of inclement weather. The existing building and its contents shall be protected against all reasonable risks.

E. Only as much existing roofing shall be removed and new roofing installed as can be made weather-tight each day. This includes all flashing work.

F. All existing roofing materials torn-off shall be immediately removed from the site to a dumping area authorized to receive such debris.

G. Any unusual or concealed conditions discovered during the course of the work that may adversely affect the performance of the new roof system must be immediately reported to the Consultant. All work shall be halted until the Consultant has responded with a solution to the problem.

H. Any substrate to receive new insulation, membrane or flashing shall be thoroughly dry. Existing wet materials must be removed prior to the application of the new membrane system. Should surface moisture occur on the decking, the contractor shall provide adequate equipment to dry the substrate.

I. Temporary waterstops shall be installed at the end of each workday and if inclement weather conditions dictate during the course of day's work. These temporary waterstops shall be removed at the start of the next workday and disposed of properly. No temporary waterstops shall be made so as to obstruct water flow on the completed system (i.e. crickets, drain sumps, etc.). Polyethylene is not considered a temporary covering.

3.5 SELECTIVE DEMOLITION, SPECIFIC MATERIALS

A. Existing Exterior Insulation Finish Systems (EIFS):

1. Where roofing work requires removal of existing EIFS materials, contractor is to remove existing EIFS materials and repair remaining EIFS materials in accordance with industry standards including, but not limited to EIMA.

2. At project completion, existing EIFS materials that have been modified are expected to be fully functional and water resistant to match existing prior to modification.

B. At roof areas where either complete or partial tear-off of the existing roof system assembly will occur:

1. Remove existing roof system edge metal, sheet metal flashings, trims, drainage components, and accessories that are not included in the new roof system installation.

2. Refer to project diagrams and project manual.

C. At roof areas where recover of the existing roof system assembly will occur:

3. Follow roof system manufacturer requirements for specified warranty.

D. Contractor to determine need for additional demolition required and include in contract price.

E. Miscellaneous Demolition:

1. Contractor to refer to Specification Sections, "Allowances" and "Unit Prices" to determine need for additional demolition beyond base bid requirements and include in contract price.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Collect and place demolished materials in containers.
2. Do not allow demolished materials to accumulate on-site.
3. Storage or sale of demolished items or materials on-site will not be permitted.
4. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
5. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

SECTION 05 31 24
METAL ROOF DECK REPLACEMENT AND REHABILITATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams, key plans, and general provisions of the Contract, including General and Supplementary Conditions and Division 01-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Replacement of damaged or deteriorated existing metal deck and areas where new openings are created in the existing metal deck.
2. Rehabilitation of damaged or deteriorated existing metal deck.

1.3 CODES AND STANDARDS

A. The work described in this section, unless otherwise noted on the Drawings or herein specified, shall be governed by the latest editions of the following codes or specifications:

1. "Specification for the Design of Cold-Formed Steel Structural Members" - AISI.
2. "Structural Welding Code" - AWS D1.3.
3. "Roof Deck Specifications" - Steel Deck Institute (SDI).
4. "Code of Recommended Standard Practice, Roof Deck Construction" - Steel Deck Institute (SDI).

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed steel deck similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

1. Qualifications of welders and welding operators, filler metal, welding techniques and procedures shall be in accordance with AISC Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings, and the AWS Structural Welding Code.
2. Certifications shall be no more than six (6) months old during the time of welding in the erection period.

B. Powder Driven or Pneumatic Tool operators shall be trained by the tool manufacturer's representative, (not distributor or agent), in accordance to American National Standards Institute.

1. Powder-actuated Fastening Systems - Safety Requirements (ANSI A10.3). New York, New York.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

C. Consultant may reject any material that has become damaged because of improper storage.

1.6 SEQUENCING/SCHEDULING

A. Coordinate Work of this Section with work of other Sections as required to properly execute the Work and as necessary to maintain satisfactory progress of the work of other Sections.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Steel Roof Deck:

a. Nucor Corp.; Vulcraft Div.

b. Dek-Ing, Inc.

c. Or approved equal.

2.2 MATERIALS

A. Metal Roof Deck: Deck type and gauge to match existing and shall conform to the requirements adopted by the Steel Deck Institute.

B. Primer/Paint: Shop applied standard Vulcraft, light gray primer. Performance test standards shall meet or exceed requirements of Federal Specification TT-P-8GG, Types I and II.

C. Galvanized Steel Sheet: ASTM A 653/A653M, Structural Steel, Grade 33, G60 (Z180) zinc coating.

D. Welding Electrodes: Shall conform to AWS A5.1 and AWS A5.5.

E. Screws and Deck Fasteners: As an alternate for attachment of deck.

F. Powder Driven and Pneumatic Fasteners: Fasteners shall have knurled shank; minimum ½" diameter steel washer; electroplated zinc conforming to ASTM B633, Sc. 1, Type III; meet SDI design requirements; Factory Mutual approval, such as Hilti ENP2-21-L15, ENP2H-21-L15, ENP2K-20-L15, X-EDN19-THQ12HSN, XEDNK22 THQ12 HSN or SDM22 THS12 FDN.

G. Accessories: Provide all accessories necessary to complete the entire installation, including cover plates required to cover all gaps where deck units abut or change direction, around columns, to cover access holes used for welding, and closures where required.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Deck attachment shall be in accordance with current Steel Deck Institute (SDI) recommendations. Fastening requirements listed in this specification are minimum requirements. The more stringent fastening requirement between these specifications and SDI requirements shall be used.

1. Deck units shall be placed on supporting steel framework and adjusted to final position before being permanently fastened. Each unit shall lap a minimum of two inches (2") over supports.
2. Unless noted on the contract documents metal deck units shall be fastened to the steel framework at ends, side supports, and at intermediate supports by puddle welds not less than 5/8" diameter or mechanical fasteners.
3. Provide weld washers for welding all metal material lighter than 22 gauge.
4. Above noted weld pattern is minimum connection. Reference drawings for required weld pattern.

B. Install fasteners using a low velocity powder actuated tool such as the Hilti DX 750, DXA 70R, DXA 41SM or a pneumatic tool such as the Hilti R4 - X12.

1. The nail head stand off shall be according to the manufacturer's recommendations and verified with an inspection gauge. The power level shall be determined by jobsite testing.

C. Installation of fasteners shall be in accordance to design requirements and installed by manufacturer licensed operator.

D. Side joints of the deck unit shall be fastened by tack welding or mechanical fastening not to exceed the lesser of ½ the span or 36" apart.

1. This shall be minimum side lap connection requirements.
2. Reference structural drawings for actual connection requirements.
3. Acceptable mechanical fasteners for side laps are as follows:
    a. Self-Drilling Screws: #10 or #12 TEK.

E. Tack weld or sheet metal screw all accessory cover plates adequately into place.

F. Weld metal shall penetrate all layers of deck material and shall have good fusion to the supporting members.

G. Roof Sump Pans and Sump Plates: When sumps are present, install over openings provided in roof decking and weld or screw flanges to top of deck. Space welds not more than 12 inches apart with at least 1 weld at each corner.

H. Miscellaneous Roof Deck Accessories: Install ridge and valley plates, finish strips, cover plates, end closures, and reinforcing channels according to deck manufacturer's written instructions.

1. Weld to substrate to provide a complete deck installation.

3.2 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damage galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.

1. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.

3.3 FIELD QUALITY CONTROL

A. Testing Laboratory services shall be in accordance with the requirements of this project manual. Provide all inspections and testing as required by the International Building Code currently adopted for use in Georgia.

B. A testing laboratory shall perform field inspection of metal deck for proper type, gage, finish, installation and attachment. Testing Laboratory shall provide a written report of their inspection.

C. Remove and replace work that does not comply with specified requirements.

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

END OF SECTION

SECTION 06 10 53
MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams, key plans, and general provisions of the Contract, including General and Supplementary Conditions and Division 01-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Framing with dimension lumber.
2. Rooftop equipment bases and support curbs.
3. Wood blocking, including plywood and nailers.

B. Related Sections include the following:

1. Division 01 “Sections” for general requirements regarding the work of this project.
2. Divisions 02-48 "Sections" for specific requirements regarding products and installations specified.

1.3 DEFINITIONS

A. Dimension Lumber: Lumber of 2-inches nominal or greater but less than 5-inches nominal in least dimension.

B. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NLGA: National Lumber Grades Authority.
2. SPIB: The Southern Pine Inspection Bureau.
3. WCLIB: West Coast Lumber Inspection Bureau.

C. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory marks each piece of lumber with grade stamp of grading agency.
2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
3. Provide dressed lumber, S4S, unless otherwise indicated.

2.2 LUMBER FRAMING

A. Maximum Moisture Content: 15 percent for 2-inch nominal thickness or less, 19 percent for more than 2-inch nominal thickness.

B. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Includes typical nominal lumber sizes including but not limited to 2x4, 2x6, 2x8, 2x10, 2x10, 4x4.

C. For concealed boards, provide lumber with 19 percent maximum moisture content and the following species and grades:

1. Mixed southern pine, No. 2 grade; SPIB.
2. Hem-fir or hem-fir (north), Construction or 2 Common grade; NLGA, WCLIB, or WWPA.

D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.3 PLYWOOD

A. Plywood: DOC PS 1, Exposure 1, C-D Plugged, in thickness indicated or, if not indicated thickness appropriate for the application indicated.

1. Includes typical nominal lumber sizes including but not limited to ½" and ¾" thicknesses in typically available 4'-0" x 8'-0" boards.

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

B. Wood Screws: ASTM A 153/A of Type 304 stainless steel.

C. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

2.5 ELASTOMERIC UNDERLAYMENT/SEPARATION SHEET

A. Provide underlayment/separation sheet to protect metal from corrosion/galvanic action due to miscellaneous rough carpentry products.

B. Mid-States “Quick-Stick” HT, W R Grace "Ice & Water Shield HT".

C. Or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

B. Provide blocking and framing as indicated and as required to support facing materials, equipment, sheet metal flashings, and specialty items, and trim.

C. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

D. Use stainless steel screw of appropriate type, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

END OF SECTION

SECTION 07 01 50.19
PREPARATION FOR RE-ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams, key plans, and general provisions of the Contract, including General and Supplementary Conditions and Division 01-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Preparation for reroofing and existing roof system removal.
2. Preparation required for wet abatement sections.

1.3 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

B. Existing Roof System: Existing roof membrane, insulation layers, cover board, gutters and downspouts, copings, and/or other associated sheet metal flashings over the roof deck.

C. Roof Tear-Off: Where applicable, refer to Section “Selective Demolition” of this project manual.

D. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.

E. Existing to Remain: Existing items of construction that are not indicated to be removed.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: If asbestos is present, installer of new roofing systems must be licensed to perform asbestos abatement in the State or jurisdiction where Project is located.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination". Refer to individual Division 02-48 Sections for additional requirements.

1.6 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately below re-roofing area. Conduct re-roofing so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.

1. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire alarm or -detection equipment if needed, and evacuate occupants from below the work area if desired.

2. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area. Verify that occupants below the work area have been evacuated prior to proceeding with work over the impaired deck area.

B. Protect building to be re-roofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

D. Owner assumes no responsibility for condition of areas to be re-roofed.

1. Conditions existing at time of inspection for bidding will be maintained by Owner as far as practical.

E. Limit construction loads on roof to rooftop equipment wheel loads and uniformly distribute material loads across the structure.

F. Weather Limitations: Proceed with re-roofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering into existing roofing system or building.

G. Hazardous Materials: It is not expected that hazardous materials such as asbestos-containing materials will be encountered in the Work.

1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Consultant and Owner.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate with Owner to shut down air intake equipment in the vicinity of the work. Cover air intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.

B. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

C. Existing Roof Drainage Components: Existing roof drainage components shall be maintained as follows:

1. All existing roof drainage system shall be cleaned and made functional prior to the removal of the existing roof system.

2. Prevent debris from entering or blocking roof drainage system. Contractor shall inspect and remove any construction or other debris on a daily basis to ensure roof drainage.

3. If roof drainage system is temporarily blocked or unserviceable due to roofing system removal or partial installation of new roofing system, provide alternative drainage method to remove water.

D. Verify that rooftop utilities and service piping have been shut off before commencing Work.

3.2 DEMOLITION

A. General: Notify Consultant/Owner each day of extent of proposed roof tear-off and/or material removal and obtain authorization to proceed.

B. Refer to specification section “Selective Roof Demolition” of this project manual.

END OF SECTION

SECTION 07 41 13
STANDING SEAM METAL ROOF PANEL SYSTEM (SSMR)

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Standing-seam metal roof panel (SSMR) System.

B. Metal roof panel system accessories.

1.2 RELATED SECTIONS

A. Section 07 62 00 - Sheet Metal Flashing.

1.3 REFERENCES

A. American Society of Civil Engineers: ASCE -7 - Minimum Design Loads for Buildings and Other Structures, version adopted by local Building Code authority having jurisdiction.

B. ASTM A792 - Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

C. ASTM E1592-01Standard Test Method for Structural Performance of Sheet Metal Roof and Siding System by Uniform Static Air Pressure Difference

D. ASTM E1680-95 (Reapproved for 2003) - Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.

E. ASTM E1646-95 (Reapproved for 2003) Standard Test Method for Rate of Water Penetration Through Exterior Metal Roof Panel Systems By Uniform Static Air Pressure Difference.

F. ASTM E2140- Standard Test method for water penetration of metal roof panel systems by static water pressure head.

G. Building Code – as approved by local authority having jurisdiction.

H. SMACNA - Architectural Sheet Metal Manual, Latest Edition.

I. Underwriter's Laboratories:

1. UL 580 - Tests for Uplift Resistance of Roof Assemblies.

2. UL 1897 - Uplift Tests for Roof Covering Systems, latest Edition.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver panels to jobsite properly packaged to provide protection against transportation damage.

B. Exercise care in unloading, storing and erecting panels to prevent bending, warping, twisting, and surface damage.

C. 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.

D. Remove from site panels which are damaged, or become water-stained during storage and handling. Remove, and replace materials, which are installed damage, or stained.

1.5 DESIGN AND PERFORMANCE CRITERIA

A. Thermal Movement: Metal Roofing system, including flashing, shall accommodate unlimited thermal movement without buckling or excess stress on the structure.

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 certified results from ASTM E 1592, Uplift Tests for Roof Covering Systems.

D. Panel system installation shall be in accordance with ASCE 7 Wind Speeds for project location with respect to appropriate Exposure category, Building Importance Factor and a Safety Factor of 2.0.

1.6 COORDINATION

A. Coordinate Work, with installation of other associated Work, to ensure quality application.

B. Coordinate Work with installation of associated metal flashings and building walls.

C. Coordinate Work to minimize foot traffic and construction activity on installed finished surfaces.

D. Coordinate location of pipe penetrations to allow centering of pipe in panel.

E. Coordinate location of roof curbs, to allow proper integration with roof panel seams.

1.7 PRE-ROOFING CONFERENCE

A. Schedule meeting to discuss roof Work before start of work onsite.

B. Comply with requirements of roof Specification Section(s).

C. Required attendees: Contractor, metal deck & roof installer, metal roof system manufacturer's representative, and any other subcontractors who have equipment penetrating the roof or Work that requires roof access or traffic.

1.8 QUALITY ASSURANCE

A. Manufacturer: Manufacturer's facility and equipment must undergo an annual quality assurance audit by Factory Mutual. This assures that manufacturers equipment, procedures and quality program are maintained to insure a uniform product consistent with that, which was tested, and FM Approved.

B. Installer Qualifications: Installer ("roofer") to perform the Work of this Section, which firm has no fewer than 5 years of successful experience with installation metal roof systems similar to

those required for this Project, and is qualified by the roof panel manufacturer, for installation of manufacturer-warranted systems.

C. 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.

D. Install a 30-foot wide, quality control area of metal roofing, for review by the Consultant, to establish the quality of installation for the roof, and have approved prior to installing additional metal panels.

PART 2 - PRODUCTS

2.1 ROOF PANEL SYSTEM

A. Metal Roof Panel System Manufacturer:

a. McElroy Metal, Inc.

b. Or approved equal.

B. Metal Roof Panel System requirements:

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 Reference section 1.3 and Design and Performance criteria Section 1.7.

2. Substitute manufactures will be approved written addendum to all bidders. Voluntary alternates will not be considered. Substitutions will not be permitted after the bid date of this project.

3. 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 provided by the manufacturer.

4. Minimum seam height 1 3/8 inches. Integral seam, double lock and snap together type panels are not acceptable

5. Panel system shall utilize individual clips in order to maximize wind uplift resistance in edge and corner zones.

6. Seam cap matching panel finish with two rows of integral factory hot applied sealant.

7. Galvalume coated sheet steel, Type AZ-50, Grade 50 as described in ASTM A792; 24 gauge.

8. Finish: Two coat coil applied, baked-on full-strength (70% resin, PVF2) fluorocarbon coating consisting of a nominal of .25 mil dry film thickness primer, nominal dry film thickness of .75 mil color coat. Finish to be selected from manufacturer's standard color selection. The back side of the material should be .25 mil. Primer and 0.25 polyester wash coat.

9. Roof panel system must allow individual roof panel removal and replacement from any point on the roof without damage to adjacent roof panel(s).

10. 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 manufacturers employees and equipment.

