

USC Aiken Sports Concession Bldg Roof Replacement

State Project Number: H29-9550

Location: University of South Carolina- Aiken

471 University Parkway

Aiken, SC 29801



Project Name: USC Aiken Sports Concession Building Roof Replacement
Project Number: H29-9550
Project Location: Aiken, SC

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Project Name: USC Aiken Sports Concession Building Roof Replacement

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TECHNICAL SPECIFICATIONS

<u>SECTION NO.</u>	<u>DESCRIPTION</u>
01010	– Summary of Work
01021	– Cash Allowances
01025	– Measurement and Payments
01300	– Submittals
01340	– Shop Drawings, Product Data and Samples
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06100	– Rough Carpentry
07550	– Modified Bitumen Membrane Roofing
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07591	– Reroofing Removals & Preparation
07620	– Flashing, Sheet Metal, and Miscellaneous Metals

ENCLOSURES:

Foreman's Statement
Contractor's Two-Year Warranty
Asbestos Free Warranty

SE-311

INVITATION FOR MINOR CONSTRUCTION QUOTES

PROJECT NAME: USC Aiken Sports Concession Building Roof ReplacementPROJECT NUMBER: H29-9550PROJECT LOCATION: USC Aiken, Aiken SCBID SECURITY REQUIRED? Yes ☐ No ☒PERFORMANCE BOND REQUIRED? Yes ☐ No ☒PAYMENT BOND REQUIRED? Yes ☐ No ☒CONSTRUCTION COST RANGE: \$ 30,000 - 40,000

DESCRIPTION OF PROJECT: Re-roofing the Sports Concession Building located at the USC Aiken campus. Work includes removal and disposal of the existing aggregate surfaced Built-Up Roof system and replacing it with a Modified Asphalt Built-Up Roofing system. See drawings and technical specifications for detailed information. This is a 45-calendar day project from the date of Notice to Proceed. Minority and small business participation is encouraged.

BIDDING DOCUMENTS/PLANS MAY BE OBTAINED FROM: http://purchasing.sc.edu (see Facilities Construction Solicitations & Awards)

PLAN DEPOSIT AMOUNT: \$ \$0.00

IS DEPOSIT REFUNDABLE

Yes ☐No ☐N/A ☒

Bidders must obtain Bidding Documents/Plans from the above listed source(s) to be listed as an official plan holder. Only those Bidding Documents/Plans obtained from the above listed source(s) are official. Bidders rely on copies of Bidding Documents/Plans obtained from any other source at their own risk.

IN ADDITION TO THE ABOVE OFFICIAL SOURCE(S), BIDDING DOCUMENTS/PLANS ARE ALSO AVAILABLE AT:

Bidders are responsible for obtaining all updates to bidding documents from the USC Purchasing website. (http://purchasing.sc.edu)

All questions & correspondence concerning this Invitation shall be addressed to the A-E.

A-E NAME: Shepard & Associates, LLCA-E CONTACT: Richard Parrish, RRC, RROA-E ADDRESS: Street/PO Box: 3547 Dreher Shoals Road, Suite 6City: IrmoState: SCZIP: 29063-EMAIL: shepard-insp1@sc.rr.comTELEPHONE: (803) 407-8284FAX: (803) 407-8206AGENCY: University of South CarolinaAGENCY PROJECT COORDINATOR: Aimee RishADDRESS: Street/PO Box: 743 Greene StreetCity: ColumbiaState: SCZIP: 29208-EMAIL: arish@fmc.sc.eduTELEPHONE: (803) 777-2261FAX: (803) 777-7334PRE-QUOTE CONFERENCE: Yes ☒ No ☐MANDATORY ATTENDANCE: Yes ☐ No ☒PRE-QUOTE DATE: 12/2/2015TIME: 10:00 AMPLACE: Supply & Maintenance Shop, Bldg 908, 471University Parkway, Aiken, SCQUOTE CLOSING DATE: 12/9/2015TIME: 2:00 PMPLACE: 743 Greene St, Conf Rm 57, Columbia, SC 29208

QUOTE DELIVERY ADDRESSES:

HAND-DELIVERY:

Attn: Aimee Rish(BID ENCLOSED)743 Greene StreetColumbia, SC 29208

MAIL SERVICE:

Attn: Aimee Rish (BID ENCLOSED)743 Greene StreetColumbia, SC 29208

APPROVED BY: _____

(Agency Project Coordinator)

DATE: _____

SE-331

QUOTE FORM*Quotes shall be submitted only on SE-331.***QUOTE SUBMITTED BY:** _____*(Offeror's Name)***QUOTE SUBMITTED TO:** University of South Carolina*(Owner's Name)***FOR: PROJECT NAME:** USC Aiken Sports Concession Building Roof Replacement**PROJECT NUMBER:** H29-9550**OFFER**

1. In response to the Invitation for Minor Construction Quotes, and in compliance with the Instructions to Bidders for the above-named Project, the undersigned **OFFEROR** proposes and agrees, if this Quote is accepted, to enter into a Contract with the Owner in the form included in the Solicitation Documents, and to perform all Work as specified or indicated in the Solicitation Documents, for the prices and within the time frames indicated in the Solicitation and in accordance with the other terms and conditions stated.
2. Pursuant to Section 11-32-3030(1) of the SC Code of Laws, as amended, **OFFEROR** has submitted Bid Security as follows in the amount and form required by the Solicitation Documents:

☐ **Bid Bond with Power of Attorney**☐ **Electronic Bid Bond**☐ **Cashier's Check***(Bidder check one)*

3. **OFFEROR** acknowledges the receipt of the following Addenda to the Solicitation documents and has incorporated the effects of said Addenda into its Quote *(Bidder, check only boxes that apply.)*:

ADDENDA:☐ **#1**☐ **#2**☐ **#3**☐ **#4**☐ **#5**

4. **OFFEROR** agrees that this Quote, including all bid alternates, if any, may not be revoked or withdrawn after the opening of quotes, and shall remain open for acceptance for a period of 60 Days following the Quote Date, or for such longer period of time that **OFFEROR** may agree to in writing upon request of the Owner.
5. **OFFEROR** agrees that from the compensation to be paid, the Owner shall retain as Liquidated Damages the amount of \$ 150.00 for each calendar day the actual construction time required to achieve Substantial Completion exceeds the specified or adjusted Contract Time for Substantial Completion, as provided in the Contract Documents.
6. **OFFEROR** herewith submits its offer to provide all labor, materials, equipment, tools of trades and labor, accessories, appliances, warranties and guarantees, and to pay all royalties, fee, permits, licenses and applicable taxes necessary to complete the following items of construction work:

6.1 BASE QUOTE \$ _____*(enter BASE QUOTE in figures only)*

6.1.1 ALTERNATE NO. 1 \$ _____ **to be ADDED / DEDUCTED from BASE QUOTE.**
(circle one)

6.1.2 ALTERNATE NO. 2 \$ _____ **to be ADDED / DEDUCTED from BASE QUOTE.**
(circle one)

SC Contractor's License Number: _____**Classification(s) & Limits:** _____**Address:** _____**Telephone/Fax** _____**E-mail** _____**This Quote is hereby submitted on behalf of the Offeror named above.****BY:** _____
*(Signature of Offeror's Representative)*_____
*(Print or Type Name of Offeror's Representative)***TITLE:** _____

SE-380

CHANGE ORDER NO.: _____

CHANGE ORDER TO CONSTRUCTION CONTRACT**AGENCY:** University of South Carolina**PROJECT NAME:** USC Aiken Sports Concession Building Roof Replacement**PROJECT NUMBER:** H29-9550**CONTRACTOR:** _____ **CONTRACT DATE:** _____**This Contract is changed as follows:** *(Insert description of change in space provided below)***ADJUSTMENTS IN THE CONTRACT SUM:**

1. Original Contract Sum:		\$
2. Change in Contract Sum by previously approved Change Orders:	\$	
3. Contract Sum prior to this Change Order		\$ 0.00
4. Amount of this Change Order:	\$	
5. New Contract Sum, including this Change Order:		\$ 0.00

ADJUSTMENTS IN THE CONTRACT TIME:

1. Original Substantial Completion Date:		
2. Sum of previously approved increases and decreases in Days:		Days
3. Change in Days for this Change Order		Days
4. New Substantial Completion Date:		

CONTRACTOR ACCEPTANCE:**BY:** _____ **Date:** _____
(Signature of Representative)**Print Name:** _____**ARCHITECT RECOMMENDATION FOR ACCEPTANCE:****BY:** _____ **Date:** _____
(Signature of Representative)**Print Name:** _____**AGENCY ACCEPTANCE AND CERTIFICATION:****BY:** _____ **Date:** _____
(Signature of Representative)**Print Name:** _____