11. Panel surface characteristics to be chosen by Architect for roof panel manufacturer's available types.

12. Manufacturer watertightness warranty, meeting requirements of this Section.

13. Roof panels proposed for substitution shall fully comply with specified requirements in appearance, assembly, and performance. Substitution request must comply with Division 1 requirements for submission.

2.2 FASTENERS AND ACCESSORIES

A. Panel Clip Screw - screw required in wind uplift rating requirements for application, with corrosion-resistant coating, in length necessary to penetrate deck minimum 3/4 inch., as supplied by roof panel manufacturer.

B. Roof Panels Clip:

1. Individual Clip: 16 gauge, grade 50, G-90 Galvanized coated steel. Clip shall be 8" long and be designed specifically to sit on two existing shingles in order to be installed in the same plane as the roof panels. Clip shall provide for a ¾" air space between the old roof and new to provide unobstructed Above Sheathing Ventilation from eave to ridge. .

2. Fiber Reinforced Polycarbonate Shim Plate: used in lieu of bearing plates in areas where deck is uneven to insure level finished panel surface.

C. Trim and flashing will be of the same gage and finish unless approved otherwise by the metal roof system manufacturer.

1. All sheet metal valleys will be supplied in continuous lengths up to 32'

2. Ridge closures, consisting of metal channel surrounding factory precut closed cell foam, will not be secured through the field of the panel.

3. 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: in gage 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: Color coordinated primer-less silicone, or high-grade, non-drying butyl, as supplied by panel manufacturer.

H. Sealant Tape: non-drying, 100 percent solids, high-grade butyl tape, as supplied by panel manufacturer, in sizes to match application.

I. Pipe Penetration Flashings: flexible boot type, with stainless steel compression ring, and stainless steel pipe strap, Dektite by Buildex, or approved substitute. Use silicone type at hot pipes.

J. Metal Roof Curbs: welded aluminum, or stainless steel, factory-insulated, with integral cricket, and designed to fit roof panel module, sized to meet application, by L.M. Curbs, or approved substitute.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Ensure surfaces are ready for panel application.

B. Inspect and ensure surfaces are free from objectionable warp, wave, and buckle before proceeding with installation of pre-formed metal roofing.

C. Ensure substrate is ready to receive metal roofing. Report items for correction and do not proceed with metal roof panel system installation until resolved.

3.2 INSTALLATION OF ROOF PANELS

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 and instructions, within specified erection tolerances.

B. Coordinate installation of gutters and downspouts with roof panel system installation.

C. Cut back shingle overhang at eave and install flange gutter bottom eave trim.

D. Install eave vent

E. Attach 1' corrugated support panels at ridge, headwall and hip locations

F. Install field panels in continuous lengths, without end laps using special 8" long clips. Clips sit on two shingle tabs and are fastened through end of shingle tabs down into deck below. Clip should sit in the same plane as the roof when installed.

G. Fasten panel into corrugated to hold in place

H. Install caps as panels are installed.

I. Do not install panels damaged by shipment or handling..

J. Allow for 1-inch panel clearance at penetrations.

K. Install zee closures, ridge vent material and ridge or hip trim.

L. Install concealed supports, angles and brackets as furnished by manufacturer to form complete assemblies.

M. Remove roof panel and flashing protective film prior to extended exposure to sunlight, heat, and other weather elements.

N. Field-apply sealant tape and gun-grade sealant according to reviewed shop drawings and manufacturer's requirements for airtight, waterproof installation.

O. Ensure sealant beads and tape 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.

P. 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.

Q. Align roof curbs to fit roof panel module and overlap standing seam(s). Allow for proper drainage on both sides of curb.

R. Install sheet metal flashings according to manufacturer's recommendations, reviewed shop drawings and in accordance with provision of Section 07 62 00.

3.3 CLEANING

A. Clean exposed surfaces of Work promptly after completion of installation.

B. Clean mud, dirt, and construction-related debris from panels before panels are scratched or marred.

3.4 PROTECTION

A. Protect Work as required to ensure roofing will be without damage at time of final completion.

B. Do not allow excessive foot traffic over finished surfaces.

C. Do not track mud, dirt, or construction-related debris onto panel surfaces.

D. Replace damaged Work before final completion.

END OF SECTION

SECTION 07 52 16.11
MODIFIED BITUMINOUS MEMBRANE ROOFING

NOTE: FOR USE ONLY WHEN APPROVED/ACCEPTED BY ALTERNATE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The extent of Modified Bitumen roofing is indicated on the drawings and by provisions of this section, and is defined to include the following:

B. Section Includes:

1. Cover board.
2. Mechanically fastened and heat welded roof membrane system.
3. Miscellaneous system accessories and components.

C. Related Sections include the following:

1. Division 01 “Sections” for general requirements regarding the work of this project.
2. Divisions 02-48 "Sections" for specific requirements regarding products and installations specified.

1.3 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

B. Design Uplift Pressure: The uplift pressure, calculated according to procedures in SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," before multiplication by a safety factor.

C. Factored Design Uplift Pressure: The uplift pressure, calculated according to procedures in SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," after multiplication by a safety factor.

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

C. Roofing System Assembly: Provide a roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE 7.

D. Wind, Fire and Hail Resistance:

1. FMG Listing: Provide a complete system including roofing membrane, base flashings, and component materials that comply with requirements in FMG 4450 and FMG 4470 as part of a roofing system and that are listed in FMG's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FMG markings.

   a. Fire/Windstorm Classification: Class 1A-90.

   b. Hail Resistance: SH.

2. Miami Dade NOA: Alternately, a complete system NOA approval may be provided in lieu of FM approval.

   a. Windstorm Classification: -45 psf

3. For recover projects, provide statement from membrane manufacturer clarifying applicability of referenced wind uplift approval to the specific project recover conditions.

E. Impact Resistance: Roof coverings installed on low-slope roofs (roof slope <2:12) shall resist impact damage based on the results of tests conducted in accordance with ASTM D 3746, ASTM D 4272, or the “Resistance to Foot Traffic Test “ FM 4470.

F. Agency Approvals:

1. All products used shall bear Factory Mutual Global (FMG) and Underwriters Laboratories (UL) approval.

2. Designated seal of approval shall be clearly visible on all product packing.

3. System and components shall comply with applicable state International Building Code (IBC) requirements including ANSI-SPRI/ES-1.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified firm that is has been their approved application in good standing for the past five (5) consecutive years prior to project bid date. Installer must have been in business under the same name for at least five (5) consecutive years. Contractor shall be approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's twenty (20) year warranty.

1. Installer's Field Supervision: Installer is required to maintain a full-time supervisor / foreman, with supervision-only responsibilities, on job site during times that modified bituminous sheet membrane roofing work is in progress. The individual shall be experienced in installation of roofing systems similar to type and scope required for this Project.

B. Manufacturer Qualifications: A qualified manufacturer that has UL listing and FMG approval for membrane roofing system identical to that used for this Project. Manufacturer shall have a minimum ten (10) years of successful manufacture of membrane using the same membrane formulation.

1. Obtain components for roofing system from or approved by roofing system manufacturer Provide primary products, including each type of roofing sheet, bitumen, composition flashings, and vapor barrier (where used), produced by a single manufacturer. Provide secondary products only as recommended and approved by the manufacturer of primary products for use with roofing system specified.

2. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design and extent to those specified for this Project. Manufacturer's Sales Representative will not be accepted as a Technical Representative.

a. The manufacturer's technical representative is to provide a minimum three (3) inspections of field-assembled components and equipment installation.

b. One inspection within one day of job start-up

c. A minimum of one interim inspection

d. One final inspection.

e. Manufacturer field inspection reports shall be provided in writing to Consultant within the following three (3) days of each inspection.

C. Source Limitations: Obtain components for roofing system from or approved by roofing system manufacturer. Provide primary products, including each type of roofing sheet, bitumen, composition flashings, and vapor barrier (if any), produced by a single manufacturer. Provide secondary products only as recommenced by the manufacturer of primary products for use with roofing system specified.

D. Fire-Test-Response Characteristics: Provide roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, and/or FMG. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.

1. Exterior Fire-Test Exposure: Class A; ASTM E 108, for application and roof slopes indicated.

2. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.

1.6 PRE-ROOFING CONFERENCE

A. Approximately five (5) days prior to scheduled commencement of the modified bitumen roofing installation and associated work, meet at project site with Installer, installer of each component of associated work, installers of deck or substrate construction to receive roofing work, installers of roof-top units and other work in and around roofing which must precede or follow roofing work (including mechanical work if any), Owner, General Contractor, Consultant, Roof Installer, Roof Systems Manufacturer's Technical Representative, and other representatives directly concerned with performance of the work including (where applicable) Owner's insurers, test agencies, and governing authorities.

1. ATTENDANCE OF THE ROOF INSTALLER'S PROJECT FOREMAN AND ON SITE SUPERINTENDENT IS MANDATORY.

2. Roof system manufacturer's representative attending the Conference must be a Technical Representative and full time employee of the roof manufacturer.

a. Manufacturer Distributors, Sales Representatives, or Distributor Sales Representatives, do not comply with this requirement.

B. The pre-roofing conference is intended to clarify demolition (for renovation or re-roofing projects) and application requirements for work to be completed before roofing operations can begin. This would include a detailed review of the specifications, roof plans, roof deck information, flashing details, and approved shop drawings, submittal data, and samples. If conflict exists between the specifications and the Manufacturer's requirements, this shall be resolved.

C. If this pre-roofing conference cannot be satisfactorily concluded without further inspection and investigation by any means of the parties present, it shall be reconvened at the earliest possible time to avoid delay of the work. In no case should work proceed without inspection of all roof deck areas and substantial agreement on all points.

D. The Consultant shall prepare a written report indicating actions taken and decisions made at this pre-roofing conference. This report shall be made a part of the project record and copies furnished the Contractor, the Owner.

E. The contractor shall be fully prepared to address the following during the conference.

1. Review all wind, fire and hail requirements listed in the specifications and resolve any questions or conflicts that may arise.

2. Establish trade-related job schedules, including the installation of roof-mounted mechanical equipment.

3. Establish roofing schedule and work methods that will prevent roof damage.

4. Require that all roof penetrations and walls be in place prior to installing the roof.

5. Establish those areas on the job site that will be designed as work and storage areas for roofing operations.

6. Establish weather and working temperature conditions to which all parties must agree.

7. Establish acceptable methods of protecting the finished roof if any trades must travel across or work on or above any areas of the finished roof.

8. Review foreseeable methods and procedure related to roofing work, including but not necessarily limited to the following:

   b. Tour representative areas of roofing substrates (decks), inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work performed by other trades.

   c. Review structural loading limitations of decks and inspect decks for loss of flatness and for required mechanical fastening.

   d. Review roofing system requirements (drawings, specifications and other contract documents).

   e. Review required submittals, both completed and yet to be completed.

   f. Review and finalize construction schedule related to roofing work and verify availability of materials, Installer's personnel, equipment and facilities needed to make progress and avoid delays.

   g. Review required inspection, testing, certifying and material usage accounting procedures.

   h. Review weather and forecast' weather conditions, and procedures for coping with unfavorable conditions, including possibility of temporary roofing (if not a mandatory requirement).

   i. Review roof application procedures, technique, details and roof specifics, e.g. review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.

   j. Review job specific safety requirements, safety barriers, street blacking, haul routes, building access, site contact, facilities, security, etc.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storage.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

   1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturers written instructions for handling, storing, and protecting during installation.

D. Store and handle roofing roll goods and rigid insulation boards in a manner, which will ensure that there is no possibility of significant moisture pick-up.

E. All material must be protected from the weather by protective tarps. Manufacturer's plastic covers are not acceptable means of protection.

F. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.8 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

B. At the end of each days work temporary cut-offs and tie-ins shall be made weathertight, no exceptions.

C. At the end of the days work all materials stored materials are to be recovered, tied and weighted down.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with specified roof system requirements, provide products by the following:

1. SBS-Modified Bituminous Membrane Roofing:

a. Soprema, Inc.

b. Or approved equal.

B. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:

1. Products: Subject to compliance with requirements, provide one of the products specified.

2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 SBS-MODIFIED ASPHALT CAP SHEET MATERIALS

A. Roofing Membrane Cap Sheet: ASTM D 6164, Grade G, Type II, polyester-reinforced 250 gram fire rated (FR) SBS-modified asphalt sheet; granular surfaced; suitable for application method specified.

1. Granule Color: Manufacturers standard White.

2. 4.0 mm nominal thickness.

2.3 SBS-MODIFIED ASPHALT BASE-PLY SHEET MATERIALS

A. Base-Ply: ASTM D 6164, Grade S, Type I, polyester-reinforced, SBS-modified asphalt sheet; smooth surfaced; suitable for application method specified.

1. 3.0 mm nominal thickness.

2. 1-ply application.

2.4 BASE FLASHING SHEET MATERIALS

A. Flashing Cap Sheet: Same as field cap sheet.

B. Flashing Base Sheet: Same as field base sheet.

2.5 COVER BOARD AND CANT STRIP ADHESIVE

A. Bead-applied low-rise one- or multi-component urethane adhesive formulated to for use in roof systems for specified cant strip and cover board attachment.

1. Use roof membrane manufacturers own adhesive only. Third party adhesives are not permitted.

2.6 COVER BOARD

A. Asphaltic fiberglass composite cover board with minimum compressive strength of 500 psi, 1/8" thick minimum thickness Sopraboard by Soprema, or;

B. Fiberglass faced, pre-primed gypsum roof board with minimum compressive strength of 500 psi, 1/4" thick minimum thickness Dens Deck Prime by Georgia Pacific.

2.7 TAPERED EDGE STRIP

A. Tapered edge strip shall be factory fabricated, preformed polyisocyanurate rigid insulation, meeting the specification requirements of this section, cut on angles that slope from zero on one edge to 1 1/2-inch thick on the opposite.

2.8 AUXILIARY MATERIALS AND ACCESSORIES

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing membrane. Items used from the section must be acceptable to the membrane system manufacturer for use in conjunction with their roof system, and not effect specified warranty coverage.

B. Asphalt Primer: ASTM D 41. Use roof membrane system manufacturers primer only.

C. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required by roofing system manufacturer for application. Use roof membrane system manufacturers primer only.

D. Mesh Roof Fabric; width: 6 inches

E. Mastic Sealant: Sonneborn NP-1.

F. Fasteners: Factory-coated steel fasteners and metal plates, batten bars and termination bars meeting corrosion-resistance provisions in FMG 4470, designed for fastening roofing membrane components to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer. Tested to meet or exceed specified wind uplift requirements.

1. Fasteners subject to compliance with specified roof system performance requirements.

2. Steel Deck Fasteners (where required): Extra Heavy Duty #15 by SFS, OMG, TRUFAST or fasteners provided by roof membrane system manufacturer.

G. Cant Strips: Cellulosic wood fiber cant strips designed for commercial roofing applications.

H. Nailers and Curbs: Wood nailers and curbs are specified in Division 06 "Miscellaneous Rough Carpentry".

I. Roofing Granules: Roof membrane manufacturers standard ceramic-coated roofing granules, color to match roofing membrane. Use granules provided by roof membrane system manufacturer only.

J. Pipe Roof Supports: Adjustable height and/or fixed height, suitable for quantity of pipe runs, elevation and sizes. Provide new fixed height and/or adjustable height (as required for roof slope and condition) pipe supports at all gas lines and conduits on roof surface. Include manufacturer's standard hardware.

1. Manufacturers:

a. Miro Industries

2. Pipe supports must be roller equipped.

3. Equip with pipe strap as required by applicable governing authority.

K. Condensation Drain Line Supports: Provide drain line support at condensation drain lines from HVAC equipment by Erico, Inc. or Miro Industries; spaced as required for stability and as recommended by support manufacturer.

L. Sheet Metal Flashings and Accessories: See Division 07 Section "Sheet Metal Flashing and Trim" for roof penetration flashings, flashings and counterflashings.

1. Penetration Pitch Pocket Sealer: 1-part polyurethane pourable sealer designed for filling roof penetration pockets in conjunction with the roofing system manufacturer’s recommendation.

M. Edge Metal: Refer to Section 07 62 00, Sheet Metal Flashing And Trim.

N. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

PART 3 - EXECUTION

3.1 DEMOLITION, GENERAL

A. Coordinate demolition work with the requirements of the following sections:

1. Section 02 41 19.14, “Selective Roof Demolition”.

2. Section 07 01 50.19, “Preparation For Re-Roofing”.

3.2 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place, set and braced.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and nailers match thicknesses of insulation.
3. Proceed with installation only after unsatisfactory conditions have been corrected

3.3 PREPARATION

A. Clean and prepare substrate according to manufacturers written recommendations. Provide clean, dust-free, and dry substrate for roofing application.

B. Mask off adjoining surfaces not receiving roofing to prevent spillage from affecting other construction.

C. Protect roof drains and other deck penetrations to prevent spillage and migration of roofing fluids.

D. Remove grease, oil, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

E. Remove fins, ridges, and other projections and fill honeycomb, aggregate pockets, and other voids.

3.4 WOOD NAILERS

A. Treated wood nailers shall be installed as indicated on project drawings. Refer to specification section “Rough Carpentry For Roofing”.

B. The thickness of the nailer shall be such that the top of the nailer is flush with adjacent surfaces as required to provide a smooth transition for all roof system components.