- ☐ Change is within Agency Construction Procurement Certification of: \$ _____
- ☐ Change is not within Agency Construction Procurement Certification of: \$ _____

Office of the State Engineer Authorization for change exceeding Agency Construction Procurement Certification:**AUTHORIZED BY:** _____ **DATE:** _____
(OSE Project Manager)

USC SUPPLEMENTAL GENERAL CONDITIONS FOR CONSTRUCTION PROJECTS

WORK AREAS

1. The Contractor shall maintain the job site in a safe manner at all times. This includes (but is not limited to) the provision and/or maintenance of lighting, fencing, barricades around obstructions, and safety and directional signage.
2. Contractor's employees shall take all reasonable means not to interrupt the flow of student traffic in building corridors, lobbies, stairs and exterior walks. All necessary and reasonable safety precautions shall be taken to prevent injury to building occupants while transporting materials and equipment through the work area. Providing safe, accessible, plywood-shielded pedestrian ways around construction may be required if a suitable alternative route is not available.
3. At the beginning of the project, the USC Project Manager will establish the Contractor's lay-down area. This area will also be used for the Contractor's work vehicles. The lay-down area will be clearly identified to the contractor by the Project Manager, with a sketch or drawing provided to USC Parking Services. In turn, Parking Services will mark off this area with a sign containing the project name, Project Manager's name, Contractor name and contact number, and end date. Where this area is subject to foot traffic, protective barriers will be provided as specified by the Project Manager. The area will be maintained in a neat and orderly fashion.
4. Work vehicles parked in the lay down area (or designated parking areas) will be clearly marked and display a USC-furnished placard for identification. No personal vehicles will be allowed in this area, or in any areas surrounding the construction site. Personal vehicles must be parked in the perimeter parking lots or garages. Temporary parking permits can be obtained at the Contractor's expense at the USC Parking Office located in the Pendleton Street parking garage. Refer to the CAMPUS VEHICLE EXPECTATIONS (below) for additional information.
5. Contractor is responsible for removal of all debris from the site, and is required to provide the necessary dumpsters which will be emptied on a regular basis. Construction waste must not be placed in University dumpsters. The construction site must be thoroughly cleaned with all trash picked up and properly disposed of on a daily basis and the site must be left in a safe and sanitary condition each day. The University will inspect job sites regularly and will fine any contractor found to be in violation of this requirement an amount of up to \$1,000 per violation.
6. The Contractor shall be responsible for erosion and sediment control measures where ground disturbances are made.

PROJECT FENCING

7. All construction projects with exterior impacts shall have construction fencing at the perimeter. Fencing shall be 6' chain link with black or green privacy fabric (80-90% blockage). For fence panels with footed stands, sandbag weights shall be placed on the inside of the fence. Ripped sandbags shall be replaced immediately.
8. For projects with long fencing runs and/or high profile locations, decorative USC banners shall be used on top of privacy fabric; banners should be used at a ratio of one banner for every five fence panels. USC Project Manager will make arrangements for banner delivery for Contractor to hang.
9. The use of plastic safety fencing is discouraged and shall only be used on a temporary basis (less than four weeks) where absolutely necessary. Safety fencing shall be a neon yellow-green, high-

visibility fencing equal to 'Kryptonight' by Tenax. Safety fencing shall be erected and maintained in a neat and orderly fashion throughout the project.

10. Vehicles and all other equipment shall be contained within a fenced area if they are on site for more than 3 consecutive calendar days.

BEHAVIOR

11. Fraternization between Contractor's employees and USC students, faculty or staff is strictly prohibited.
12. USC will not tolerate rude, abusive or degrading behavior on the job site. Heckling and cat-calling directed toward students, faculty or staff or any other person on USC property is strictly prohibited. Any contractor whose employees violate this requirement will be assessed a fine of up to \$500 per violation.
13. Contractor's employees must adhere to the University's policy of maintaining a drug-free and tobacco-free campus.

HAZARDOUS MATERIALS & SAFETY COMPLIANCE

14. A USC Permit to Work must be signed prior to any work being performed by the general contractor or sub-contractor(s).
15. The contractor will comply with all regulations set forth by OSHA and SCDHEC. Contractor must also adhere to USC's internal policies and procedures (available by request). Upon request, the contractor will submit all Safety Programs and Certificates of Insurance to the University for review.
16. Contractor must notify the University immediately upon the discovery of suspect material which may contain asbestos or other such hazardous materials. These materials must not be disturbed until approved by the USC Project Manager.
17. In the event of an OSHA inspection, the Contractor shall immediately call the Facilities Call Center, 803-777-4217, and report that an OSHA inspector is on site. An employee from USC's Safety Unit will arrive to assist in the inspection.

LANDSCAPE & TREE PROTECTION

18. In conjunction with the construction documents, the USC Arborist shall direct methods to minimize damage to campus trees. Tree protection fencing is required to protect existing trees and other landscape features to be affected by a construction project. The location of this fence will be evaluated for each situation with the USC Arborist, Landscape Architect and Project Manager. Tree protection fencing may be required along access routes as well as within the project area itself. Fence locations may have to be reset throughout the course of the project.
19. The tree protection fence shall be 6' high chain link fence with 80-90% privacy screening unless otherwise approved by USC Arborist and/or Landscape Architect. If the tree protection fence is completely within a screened jobsite fence perimeter, privacy fabric is not required. In-ground fence posts are preferred in most situations for greater protection. If utility or pavement conflicts are present, fence panels in footed stands are acceptable. See attached detail for typical tree protection fencing.
20. No entry, vehicle parking, or materials storage will be allowed inside the tree protection zone. A 4"

layer of mulch shall be placed over the tree protection area to maintain moisture in the root zone.

21. Where it is necessary to cross walks, tree root zones (i.e., under canopy) or lawns the following protective measures shall be taken:
 - a. For single loads up to 9,000 lbs., a 3/4" minimum plywood base shall be placed over 4" of mulch.
 - b. For single loads over 9,000 lbs., two layers of 3/4" plywood shall be placed over 4" of mulch.
 - c. Plywood sheets shall be replaced as they deteriorate or delaminate with exposure.
 - d. For projects requiring heavier loads, a construction entry road consisting of 10' X 16' oak logging mats on 12" coarse, chipped, hardwood base. Mulch and logging mats shall be supplemented throughout the project to keep matting structurally functional.
22. Damage to any trees during construction shall be assessed by the USC Arborist, who will stipulate what action will be taken for remediation of damage. The cost of any and all remediation will be assumed by the contractor at no additional cost to the project. Compensation for damages may be assessed up to \$500 per caliper inch of tree (up to 8") and \$500 per inch of diameter at breast height (for trees over 8").
23. Damage to trunks and limbs, as well as disturbance of the root zone under the dripline of tree, including compaction of soil, cutting or filling, or storage of materials, shall qualify as damage and subject to remediation.
24. Any damage to existing pavements or landscaping (including lawn areas and irrigation) will be remediated before final payment is made.

TEMPORARY FACILITIES

25. Contractor will be responsible for providing its own temporary toilet facilities, unless prior arrangements are made with the USC Project Manager.
26. Use of USC communications facilities (telephones, computers, etc.) by the Contractor is prohibited, unless prior arrangements are made with the USC Project Manager.

CAMPUS KEYS

27. Contractor must sign a Contractor Key Receipt/Return form before any keys are issued. Keys must be returned immediately upon the completion of the work. The Contractor will bear the cost of any re-keying necessary due to the loss of or failure to return keys.

WELDING

28. A welding (hot work) permit must be issued by the University Fire Marshall before any welding can begin inside a building. The USC Project Manager will coordinate.