C. At Reroofing areas: Where existing nailers are not reused, install new continuous pressure treated nailers at all locations where new roof system edge metal shall be installed such as parapets and gravel stops/drip edges.

D. At New Construction areas: Install new continuous pressure treated nailers at all locations where new roof system edge metal shall be installed such as parapets and gravel stops/drip edges.

3.5 FASTENERS

A. Fasteners used to secure components of the roof system shall be accepted by the manufacturer of the membrane being installed.

B. The fastener assembly shall be installed as specified to avoid abrasion to the membrane.

C. The fastener manufacturer's recommendations shall be followed for:

1. Fastener suitability for specific applications
2. Proper drill bit for drilling correct hole size diameter and depth.
3. Minimum depth of embedment into deck to achieve required resistance to pull out.
4. Fastener length to provide proper fastening into deck.
5. Installation tools

D. Fasteners that are improperly installed shall be removed or corrected. Improper application may be characterized as:

1. Overdriven: Fastener is driven to the point that it is causing the stress distribution surface to become concave (or deformed in the case of batten strips) excessive driving may cause failure by disengaging the fastener threads from the deck).
2. Under-driven: Fastener head is not properly seated on the stress distribution surface.
3. Snapped: Fastener breaks under the driving load.
4. Bent: Fastener is bent to the point that it adversely affects the installation.
5. Not engaged: Fastener is improperly located or is of insufficient length.

3.6 COVER BOARD INSTALLATION

A. The intent is to use the existing roof slopes for drainage of the new roof system installation. The contractor must ensure that upon project completion, the new roof system drains water. Standing water will not be permitted on the completed roof system.

A. General: Comply with manufacturer's instructions and recommendations for the handling installation, and bonding or anchorage of cover board to substrate.

B. Steel/Metal Decks:

1. The cover board shall be mechanically fastened using specified screws and plates in the fastening pattern required to achieve specified wind uplift and wind speed warranty requirements.
    a. Provide perimeter and corner fastening enhancements/increases as required to meet the specified wind uplift and wind speed warranty requirements.

C. Structural Concrete Decks:

1. All layers of cover board attachment shall utilize specified bead applied cover board adhesive using bead sizes, spacing, and patterns required to meet specified wind uplift, and building code requirements.

D. Install cover board with long joints of cover board in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/16 inch with insulation.

3.7 CANTS

A. Install and secure preformed 45-degree insulation cants at junctures of roofing membrane system with vertical surfaces or angle changes greater than 45 degrees.

B. Minimum cant size shall be 4" x 4" x 3'-0".

C. Cant shall be set in full coverage application of specified membrane manufacturer's urethane insulation/membrane adhesive. Alternately, ¾" to 1" wide adhesive beads at 3" o.c. are acceptable.

3.8 SBS MEMBRANE GENERAL INSTALLATION

A. Install roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations of ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing."

B. Cooperate with testing and inspecting agencies engaged or required to perform services for installing roofing system.

C. Apply membrane manufacturers required primer for membranes to all substrates prior to membrane installation.

D. Coordinate installation of roof system so insulation and other components of the roofing membrane system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.

1. Provide tie-offs to the existing roof system at end of each day's work to cover exposed roofing membrane sheets and insulation with two course of coated felt set in roofing cement with joints and edges sealed.

2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.

3. Remove and discard temporary seals before beginning work on adjoining roofing.

E. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer. Minimum 30 minutes.

F. Reroll relaxed membrane and position membrane in place where it will be installed.

G. Install specified SBS roof membrane in a shingle fashion according to roofing system manufacturer's written instructions starting at low point of roofing system. Shingle in direction required to shed, not dam, water.

H. Application shall provide a smooth surface, free of air pockets, wrinkles, fishmouths or tears.

I. Run membrane tight up against any vertical surfaces such as curbs, parapets, and vents.

J. Contractor shall take extreme care to ensure that the cap sheet surface remains clean and free from staining, contamination, or discoloration of the surface by roofing activities. Areas of damage or discoloration may, at the Owners or Consultants discretion, require treatment using specified cold fluid applied membrane resin and ceramic granules matching the factory applied cap sheet granules.

3.9 FIELD BASE MEMBRANE PLY INSTALLATION

A. Refer to SBS MEMBRANE GENERAL INSTALLATION section above.

B. Mechanically fasten specified SBS roof membrane in side laps in a shingle fashion according to roofing system manufacturer's written instructions starting at low point of roofing system. Shingle in direction required to shed, not dam, water.

C. Extend base ply modified bitumen membrane to min. 2” beyond top edge of cant. Membrane plies shall be fully adhered to cant strip surfaces.

D. All side laps shall be fully heat welded.

E. Application of heat should create a flow of hot, melted bitumen across the back surface of the membrane. Flow of bitumen shall extend min. 1/8” beyond edge (side and end laps) of membrane.

F. Seal all laps by running a hot trowel along the edge of the seam.

G. Run membrane tight up against any vertical surfaces such as curbs, parapets, and vents.

3.10 FLASHING AND STRIPPING PLY INSTALLATION

A. Refer to SBS MEMBRANE GENERAL INSTALLATION section above.

B. All edge metal extending onto the surface of the new modified bitumen base ply shall be stripped in with an additional ply (min. 8” wide and centered) of the specified modified bitumen base ply.

C. This applies to gravel stops, drip edges, and lead drain target flashings.

D. Stripping membrane shall be the same membrane as the field base ply, and shall be fully heat welded. Application of heat should create a flow of hot, melted bitumen across the back surface of the membrane. Flow of bitumen shall extend min. 1/8” beyond edge (side and end laps) of membrane.

E. Flashing membrane plies must be fully pressed or rolled into place to ensure full adhesion.

F. Seal all laps by running a hot trowel along the edge of the seam.

3.11 FIELD CAP MEMBRANE PLY INSTALLATION

A. Refer to SBS MEMBRANE GENERAL INSTALLATION section above.

B. Once the FIELD BASE MEMBRANE, FLASHING AND STRIPPING PLY, and BASE FLASHING BASE PLY MEMBRANE is installed and have been inspected by the membrane manufacturer; installation of the field cap membrane ply is permitted.

C. All cap sheet membrane applications shall be fully heat welded. For field membrane installation rolls shall be heat welded by applying heat to the leading (front) edge of the roll while pulling the roll forward. It is unacceptable to heat the back of the roll and walk on the roll while installing.

D. Application of heat should create a flow of hot, melted bitumen across the back surface of the membrane. Flow of bitumen shall extend min. 1/8” beyond edge (side and end laps) of membrane.

E. Seal all laps by running a hot trowel along the edge of the seam.

F. Embed granules at all end laps and other locations where cap sheet overlaps granule surfaced cap sheet areas. Use hot trowel method or specially designed degranulator tool.

3.12 BASE FLASHING CAP MEMBRANE PLY INSTALLATION

A. Refer to SBS MEMBRANE GENERAL INSTALLATION section above.

B. Once the FIELD BASE MEMBRANE, FLASHING AND STRIPPING PLY, FIELD CAP MEMBRANE and BASE FLASHING BASE PLY MEMBRANE is installed and have been inspected by the membrane manufacturer; installation of the field cap membrane ply is permitted.

C. All SBS cap ply membrane applications shall be fully heat welded. Rolls shall be heat welded by applying heat to the leading (front) edge of the roll. Flashing membrane plies must be fully pressed or rolled into place to ensure full adhesion.

D. Application of heat should create a flow of hot, melted bitumen across the back surface of the membrane. Flow of bitumen shall extend min. 1/8” beyond edge (side and end laps) of membrane.

E. Run membrane tight up against any vertical surfaces such as curbs, parapets, and vents.

F. Seal all laps by running a hot trowel along the edge of the seam.

G. Embed granules at all end laps and other locations where cap sheet overlaps granule surfaced cap sheet areas. Use hot trowel method or specially designed degranulator tool.

3.13 SBS MEMBRANE FLASHING TERMINATIONS

A. Install base flashing over cant strips and other sloping and vertical surfaces and secure to substrates according to roofing system manufacturer's written instructions and as follows:

1. Prepare new and existing substrates as specified, and as required by roof membrane system manufacturer.

2. Prime substrates with asphalt primer if required by roofing system manufacturer.

3. Flashing Sheet Application: Adhere flashing sheets not to exceed 5 feet in width and 12 inches high.

B. Extend base flashing up walls or parapets a minimum of 8 inches above roofing membrane and 4 inches onto field of roofing membrane.

C. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.

D. All termination bars and surface mounted counter-flashings will be installed with a continuous bead of urethane sealant followed by the membrane manufacturer’s specified cold fluid applied flashing membrane.

E. At mechanically fastened SBS-modified bitumen systems, install specified membrane fastening screws and plates at 12” o.c. maximum at all horizontal locations where the field roof membranes terminate. This includes all perimeter roof edge termination as well as interior membrane termination points at roof penetrations or base flashing areas.

3.14 SBS MEMBRANE ROOF EDGE TERMINATIONS

A. Install edge metal system(s) in accordance with manufacturer requirements.

B. Where new roof membrane is adhered directly to new edge metal system, prime with specified ASTM D41 primer.

C. Where stripping membrane is required, strip the metal edge flashing with an 8-inch wide piece of ASTM D 6164, Type I or II, Grade S, membrane. Use specified field SBS base sheet.

D. At mechanically fastened SBS-modified bitumen systems, install specified membrane fastening screws and plates at 12" o.c. maximum at all horizontal locations where the field roof membranes terminate. This includes all perimeter roof edge termination as well as interior membrane termination points at roof penetrations or base flashing areas.

3.15 PIPE VENT

A. For use at new and replacement pipe vent details.

B. Inspect base ply installation and ensure tight seal around pipe.

C. Construct and install over base ply a sheet 2-1/2 lb. lead vent sleeve with welded or soldered seams and as per details.

1. Provide a minimum 5-inch base flange.
2. Prime all metal surfaces in contact with membrane.
3. Set metal flange in full bed of membrane cold adhesive. Set in place and firmly press on flange to ensure even contact with roof surface.
4. Set stripping/flashing membrane ply in full bed of cold adhesive cut to min. three feet square centered on drain.

D. Install field cap membrane ply as specified under 3.09 of this section.

1. Cut membrane to fit tight against stack sleeve and set in membrane cold adhesive.

E. Roll top edge of lead boot down into pipe a minimum of 1 inch.

3.16 MECHANICAL UNIT INSULATION CRICKETS

A. Install new crickets on high slope side of all mechanical unit curbs using specified insulation and roof system components.

B. New minimum cricket slope shall be double the slope of directly adjacent sloped roof membrane surfaces.

3.17 WATER CUT-OFF

A. At the end of the day's work, and when precipitation is eminent, a water cut-off shall be constructed at all open edges. Construct the cut-off with the same membrane and asphalt. Cut-off must be able to withstand extended periods of wet weather. The water cut-off shall be completely removed prior to resuming the installation of the roofing system.

3.18 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.

B. Test Cuts: Test specimens will be removed to evaluate problems observed during quality-assurance inspections of roofing membrane as follows:

1. Approximate quantities of components within roofing membrane will be determined according to ASTM D 3617.

2. Test specimens will be examined for interply voids according to ASTM D 3617 and to comply with criteria established in Appendix 3 of ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing."

3. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.

4. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

C. Final Roof Inspection: Arrange for roofing system manufacturer’s technical personnel to inspect roofing installation on completion and submit report to Consultant. Notify Consultant 48 hours in advance of date and time of inspection.

1. Notify Consultant or Owner 48 hours in advance of date and time of inspection.

D. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.19 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Consultant / Consultant and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

END OF SECTION

SECTION 07 52 42
THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams and general provisions of the Contract including General and Supplementary Conditions and other Division 00-48 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Insulation.
2. Thermoplastic polyolefin (TPO) roofing system.
3. Miscellaneous system accessories and components.

1.3 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

B. Design Uplift Pressure: The uplift pressure, calculated according to procedures in SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," before multiplication by a safety factor.

C. Factored Design Uplift Pressure: The uplift pressure, calculated according to procedures in SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," after multiplication by a safety factor.

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

C. Roofing System Assembly: Provide a roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE 7-10, as specified.

D. Wind, Fire and Hail Resistance:

1. FMG Listing: Provide a complete system including roofing membrane, base flashings, and component materials that comply with requirements in FMG 4450 and FMG 4470 as part of a roofing system and that are listed in FMG's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FMG markings.

   a. Fire/Windstorm Classification: Class 1A 90.

   b. Hail Resistance: SH.

2. Miami Dade NOA: Alternately, a complete system NOA approval may be provided in lieu of FM approval.

   a. Windstorm Classification: -45 psf

3. If any variation exists between the specified approval requirements, and the manufacturers proposed assembly, the manufacturer must provide detailed summary of differences for review and approval.

4. For recover projects, provide statement from membrane manufacturer clarifying applicability of referenced wind uplift approval to the specific project recover conditions.

E. Impact Resistance: Roof coverings installed on low-slope roofs (roof slope <2:12) shall resist impact damage based on the results of tests conducted in accordance with ASTM D 3746, ASTM D 4272, or the “Resistance to Foot Traffic Test “ FM 4470.

F. Agency Approvals:

1. All products used shall bear Factory Mutual Global (FMG) and Underwriters Laboratories (UL) approval.

2. Designated seal of approval shall be clearly visible on all product packing.

3. System and components shall comply with applicable state International Building Code (IBC) requirements including ANSI-SPRI/ES-1.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified firm that is has been their approved application in good standing for the past five (5) consecutive years prior to project bid date. Installer must have been in business under the same name for at least five (5) consecutive years. Contractor shall be approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's twenty (20) year warranty.

1. Installer's Field Supervision: Installer is required to maintain a full-time supervisor / foreman, with supervision-only responsibilities, on job site during times that sheet membrane roofing work is in progress. The individual shall be experienced in installation of roofing systems similar to type and scope required for this Project.

B. Manufacturer Qualifications: A qualified manufacturer that has UL listing and FMG approval for membrane roofing system identical to that used for this Project. Manufacturer shall have a minimum ten (10) years of successful manufacture of membrane using the same membrane formulation.

1. Obtain components for roofing system from or approved by roofing system manufacturer Provide primary products, including each type of roofing sheet, composition flashings, and vapor barrier (where used), produced by a single manufacturer. Provide secondary products only as recommended and approved by the manufacturer of primary products for use with roofing system specified.

2. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design and extent to those specified for this Project. Manufacturer's Sales Representative will not be accepted as a Technical Representative. When material and labor, no dollar limit warranties are specified, provide the following:

   a. A final inspection.

   b. Manufacturer field inspection reports shall be provided in writing to Consultant within the following three (3) days.

C. Source Limitations: Obtain components for roofing system from or approved by roofing system manufacturer. Provide primary products, including each type of roofing sheet, flashings, and vapor barrier (if any), produced by a single manufacturer. Provide secondary products only as recommenced by the manufacturer of primary products for use with roofing system specified.

D. Fire-Test-Response Characteristics: Provide roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, and/or FMG. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.

1. Exterior Fire-Test Exposure: Class A; ASTM E 108, for application and roof slopes indicated.

2. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storage.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturers written instructions for handling, storing, and protecting during installation.

D. Store and handle roofing roll goods and rigid insulation boards in a manner, which will ensure that there is no possibility of significant moisture pick-up.

E. All material must be protected from the weather by protective tarps. Manufacturer's plastic covers are not acceptable means of protection.

F. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.7 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

B. At the end of each days work temporary cut-offs and tie-ins shall be made weathertight, no exceptions.

C. At the end of the days work all materials stored materials are to be recovered, tied and weighted down.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with specified roof system requirements, provide products by the following:

1. TPO Membrane Roofing:

c. Carlisle-Syntec, Inc.

d. Or approved equal.

B. Source Limitations: Obtain components for roofing system from roof membrane system manufacturer.

C. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:

1. Products: Subject to compliance with requirements, provide one of the products specified.

2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 MATERIAL PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.

1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.

2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

C. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

D. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.3 TPO ROOF MEMBRANE

A. Fabric-Reinforced TPO Sheet: ASTM D 6878, internally fabric- or scrim-reinforced, uniform, flexible TPO sheet.

1. Thickness: 60 mils (1.5 mm), nominal.

2. Exposed Face Color: White.

2.4 ADHESIVES AND CLEANERS

A. All products shall be provided by the roof membrane manufacturer for use in the specified roof system.

B. TPO Bonding Adhesive: A high-strength, synthetic rubber adhesive used for bonding specified membrane to various surfaces. The adhesive is applied to both the membrane and the substrate at a coverage rate of approximately 45 - 50 square feet per gallon per finished surface (includes coverage on both surfaces).

C. TPO Cut-Edge Sealant: A clear-colored sealant used to seal cut edges of reinforced membrane. A coverage rate of approximately 225 - 275 linear feet per squeeze bottle can be achieved when a 1/8" diameter bead is applied.

D. Water Cut-Off Mastic: Used as mastic to prevent moisture migration at drains, compression terminations and beneath conventional metal edging (at a coverage rate of approximately 10' per tube or 100' per gallon).

E. Universal Single-Ply Sealant: A 100% solids, solvent free, one-part, polyether sealant that provides a weather tight seal to a variety of building substrates. Can be used as a termination bar sealant or for use in counterflashing, coping/parapet, and scupper details.