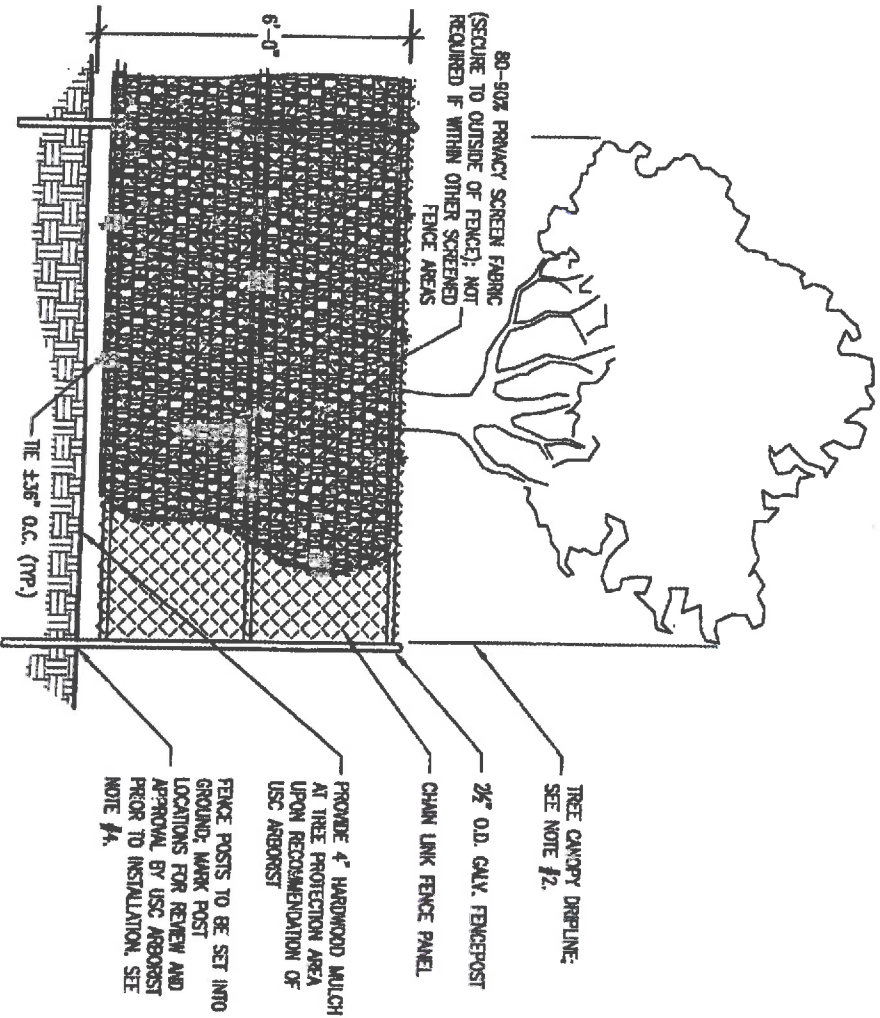
PROJECT EVALUATION & CLOSE-OUT

29. For all projects over \$100,000, including IDCs, a Contractor Performance Evaluation (SE 397) will be reviewed with the GC at the beginning of the project and a copy given to the GC. At the end of the project the form will be completed by the USC Project Manager and a Construction Performance rating will be established.
30. Contractor must provide all O&M manuals, as-built drawings, and training of USC personnel on new equipment, controls, etc. prior to Substantial Completion. Final payment will not be made until

this is completed.

CAMPUS VEHICLE EXPECTATIONS

31. Personal vehicles must be parked in the perimeter parking lots or garages. Temporary parking permits can be obtained at the Contractor's expense at the USC Parking Office located in the Pendleton Street parking garage.
32. All motorized vehicle traffic on USC walkways and landscape areas must be approved by the USC Project Manager and Parking Division, have a USC parking placard, and be parked within the approved laydown area. Violators may be subject to ticketing, towing and fines.
33. All motorized vehicles that leak or drip liquids are prohibited from traveling or parking on walks or landscaped areas.
34. Drivers of equipment or motor vehicles that damage university hardscape or landscape will be held responsible for damages and restoration expense.
35. All vehicles parked on landscape, hardscape, or in the process of service delivery, must display adequate safety devices, i.e. flashing lights, cones, signage, etc.
36. All drivers of equipment and vehicles shall be respectful of University landscape, equipment, structures, fixtures and signage.
37. All incidents of property damage shall be reported to Parking Services or the Work Management Center.



TREE PROTECTION FENCING (IN-GROUND) WITH SCREENING

NOTES:

1. PROVIDE PROTECTION FENCING FOR ALL TREES WITHIN AREA OF DISTURBANCE AND CONSTRUCTION ACCESS.
2. PROTECTION FENCING SHALL BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION.
3. PROTECTION FENCING TO BE PLACED AT THE OUTSIDE OF THE CANOPY DRIPLINE, OR AT A DISTANCE OF ONE FOOT PER ONE INCH OF TREE DIAMETER, MEASURED AT BREAST HEIGHT, WHICHEVER IS LARGER, UNLESS OTHERWISE INDICATED ON LANDSCAPE PLAN OR APPROVED BY UNIVERSITY ARBORIST.
4. IN-GROUND POSTS ARE STANDARD. IF EXISTING ROOTS, UTILITIES OR PAVEMENT PRECLUDE USE OF IN-GROUND POSTS, FOOTED STANDS ARE ACCEPTABLE. SAND BAGS SHALL BE PLACED ON THE INSIDE OF FENCE.
5. DAMAGE TO ANY TREES DURING CONSTRUCTION SHALL BE ASSESSED BY UNIVERSITY ARBORIST AND THE UNIVERSITY ARBORIST SHALL STIPULATE WHAT ACTION WILL BE TAKEN FOR REMEDIATION OF DAMAGE. THE COST OF ANY AND ALL REMEDIATION WILL BE ASSUMED BY CONTRACTOR AT NO ADDITIONAL COST TO THE PROJECT.
6. DISTURBANCE OF ROOT ZONE UNDER DRIPLINE OF TREE, INCLUDING COMPACTION OF SOIL, CUTTING OR FILLING OR STORAGE OF MATERIALS SHALL QUALIFY AS DAMAGE AND SUBJECT TO REMEDIATION.