F. TPO One-Part Pourable Sealer: A one-part, moisture curing, elastomeric polyether sealant used to fill Molded Sealant Pockets. Packaged in four 1/2 gallon pouches per plastic bucket. One pouch will fill one Molded Sealant Pocket.

G. Foil Grip Aluminum Tape: A general-purpose pressure-sensitive sealant used as a bond break at joints in TPO Coated Metal. Packaged in rolls 2" wide by 100' long.

H. TPO Membrane Cleaner: Used to prepare membrane that has been exposed to the elements for approximately 7 days prior to heat welding or to remove general construction dirt at an approximate coverage rate of 400 square feet per gallon (one surface).

2.5 AUXILIARY MATERIALS AND ACCESSORIES

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing system. Items used from the section must be acceptable to the system manufacturer for use in conjunction with their roof system, and not effect specified warranty coverage.

B. General Fastener Requirements: Factory-coated steel fasteners and metal plates, batten bars and termination bars meeting corrosion-resistance provisions in FMG 4470, designed for fastening roofing system components to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer. Tested to meet or exceed specified wind uplift requirements.

1. Fasteners subject to compliance with specified roof system performance requirements.

C. Base Flashing Nails: Galvanized Simplex large head nails 15/16-inch minimum diameter.

D. Steel Deck Insulation and/or Cover Board Fasteners and Plates:

1. Extra Heavy Duty #15 by SFS, OMG, TRUFAST or fasteners provided by roof system manufacturer.

2. Provide 3-inch diameter, galvanized steel plates approved by the fastener for specified wind uplift requirements.

E. Nailers and Curbs: Wood nailers and curbs are specified in specification section "Miscellaneous Rough Carpentry".

F. Sheet Metal Flashings and Accessories: See specification section "Sheet Metal Flashing and Trim" for roof penetration flashings, flashings and counterflashings.

G. Fascia System: Refer to specification Section 07 62 00, Sheet Metal Flashing and Trim.

H. Coping System: Refer to specification Section 07 62 00, Sheet Metal Flashing and Trim.

I. Termination Bar: a 1” wide and .098” thick extruded aluminum bar pre-punched 6” on center; incorporates a sealant ledge to support Lap Sealant and provide increased stability for membrane terminations.

J. Term Bar Nail-Ins: A min. 1-1/4” long expansion anchor with a zinc plated steel drive pin used for fastening the Termination Bar or Seam Fastening Plates to concrete, brick, or block walls.

K. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer such as pourable sealers, preformed cone and vent sheet flashings, preformed inside

and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.6 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured by TPO roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.

B. Flat Polyisocyanurate Rigid Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.

1. Thickness: 1.5” minimum

2. Provide products manufactured by the primary roof membrane system manufacturer.

C. Tapered Polyisocyanurate Rigid Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces

1. Thickness: Varies.

2. Provide products manufactured by the primary roof membrane system manufacturer.

D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.7 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing.

B. Fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation, thermal barriers, and cover boards to substrate, and acceptable to roofing system manufacturer.

PART 3 - EXECUTION

3.1 ROOFING, GENERAL

A. Refer to Section "Preparation for Re-Roofing" for demolition and removal of the existing roof system and existing roof deck preparation.

B. No roofing materials will be removed or installed under adverse weather conditions. All work shall be scheduled and executed without exposing interior building areas to the effects of inclement weather. The existing building and its contents shall be protected against all reasonable risks.

C. Only as much existing roofing shall be removed and new roofing installed as can be made weathertight each day. This includes all flashing work.

D. All existing roofing materials torn-off shall be immediately removed from the site to a dumping area authorized to receive such debris.

E. Any unusual or concealed conditions discovered during the course of the work that may adversely affect the performance of the new roof system must be immediately reported to the Consultant. All work shall be halted until the Consultant has responded with a solution to the problem.

F. Any substrate to receive new insulation, membrane or flashing shall be thoroughly dry. Existing wet materials must be removed prior to the application of the new membrane system. Should surface moisture occur on the decking, the contractor shall provide adequate equipment to dry the substrate.

G. Temporary waterstops shall be installed at the end of each work day and if inclement weather conditions dictate during the course of day's work. These temporary waterstops shall be removed at the start of the next work day and disposed of properly. No temporary waterstops shall be made so as to obstruct water flow on the completed system (i.e. crickets, drain sumps, etc.). Polyethylene is not considered a temporary covering.

3.2 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place, set and braced.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and nailers match thicknesses of insulation.
3. Proceed with installation only after unsatisfactory conditions have been corrected

3.3 PREPARATION

A. Clean and prepare substrate according to manufacturers written recommendations. Provide clean, dust-free, and dry substrate for roofing application.

B. Mask off adjoining surfaces not receiving roofing to prevent spillage from affecting other construction.

C. Protect roof drains and other deck penetrations to prevent spillage and migration of roofing fluids.

D. Remove grease, oil, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

E. Remove fins, ridges, and other projections and fill honeycomb, aggregate pockets, and other voids.

3.4 WOOD NAILERS

A. Treated wood nailers shall be installed as indicated on project drawings. Refer to specification section "Rough Carpentry For Roofing".

B. The thickness of the nailer shall be such that the top of the nailer is flush with the surface to which the membrane is to be applied.

C. At Reroofing areas: Where existing nailers are not reused, install new continuous pressure treated nailers at all locations where new roof system edge metal shall be installed such as at parapets and gravel stops/drip edges.

3.5 FASTENERS

A. Fasteners used to secure components of the roof system shall be accepted by the manufacturer of the membrane being installed.

B. The fastener assembly shall be installed as specified to avoid abrasion to the membrane.

C. The fastener manufacturer's recommendations shall be followed for:

1. Fastener suitability for specific applications
2. Proper drill bit for drilling correct hole size diameter and depth.
3. Minimum depth of embedment into deck to achieve required resistance to pull out.
4. Fastener length to provide proper fastening into deck.
5. Installation tools

D. Fasteners that are improperly installed shall be removed or corrected. Improper application may be characterized as:

1. Overdriven: Fastener is driven to the point that it is causing the stress distribution surface to become concave (or deformed in the case of batten strips) excessive driving may cause failure by disengaging the fastener threads from the deck).
2. Under-driven: Fastener head is not properly seated on the stress distribution surface.
3. Snapped: Fastener breaks under the driving load.
4. Bent: Fastener is bent to the point that it adversely affects the installation.
5. Not engaged: Fastener is improperly located or is of insufficient length.

3.6 POLYISOCYANURATE INSULATION INSTALLATION

A. The intent is to use the existing roof slopes for drainage of the new roof system installation. The contractor must ensure that upon project completion, the new roof system drains water. Standing water will not be permitted on the completed roof system.

B. General: Comply with insulation manufacturer's instructions and recommendations for the handling installation, and bonding or anchorage of insulation to substrate. Install one or more layers of insulation under area of roofing to achieve specified R-value.

1. Install insulation board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.

C. Existing Metal Decks:

1. The polyisocyanurate rigid insulation shall be mechanically fastened using specified insulation screws and plates in the fastening pattern required to achieve specified wind uplift and wind speed warranty requirements.
    a. Provide perimeter and corner fastening enhancements/increases as required to meet the specified wind uplift and wind speed warranty requirements.

D. Install polyisocyanurate rigid insulation with long joints of cover board in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/16-inch with insulation.

3.7 TPO MEMBRANE HEAT WELDED SEAM INSTALLATION, GENERAL

A. Heat weld the TPO membrane using an Automatic Heat Welding Machine or Hot Air Hand Welder in accordance with the manufacturer's specifications. At all splice intersections, roll the seam with a silicone roller immediately after the welder causes the membrane step off to ensure a continuous hot air welded seam.

B. All splice intersections shall be overlaid with pre-fabricated T Joint Covers.

C. Probe all seams once the hot air welds have thoroughly cooled (approximately 30 minutes).

D. Repair all seam deficiencies the same day they are discovered.

E. Apply Cut Edge Sealant on all cut edges of reinforced membrane (where the scrim reinforcement is exposed) after seam probing is complete. Cut Edge Sealant is not required on vertical splices.

3.8 MECHANICALLY FASTENED ROOFING INSTALLATION AT METAL DECKS

A. Mechanically fasten TPO roof membrane system over area to receive roofing according to roofing system manufacturer's written instructions. Unroll roofing and allow to relax before retaining.

B. Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

C. Mechanically fasten or adhere roofing securely at terminations, penetrations, and perimeter of roofing.

D. Apply roofing with side laps shingled with slope of roof deck where possible.

E. In-Seam Attachment: Secure one edge of TPO sheet using fastening plates or metal battens centered within seam, and mechanically fasten TPO sheet to roof deck.

F. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

G. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet.

H. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.

I. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.

J. Spread sealant bed over deck-drain flange at roof drains, and securely seal roofing in place with clamping ring.

3.9 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.

B. <u>All base flashings shall be adhered in full coverage application of TPO membrane bonding adhesive, no exceptions.</u>

C. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.

D. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

E. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

F. Terminate and seal top of sheet flashings and mechanically anchor to substrate with termination bars.

3.10 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Consultant and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

3.11 PENETRATIONS

A. Refer to roof membrane system manufacturer requirements.

3.12 WATER CUT-OFF

A. At the end of the day's work, and when precipitation is eminent, a water cut-off shall be constructed at all open edges. Cut-off must be able to withstand extended periods of wet weather. The water cut-off shall be completely removed prior to resuming the installation of the roofing system.

3.13 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.

B. Test Cuts: Test specimens will be removed to evaluate problems observed during quality-assurance inspections of roofing membrane as follows:

1. Approximate quantities of components within roofing membrane will be determined according to ASTM D 3617.

2. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.

3. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

C. Final Roof Inspection: Arrange for roofing system manufacturer’s technical personnel to inspect roofing installation on completion and submit report to Consultant. Notify Consultant 48 hours in advance of date and time of inspection.

1. Notify Consultant or Owner 48 hours in advance of date and time of inspection.

D. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.14 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Consultant / Consultant and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

END OF SECTION

SECTION 07 56 00
FLUID APPLIED ASPHALTIC MEMBRANE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams, key plans, and general provisions of the Contract including General and Supplementary Conditions and other Division 01-48 Specification Sections, apply to this Section.

1.2 WORK INCLUDED

A. Work under this section covers the installation of a new cold fluid applied, polyester reinforced, asphaltic urethane roof membrane.

B. In addition, contractor shall include all related items of work as noted herein or indicated on the drawings or otherwise required to complete the specified elements of work and to provide the necessary warranties for this work.

1.3 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide installed membrane that remains watertight; does not permit the passage of water; thermally induced movement, and exposure to weather without failure.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storage.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection or damage to the substrate or existing roof system.

1.6 PROJECT CONDITIONS

A. Weather Limitations: Proceed with roofing work only when existing and forecasted weather conditions permit roofing to be installed according to manufacturers' written instructions and warranty requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. The basis for roof system design are materials manufactured by Soprema, Inc.

B. Approved Manufacturers: Subject to compliance with the requirements of this specification, provide products by one of the following:

1. Cold Fluid Applied Asphaltic Urethane Roof Membrane:

a. Soprema, Inc.

b. Or, approved equal.

2.2 MISCELLANEOUS ROOF SYSTEM MATERIALS

A. General: All roof system materials must be manufactured or approved by the roofing system manufacturer.

B. Roofing Granules: Standard white ceramic-coated roofing granules, as provided by the membrane manufacturer.

C. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Prior to onset of roofing activities, clearly mark all areas to be repaired.

2. Verify with manufacturer and Consultant that marked areas are acceptable for repair.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging existing roof drainage components and from spilling or migrating onto surfaces of other construction.

C. Do not damage existing roof system during execution of work covered in this specification section.

3.3 COLD FLUID APPLIED MEMBRANE INSTALLATION

A. Use substrate primer as recommended by manufacturer.

B. Apply 1st coat (base coat) of Soprema Alsan Flashing liquid membrane at a rate of 1.5 gallons per 100 square feet.

C. Immediately embed Soprema Alsan Flashing Fleece in 1st coat of Alsan Flashing resin. Fully embed fleece into wet resin.

D. When 1st coat becomes non-tacky to the touch, apply 2nd coat of Soprema Alsan Flashing liquid membrane across the entire repair substrate surface (horizontal and vertical) at a rate of 1.5 gallons per 100 square feet.

E. Allow 2nd coat to fully cure. When 2nd coat is fully cured, apply 3rd coat of Soprema Alsan Flashing liquid membrane across the entire repair substrate surface (horizontal and vertical) at a rate of 1.5 gallons per 100 square feet.

F. Allow 3rd coat to fully cure. When 3rd coat is fully cured, apply supplemental coat of resin and embed ceramic roofing granules in wet resin in full coverage application.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Technical Representative: Roof system manufacturer shall provide inspections during installation of the roof system if requested by the Consultant.

B. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.

3.5 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Consultant and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction product or material. Use of bleach or muriatic acid is prohibited.

END OF SECTION

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Project diagrams, key plans, and general provisions of the Contract, including General and Supplementary Conditions and Division 01-48 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Formed roof-drainage sheet metal fabrications.
2. Formed low-slope roof sheet metal fabrications.
3. Formed roof penetration flashings.

1.3 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leak-proof, secure, and noncorrosive installation.

1.4 SUBMITTALS

A. Refer to specification Section 01 33 24, “Submittals”.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Employ skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.

B. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

C. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. FM Approvals Listing: Manufacture and install copings and roof edge flashings that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-90. Identify materials with name of fabricator and design approved by FM Approvals.

D. System and components shall comply with applicable state International Building Code (IBC) requirements including ANSI-SPRI/ES-1.

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

2.3 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.

b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.

2. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.

3. Fasteners for Zinc-Coated (Galvanized) Aluminum-Zinc Alloy-Coated Steel Sheet: Series 300 stainless.

4. Fasteners for attachment of wood nailers and blocking: Series 300 Stainless steel screws.

C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, non-sag, nontoxic, non-staining tape

1. 2-inch wide and 1/8-inch thick.

D. Elastomeric Sealant: Sonneborn NP-1

E. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

2.4 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.

1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.

2. Obtain field measurements for accurate fit before shop fabrication.

3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.

4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4-inch in 20-feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Use lapped expansion joint unless otherwise shown.

2. Form expansion joints of intermeshing hooked flanges, not less than 1-inch deep, filled with butyl sealant concealed within joints as indicated on the drawings.

D. Sealant Joints: Where movable, non expansion-type joints are required; form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.

E. Fabricate cleats and attachment devices from compatible metals and in accordance with ANSI-SPRI ES-1 requirements.

F. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use, rivet joints where necessary for strength.

G. Do not use graphite pencils to mark metal surfaces.

2.5 ROOF SHEET METAL FABRICATIONS

A. General: Any clarifications will be in accordance with National Roofing Contractors Association (NRCA) standards.

B. Roof System Edge Metal Cleats (Typical in All Locations):

1. Fabricate from the following materials:

a. Provide cleat in metal type and gauge required for specified ANSI/SPRI ES-1 wind uplift test requirements.

b. Ensure protection from corrosive action caused by contact of dissimilar metals.

C. Counter-flashing:

1. Fabricate from the following materials:

a. 20 ga. Factory Kynar Finish

b. Manufacturer standard color selected by Owner.

D. Expansion Joint Covers:

1. Fabricate from the following materials:

a. 20 ga. Factory Kynar Finish

b. Manufacturer standard color selected by Owner.

E. Drip Edge Fascia or Gravel Stop Roof Edge Metal Cladding:

1. Fabricate with continuous cleat on the exterior side from the following materials:

a. 20 ga. Factory Kynar Finish

b. Manufacturer standard color selected by Owner.

F. Metal Coping:

1. Fabricate with continuous cleat on exterior side and min. 1” folded standing seams from the following materials:

a. 20 ga. Factory Kynar Finish

b. Manufacturer standard color selected by Owner.

G. Flashing Receivers and Miscellaneous Sheet Metal:

1. Fabricate from the following materials:

a. 20 ga. Factory Kynar Finish

b. Manufacturer standard color selected by Owner.

H. Gutter and Downspout Leader:

1. Fabricate from the following materials:

a. 20 ga. Factory Kynar Finish

b. Manufacturer standard color selected by Owner.

I. Pitch pocket penetration flashings:

1. Fabricate from the following materials:

a. 20 ga. Factory Kynar Finish

b. Manufacturer standard color selected by Owner.

J. Vent stack-Penetration Flashing:

1. Fabricate from the following materials:

a. 4 pound sheet lead.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.

2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.

2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

3. Install continuous cleats spaced not more than 1-inch apart. Anchor each cleat with fasteners through the vertical leg face at 12-inches on center.

4. Install exposed sheet metal flashing and trim without excessive oil canning, and free of buckling and tool marks.

5. Torch cutting of sheet metal flashing and trim is not permitted.

6. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Provide underlayment/separation sheet to protect metal from corrosion/galvanic action due to miscellaneous rough carpentry products.

a. Mid-States “Quick-Stick” HT, W R Grace "Ice & Water Shield HT".

C. Bed flanges in approved sealant where required for waterproof performance.

D. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10-feet with no joints allowed within 24-inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges not less than 1-inch deep, filled with elastomeric sealant concealed within the joints.

E. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/2-inches for wood screws

1. Galvanized or Aluminum-Zinc Alloy-coated steel: Use stainless-steel fasteners

2. Stainless Steel: Use stainless steel fasteners.

F. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

G. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated. Embed hooked flanges of joint members not less than 1-inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).

2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

H. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2-inches; however, reduce pre-tinning where pre- tinned surface would show in completed Work.

1. Do not solder metallic-coated steel and aluminum sheet.
2. Do not pre-tin zinc-tin alloy-coated stainless steel
3. Do not use torches for soldering.
4. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
5. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.

3.3 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements, NRCA's "Roofing and Waterproofing Manual" and "SMACNA's Manual." Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Copings: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated.

1. Inter-lock exterior bottom edge of coping with continuous cleat anchored to substrate at 12-inch centers.
2. Anchor interior leg of coping with washers and screw fasteners at 16-inch centers.

C. Counter-flashing: Coordinate installation of counter-flashing with installation of base flashing. Insert counter-flashing in reglets or receivers and fit tightly to base flashing. Extend counter-flashing 4-inches over base flashing. Lap counter-flashing joints minimum of 4-inches. Secure in waterproof manner by means of snap-in installation and sealant or lead wedges and sealant; interlocking folded seam or blind rivets and sealant as indicated.

3.4 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited SMACNA sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Reglets: Saw-cut reglet joints a minimum of one 1-inch deep by one quarter-inch wide into masonry substrate/wall as indicated.

3.5 INSTALLATION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4-inch in 20-feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturers written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.

E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

EDIFICE CONSULTING, INC.
A Georgia Corporation

PROJECT DIAGRAMS

ALEXANDER II ROOF PROJECT
BIBB COUNTY BOARD OF EDUCATION

MACON, GA

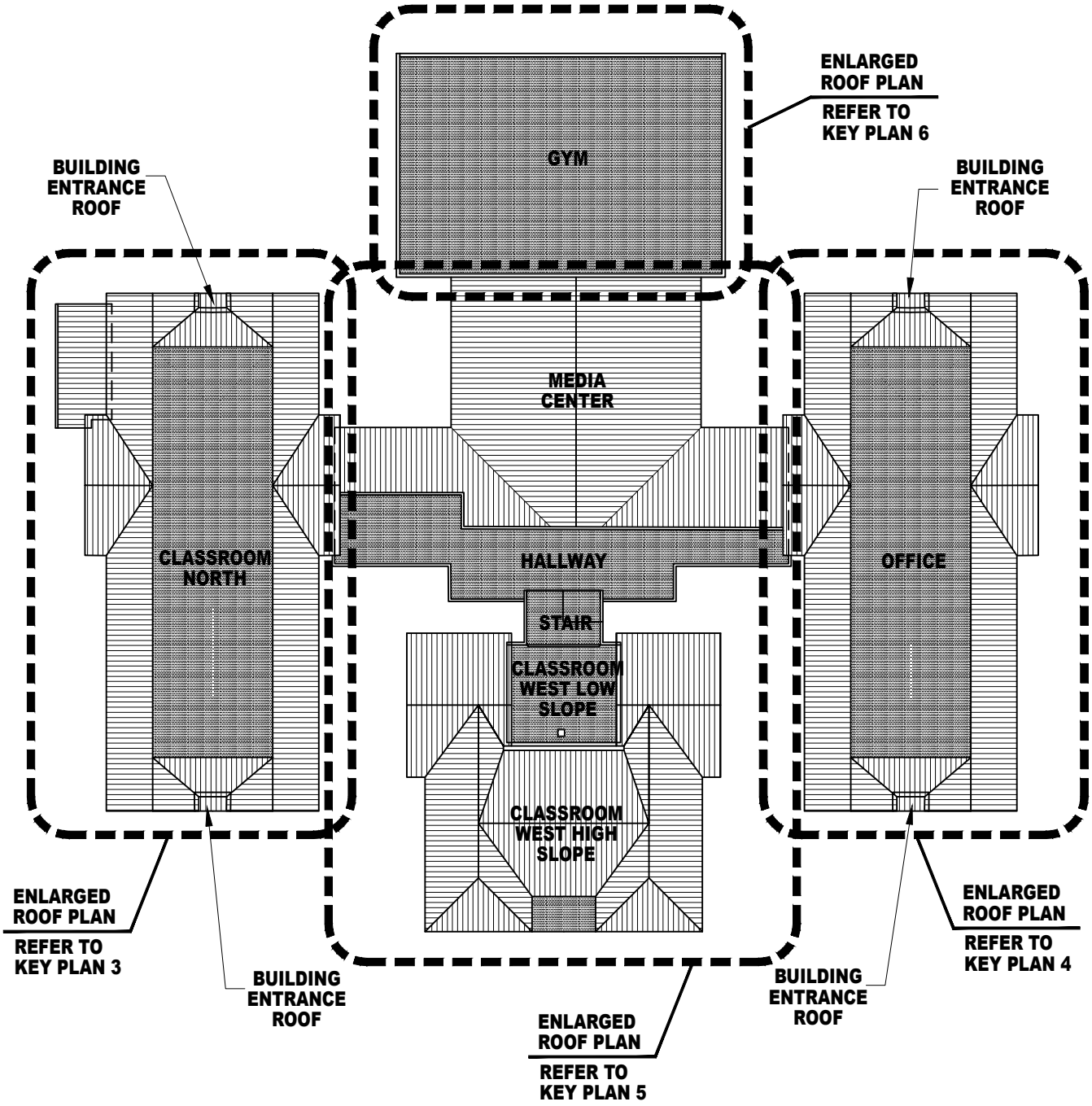
SEPTEMBER 12, 2016

ISSUED FOR:

☐ **PRELIMINARY (NOT FOR CONSTRUCTION)**

☑ **BIDDING AND CONSTRUCTION (100%)**

PROJECT NUMBER: 16BBEJ06RF081



GENERAL ROOF TYPE LEGEND

STEEP SLOPE ROOF AREAS

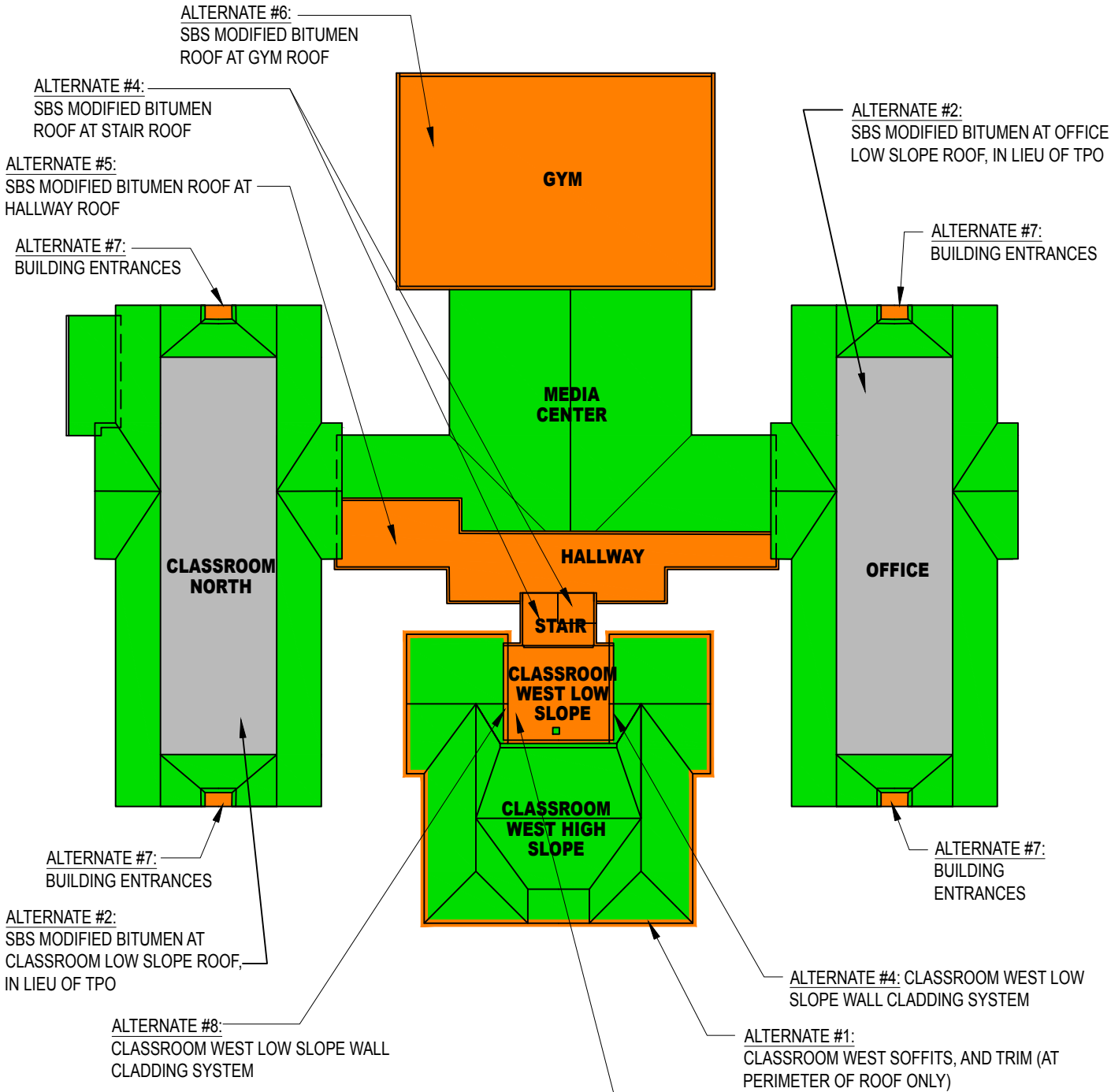
LOW SLOPE ROOF AREAS

KEY PLAN IS COLOR CODED, DO NOT USE BLACK AND WHITE REPRODUCTIONS

ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
KEY PLAN 1 **OVERALL ROOF PLAN**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-



SCOPE OF WORK LEGEND

WORK IN THIS AREA INCLUDED IN BASE BID

WORK IN THIS AREA BY ALTERNATE ONLY

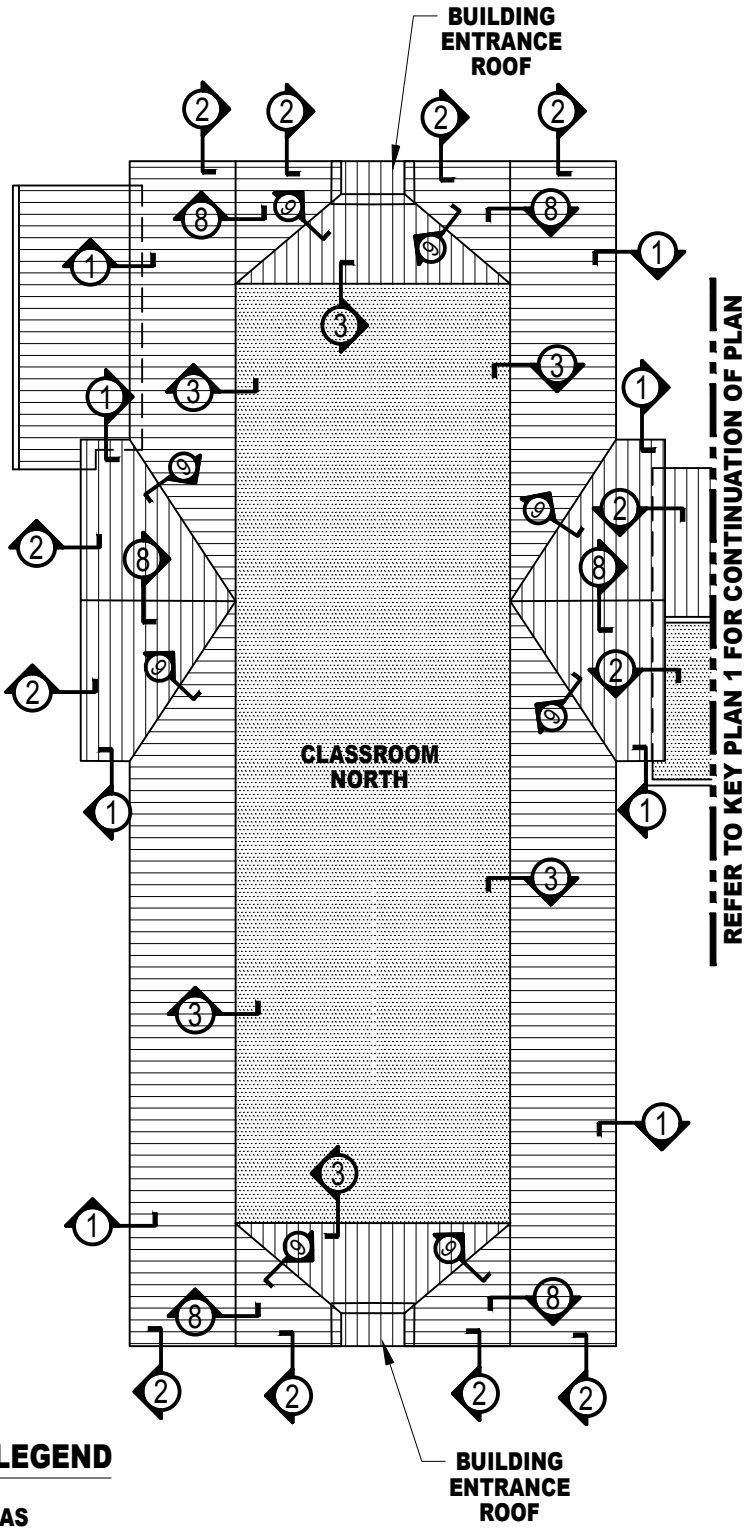
AREA INCLUDED IN BOTH BASE BID AND ALTERNATES

KEY PLAN IS COLOR CODED, DO NOT USE BLACK AND WHITE REPRODUCTIONS

ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
KEY PLAN 2 **OVERALL ROOF PLAN - BID SCOPE OF WORK**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-



GENERAL ROOF TYPE LEGEND

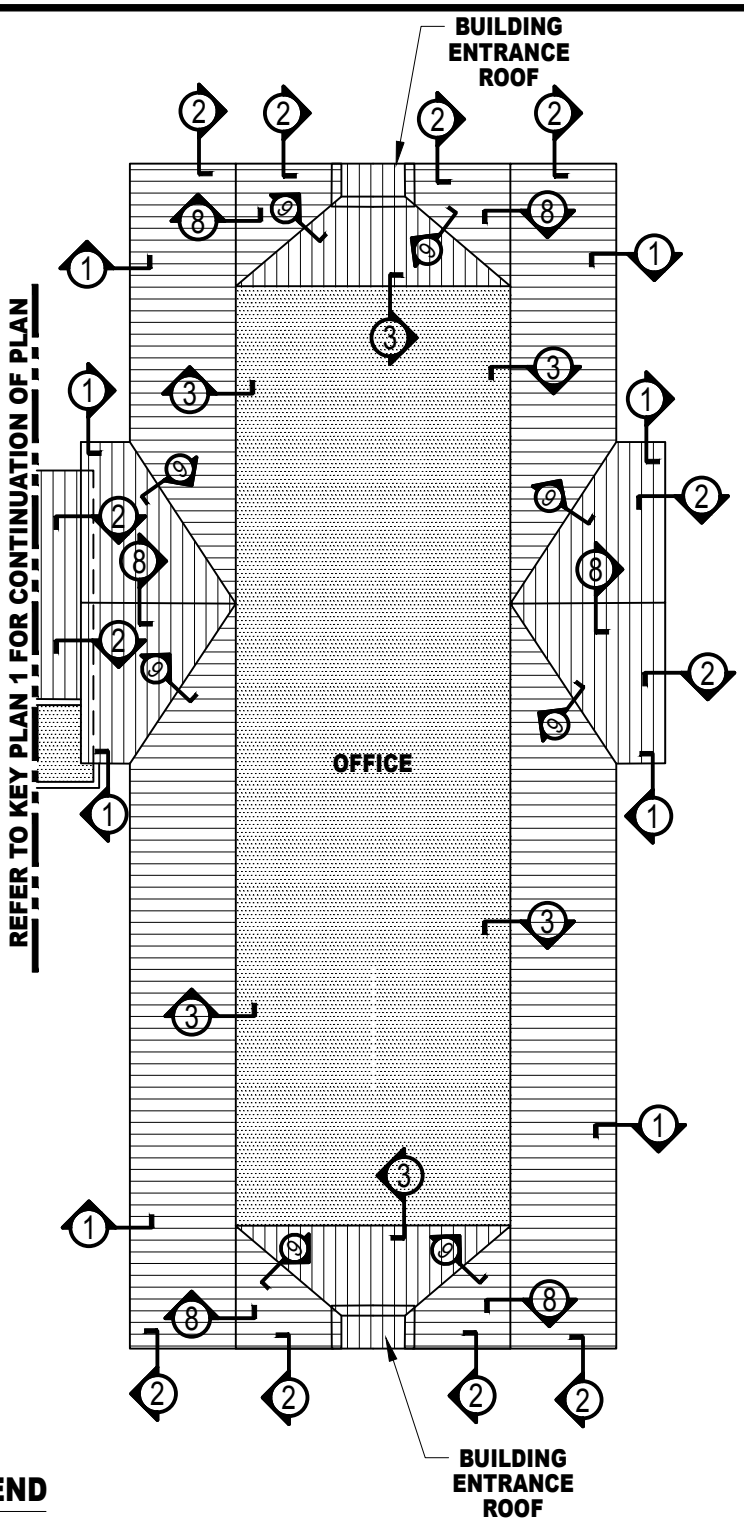
STEEP SLOPE ROOF AREAS

LOW SLOPE ROOF AREAS

ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
KEY PLAN 3 **ENLARGED ROOF PLAN**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-



GENERAL ROOF TYPE LEGEND

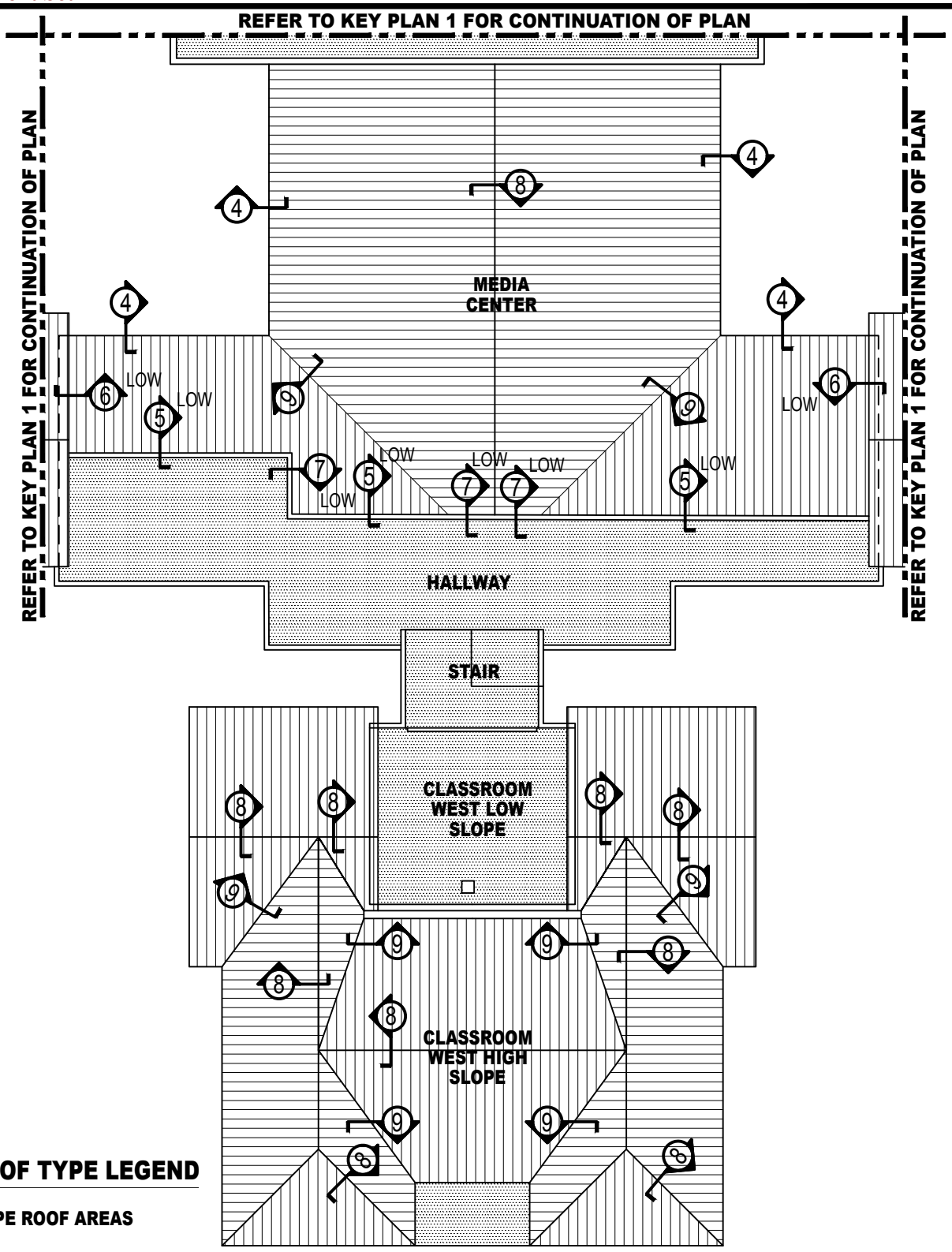
STEEP SLOPE ROOF AREAS

LOW SLOPE ROOF AREAS

ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
KEY PLAN 4 **ENLARGED ROOF PLAN**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-



GENERAL ROOF TYPE LEGEND

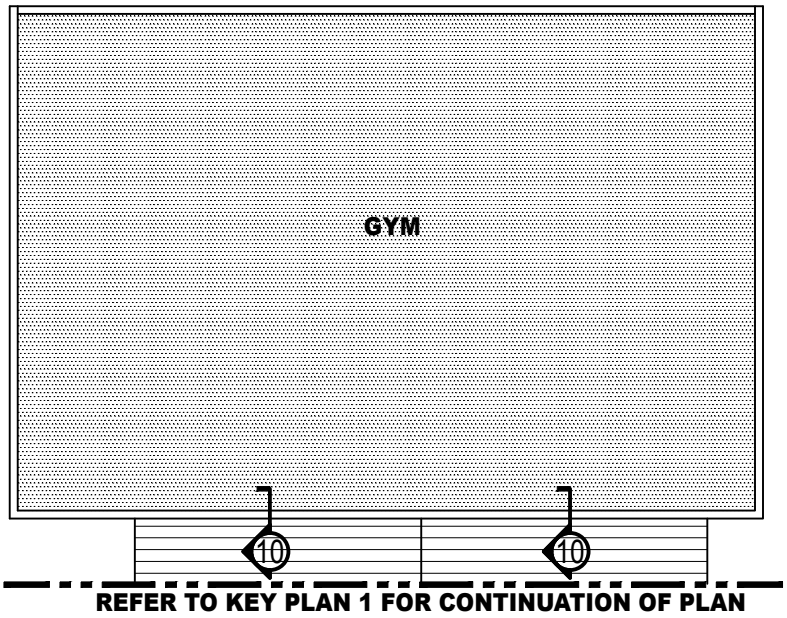
STEEP SLOPE ROOF AREAS

LOW SLOPE ROOF AREAS

ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
KEY PLAN 5 **ENLARGED ROOF PLAN**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-



GENERAL ROOF TYPE LEGEND

STEEP SLOPE ROOF AREAS

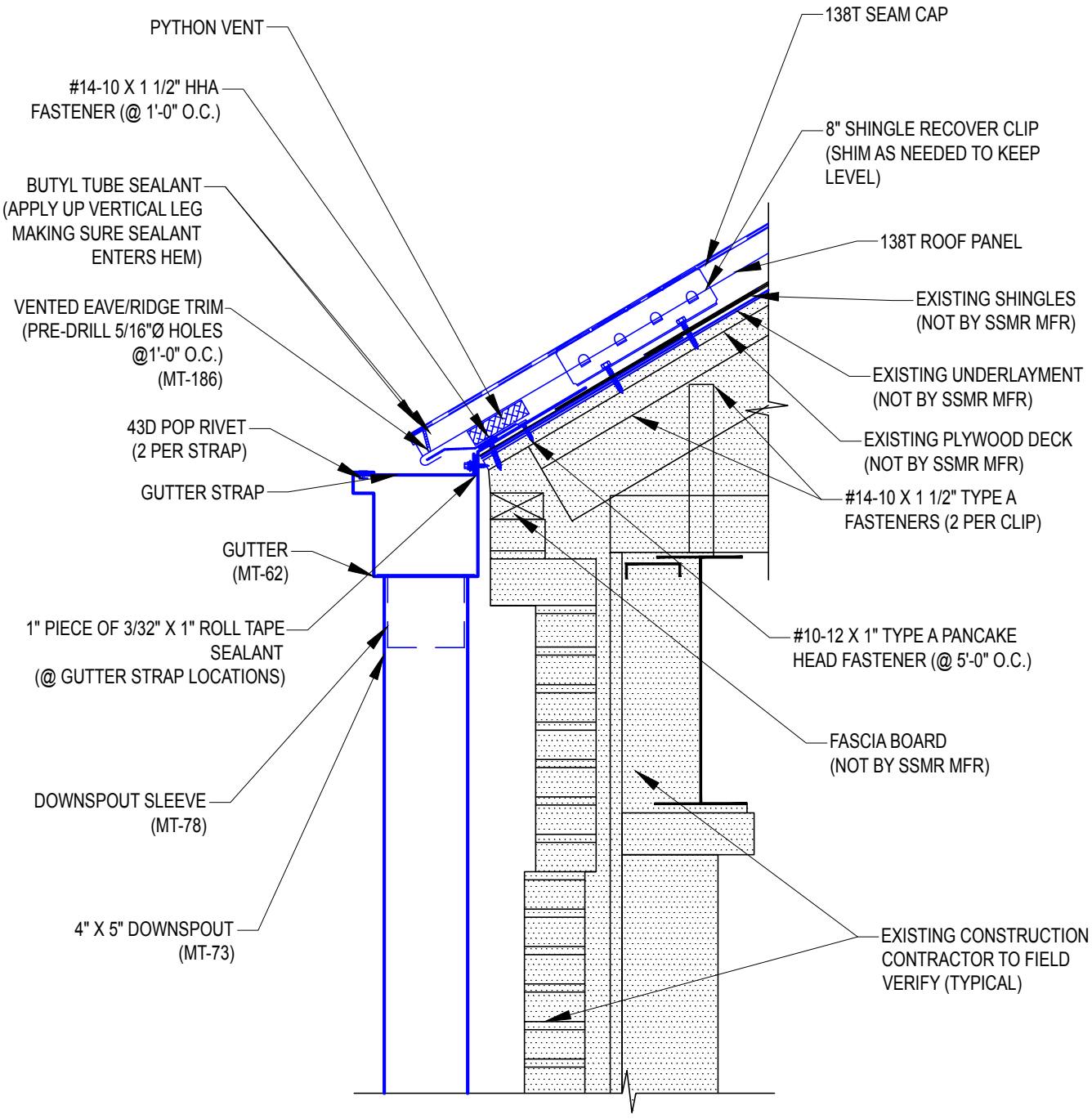
LOW SLOPE ROOF AREAS

ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
KEY PLAN 6 **ENLARGED ROOF PLAN**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-

NOTE: ANY SPACE SHOWN BETWEEN SOME MATERIALS IS FOR GRAPHIC CLARITY ONLY. ALL MATERIALS SHOULD BE TIGHTLY ABUTTED UNLESS OTHERWISE NOTED.

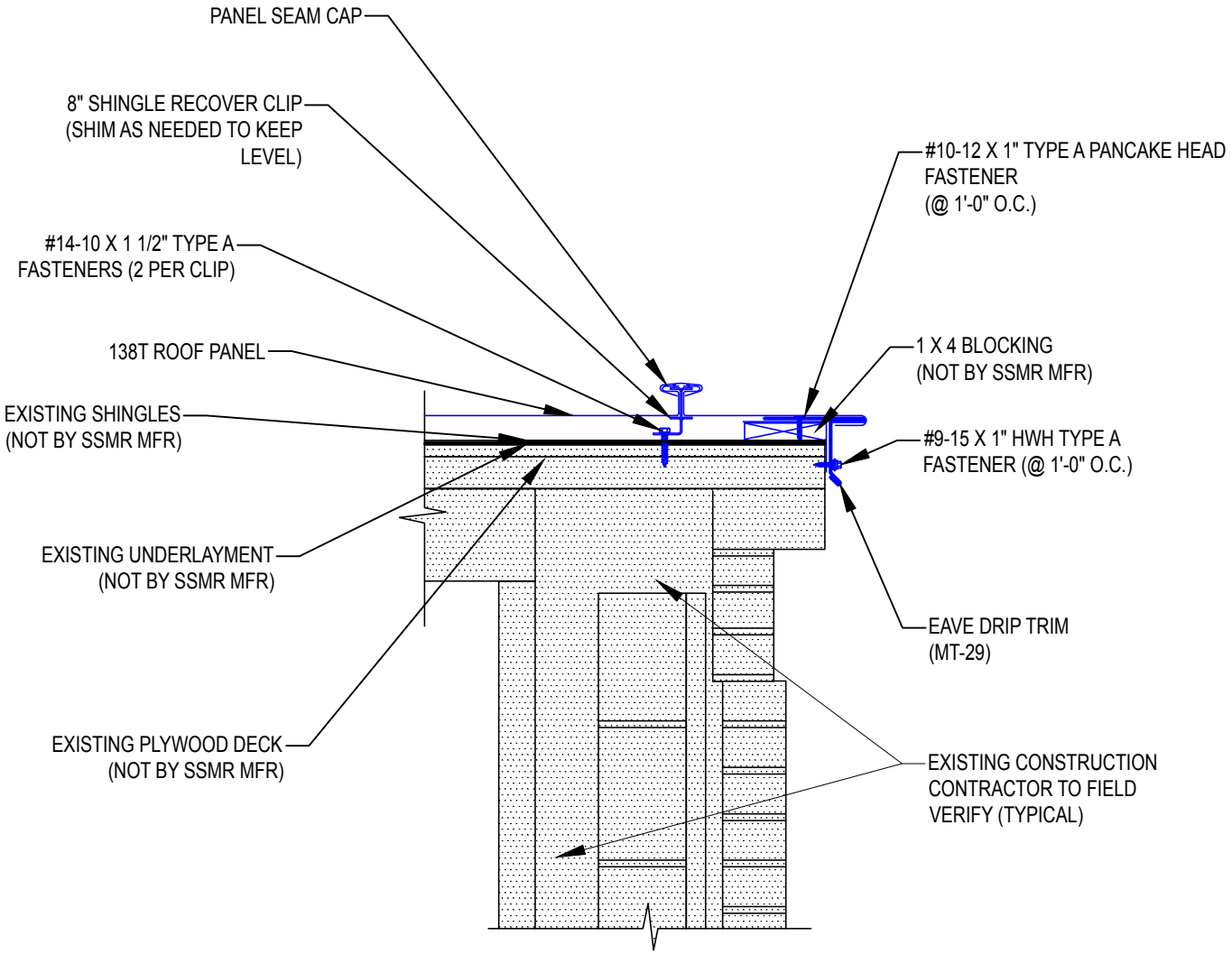


ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
DIAGRAM 1 **METAL ROOF EAVE WITH GUTTER**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-

NOTE: ANY SPACE SHOWN BETWEEN SOME MATERIALS IS FOR GRAPHIC CLARITY ONLY. ALL MATERIALS SHOULD BE TIGHTLY ABUTTED UNLESS OTHERWISE NOTED.

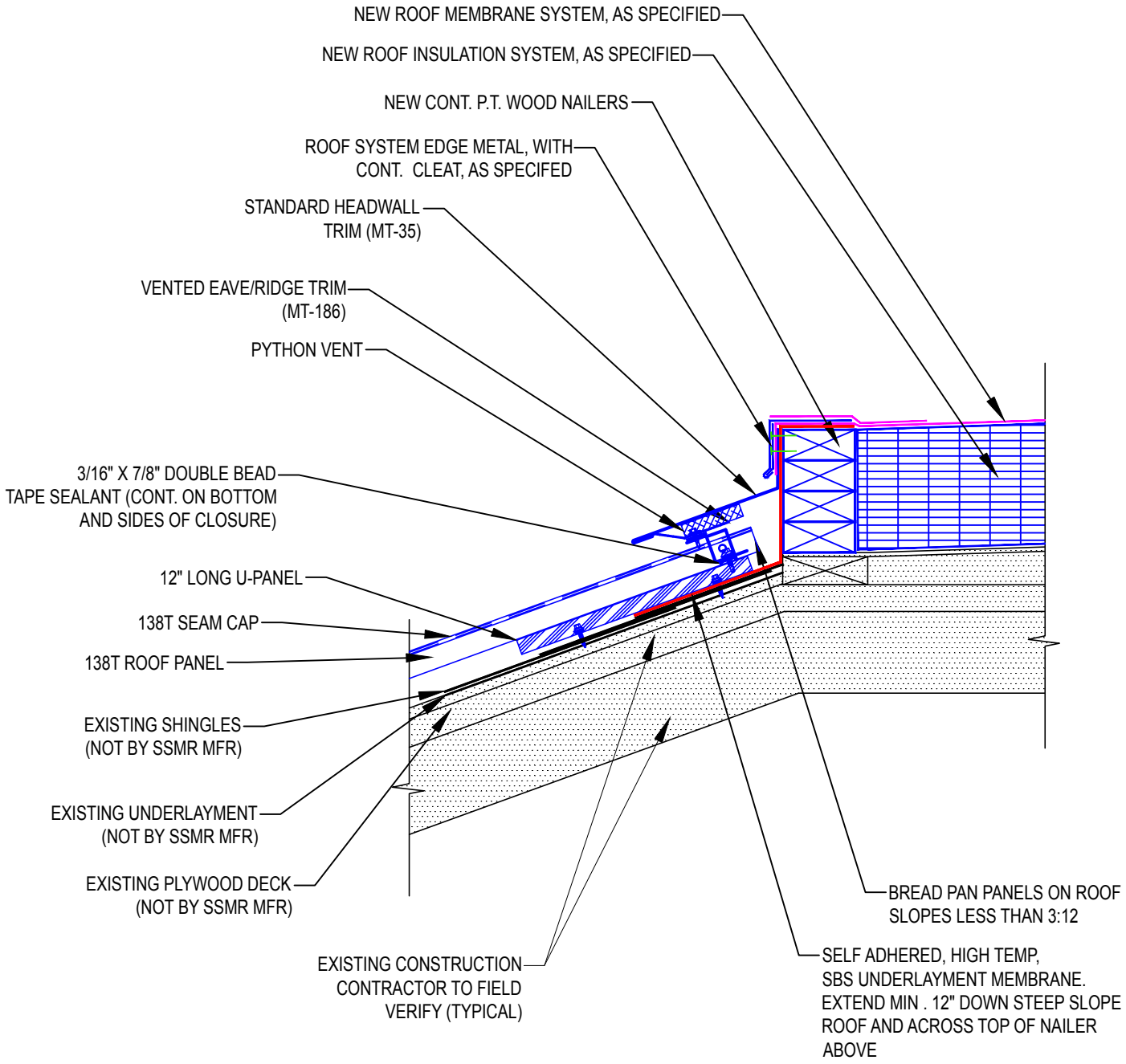


ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
DIAGRAM 2 **METAL ROOF RAKE**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-

NOTE: ANY SPACE SHOWN BETWEEN SOME MATERIALS IS FOR GRAPHIC CLARITY ONLY. ALL MATERIALS SHOULD BE TIGHTLY ABUTTED UNLESS OTHERWISE NOTED.

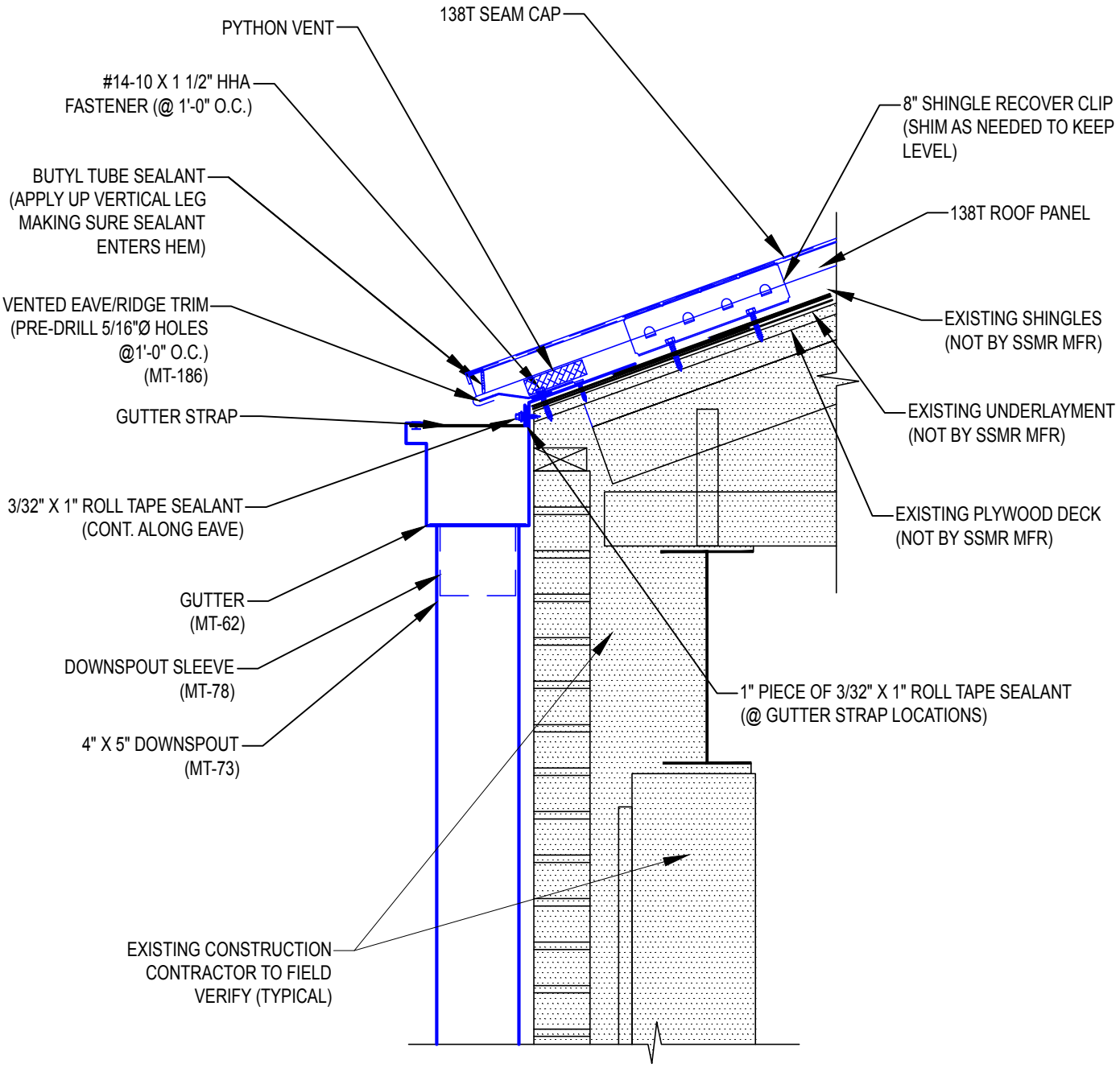


ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
DIAGRAM 3 **METAL ROOF TO LOW SLOPE ROOF TRANSITION**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-

NOTE: ANY SPACE SHOWN BETWEEN SOME MATERIALS IS FOR GRAPHIC CLARITY ONLY. ALL MATERIALS SHOULD BE TIGHTLY ABUTTED UNLESS OTHERWISE NOTED.

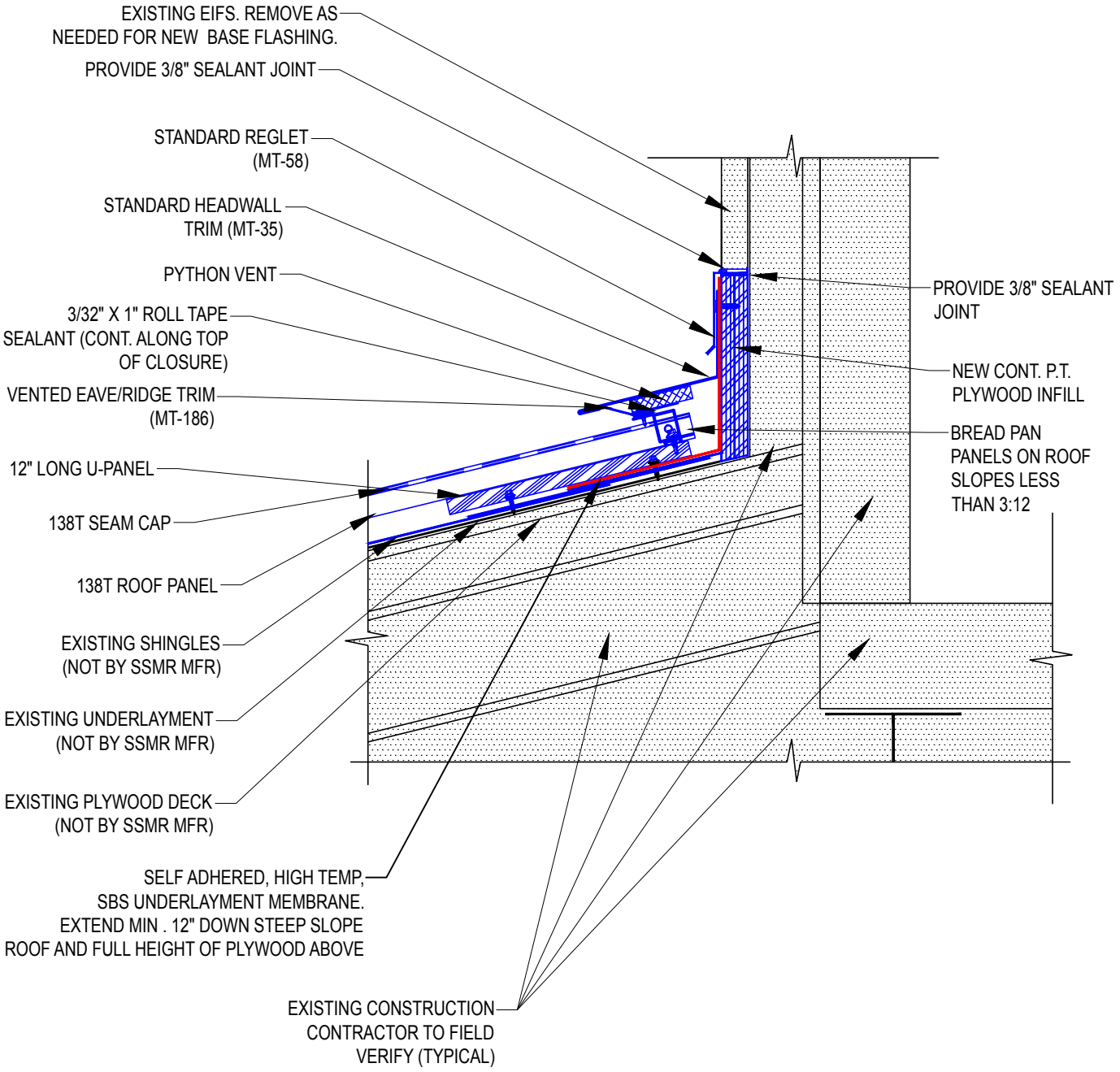


ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
DIAGRAM 4 **METAL ROOF EAVE WITH GUTTER**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-

NOTE: ANY SPACE SHOWN BETWEEN SOME MATERIALS IS FOR GRAPHIC CLARITY ONLY. ALL MATERIALS SHOULD BE TIGHTLY ABUTTED UNLESS OTHERWISE NOTED.

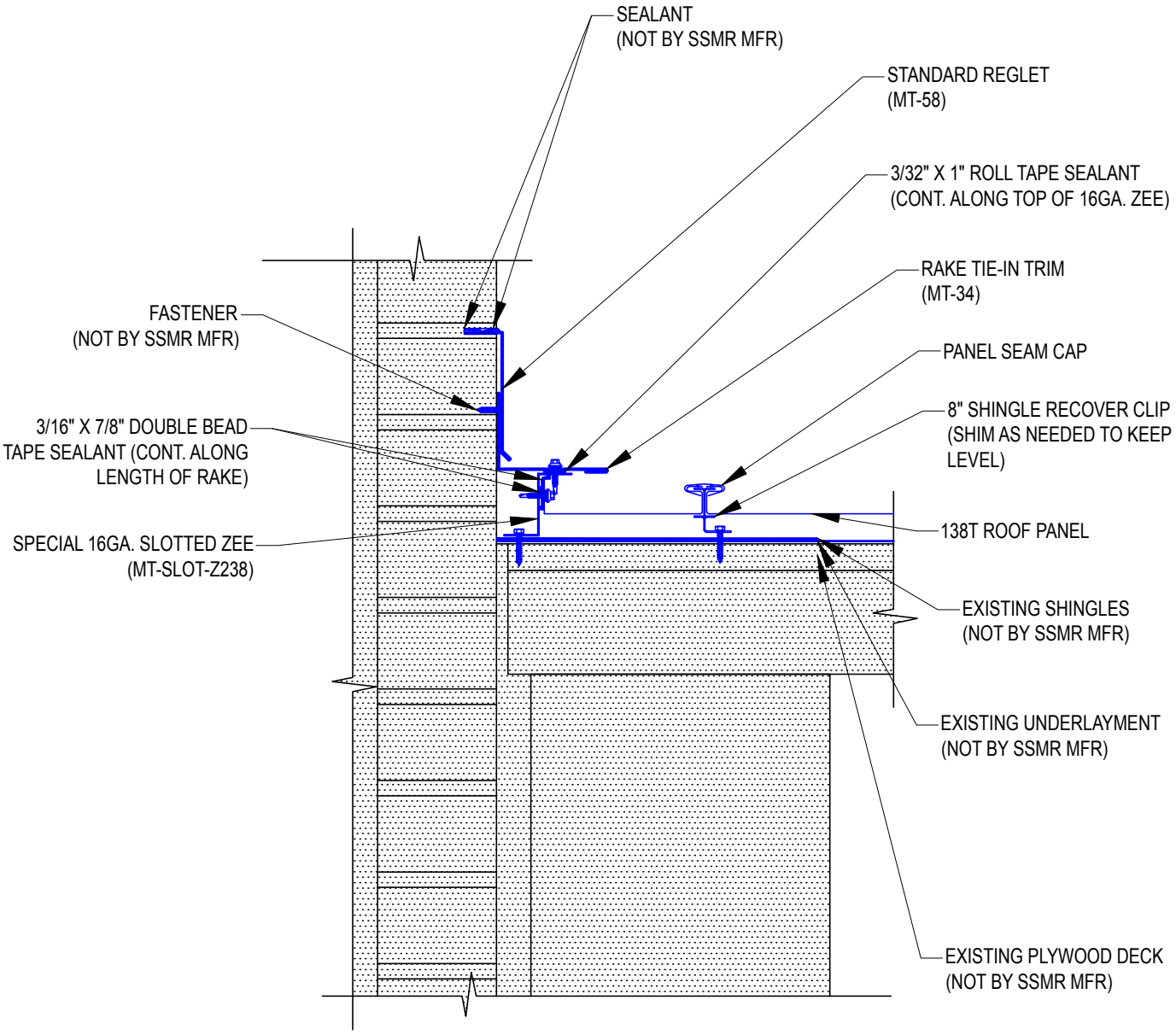


ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
DIAGRAM 5 **METAL ROOF TO WALL RIDGE FLASHING AT EIFS**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-

NOTE: ANY SPACE SHOWN BETWEEN SOME MATERIALS IS FOR GRAPHIC CLARITY ONLY. ALL MATERIALS SHOULD BE TIGHTLY ABUTTED UNLESS OTHERWISE NOTED.

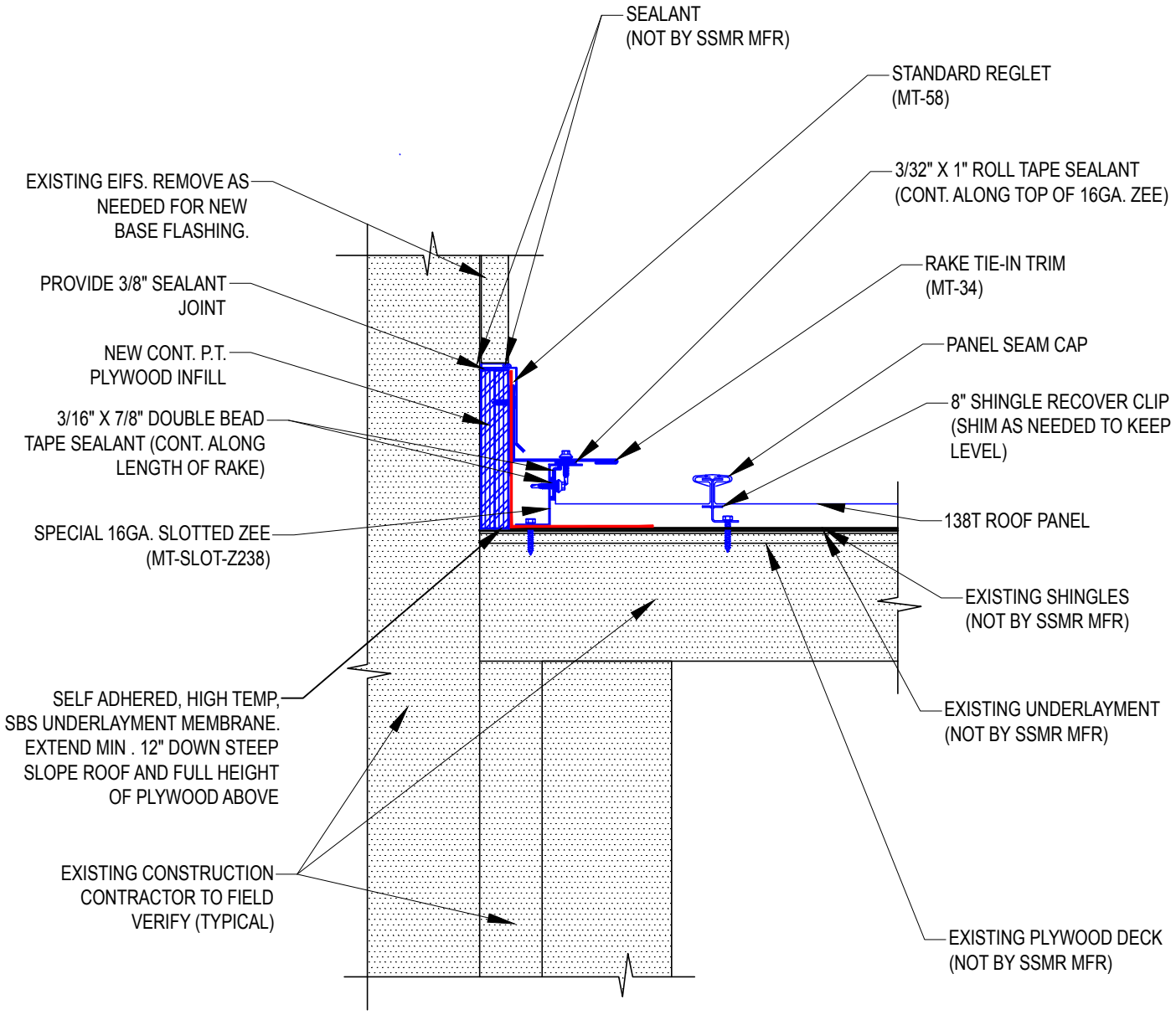


ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
DIAGRAM 6 **METAL ROOF TO WALL RAKE FLASHING AT BRICK**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-

NOTE: ANY SPACE SHOWN BETWEEN SOME MATERIALS IS FOR GRAPHIC CLARITY ONLY. ALL MATERIALS SHOULD BE TIGHTLY ABUTTED UNLESS OTHERWISE NOTED.

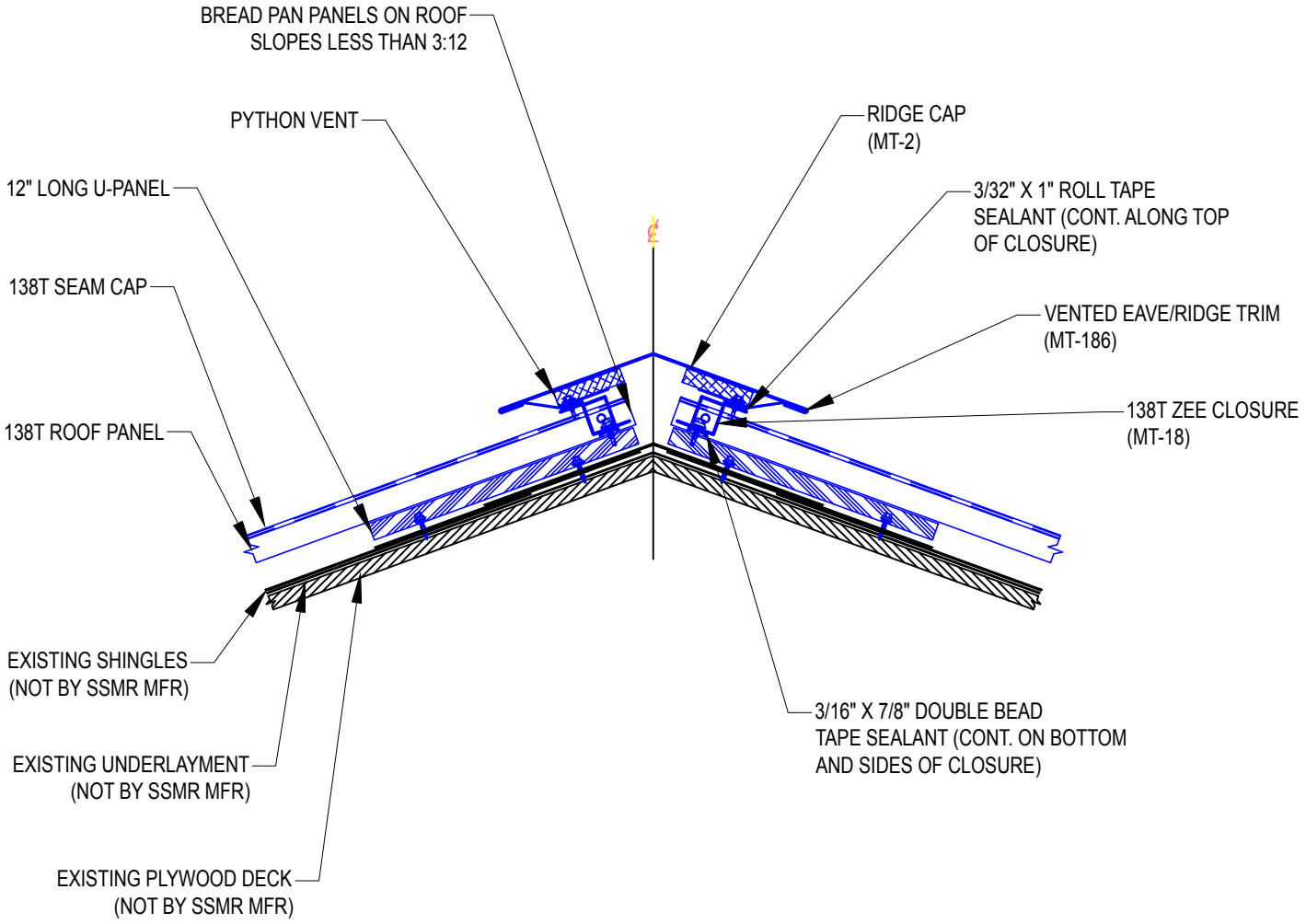


ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
DIAGRAM 7 **METAL ROOF TO WALL RAKE FLASHING AT EIFS**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-

NOTE: ANY SPACE SHOWN BETWEEN SOME MATERIALS IS FOR GRAPHIC CLARITY ONLY. ALL MATERIALS SHOULD BE TIGHTLY ABUTTED UNLESS OTHERWISE NOTED.

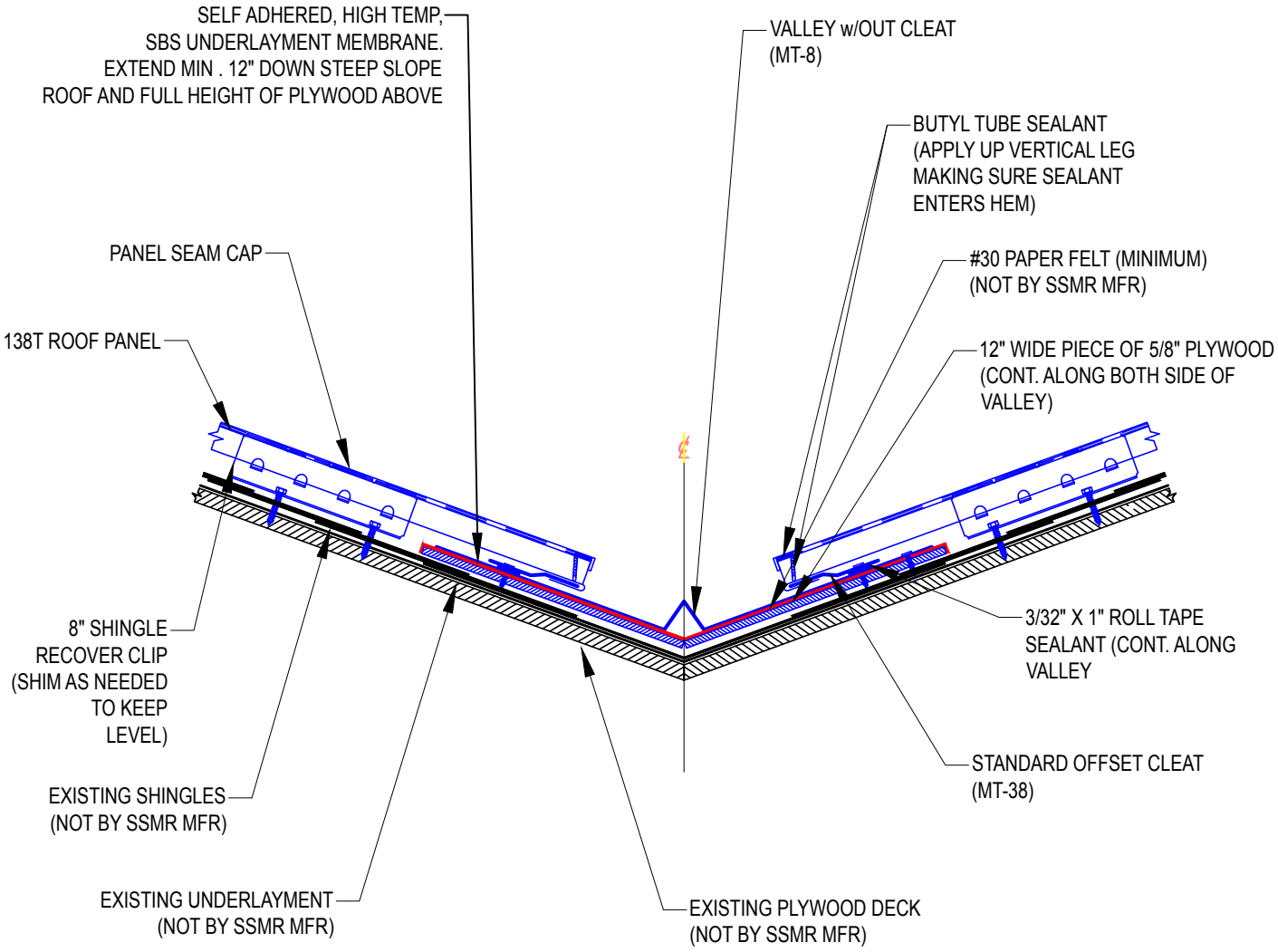


ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
DIAGRAM 8 **METAL ROOF RIDGE**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-

NOTE: ANY SPACE SHOWN BETWEEN SOME MATERIALS IS FOR GRAPHIC CLARITY ONLY. ALL MATERIALS SHOULD BE TIGHTLY ABUTTED UNLESS OTHERWISE NOTED.

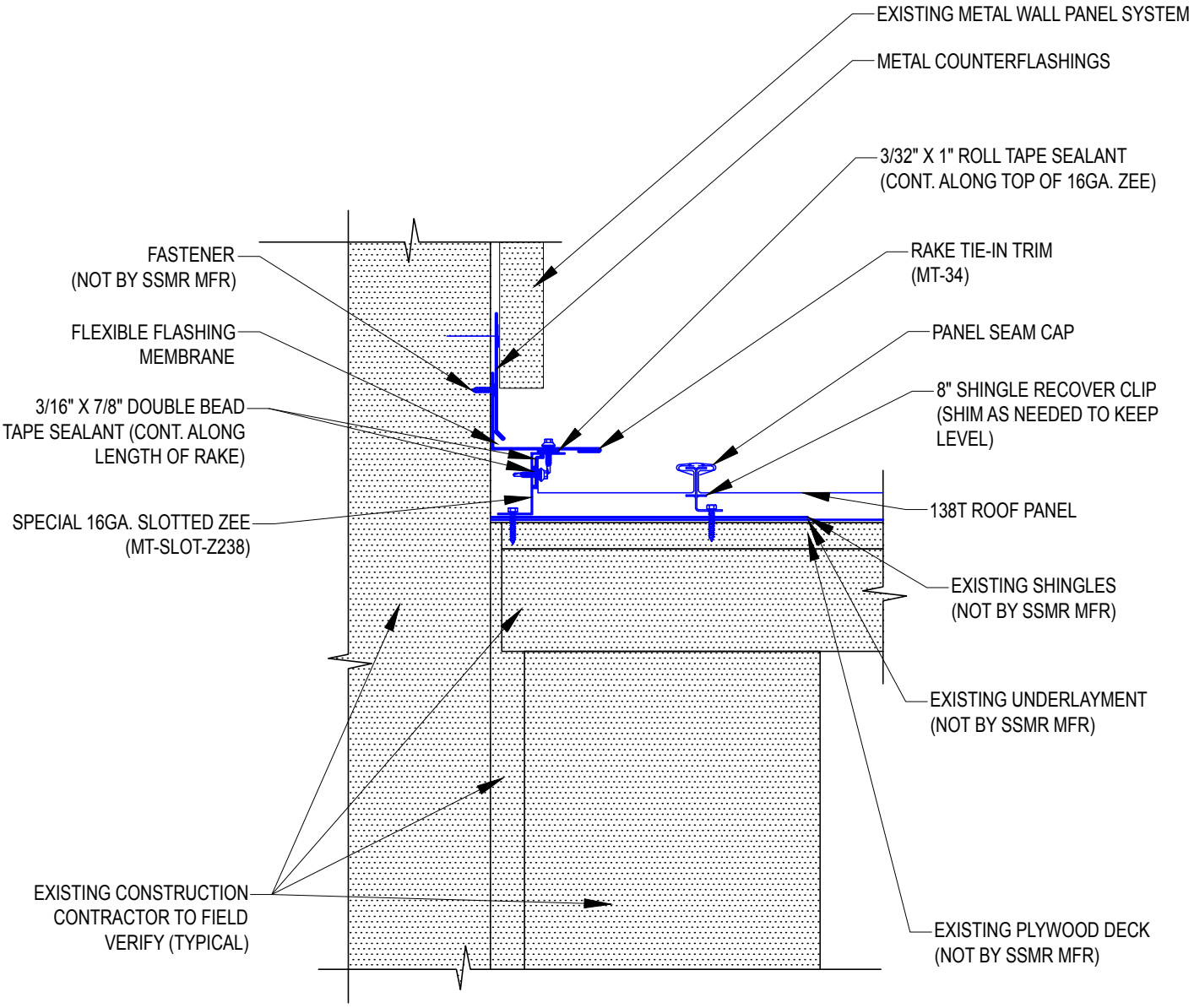


ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
DIAGRAM 9 **VALLEY FLASHING**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-

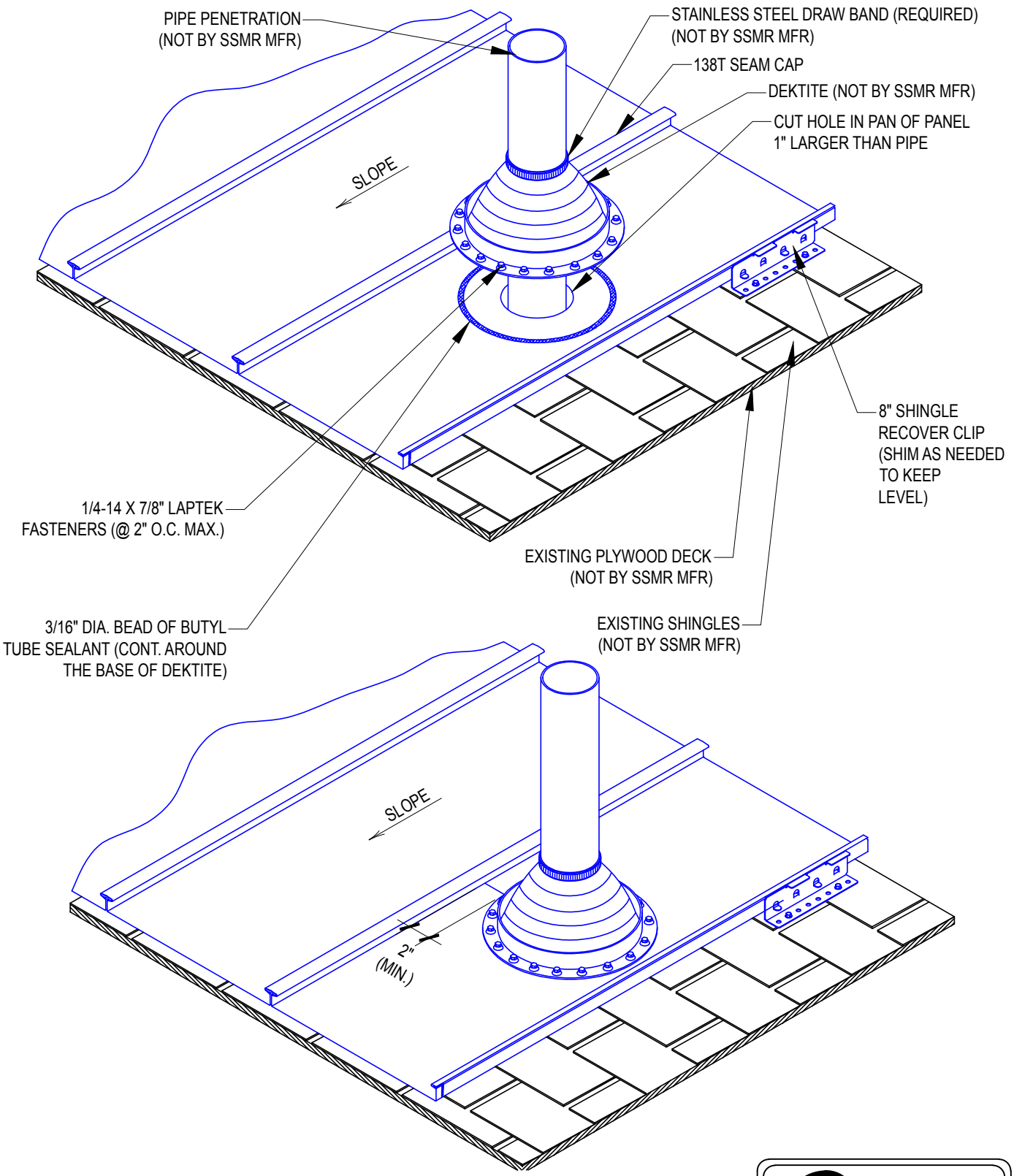
NOTE: ANY SPACE SHOWN BETWEEN SOME MATERIALS IS FOR GRAPHIC CLARITY ONLY. ALL MATERIALS SHOULD BE TIGHTLY ABUTTED UNLESS OTHERWISE NOTED.



ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
DIAGRAM 10 **METAL ROOF TO METAL WALL PANEL TRANSITION**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-



ALEXANDER II ROOF PROJECT **MACON, GEORGIA**	PROJECT #: 16BBEJ06RF081
	DATE: 12 SEP 2016
DIAGRAM A **TYPICAL METAL ROOF PIPE PENETRATION**	SCALE: NOT TO SCALE

EDIFICE CONSULTING, INC.
A Georgia Corporation

KEY PLANS	DIAGRAMS
-6-	-10-