NO SCALE REVISED 8.28.14

Project Name: USC Aiken Sports Concession Building Roof Replacement
Project Number: H29-9550

University of South Carolina

CONTRACTOR'S ONE YEAR GUARANTEE

STATE OF _____

COUNTY OF _____

WE _____
as Contractor on the above-named project, do hereby guarantee that all work executed under the requirements of the Contract Documents shall be free from defects due to faulty materials and /or workmanship for a period of one (1) year from date of acceptance of the work by the Owner and/or Architect/Engineer; and hereby agree to remedy defects due to faulty materials and/or workmanship, and pay for any damage resulting wherefrom, at no cost to the Owner, provided; however, that the following are excluded from this guarantee;

Defects or failures resulting from abuse by Owner.

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

[Name of Contracting Firm]

*By _____

Title _____

*Must be executed by an office of the Contracting Firm.

SWORN TO before me this
_____ day of _____, 2____ (seal)

_____ State

My commission expires _____

Technical Specifications

SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.1 WORK INCLUDED

- 1.1.1 All work is located at the Sports Concession Building of University of South Carolina Aiken Campus, 521 Scholar Loop, Aiken, SC 29801.

1.2 BASE BID WORK

- 1.2.1 Work covered by this contract includes furnishing all labor, materials, tools, devices, appliances, and equipment necessary to perform all the work described in the Contract Documents.

1.2.2 Low Sloped Roof Replacement (Roof Area 1 – approximately 1,128 SF):

- 1.2.2.1 Work consists of the complete removal and disposal of the existing aggregate surfaced Built-Up Roof system, metal and bituminous flashings, down to the existing plywood deck; preparations to and replacement of the existing plywood deck and framing, as necessary; and the installation of new wood blocking, flat and tapered insulation, insulation overlayment, cold application modified bitumen membrane roofing system with cap sheet surfacing, bituminous, metal and acrylic resin flashings, metal coping cap, counter flashing, and associated miscellaneous work specified herein.

1.2.3 Metal Roof Coating (Approximately 860 SF):

- 1.2.3.1 The work generally consists of removal and disposal of existing metal coping cap, ridge apron flashings and rake flashings; upon completion of all removals, re-secure all loose T-Rib battens, install new metal zee closure, metal ridge apron flashing, metal rake flashing with eave end kickout diverter and metal coping cap; upon completion of all removals and repairs, prepare existing metal roof panels to receive rust neutralizer and primer; and install new fluid applied roof coating system.

1.3 UNIT PRICES: Include in the BASE BID the following quantities of unit price materials:

- 1.3.1 Unit Price 1 - Removal and replacement of any existing damaged or deteriorated $\frac{3}{4}$ " plywood decking. 128 SF

- 1.3.2 Unit Price 2 - Removal and replacement of any existing damaged or deteriorated 2x wood framing members. 52 BF

1.4 CONTRACT METHOD

- 1.4.1 Construct the work as a single lump sum contract. For the items that are bid on a unit price basis, follow procedure indicated on the Bid Form and as specified in

Section 01025 MEASUREMENT AND PAYMENT.

1.5 REFERENCE STANDARDS

- 1.5.1 For products specified by the association or trade standards, comply with requirements of the standard except when more rigid requirements are specified or are required by applicable codes.

1.6 EXISTING SITE CONDITIONS

- 1.6.1 Information in this section is provided only to establish a general description and is not necessarily accurate. The Contractor is responsible for visiting the site and satisfying himself as to the existing conditions, size of existing roof areas, metal components, etc. before submitting his bid.

1.6.2 Approximate Square Footage of Existing Low Sloped Built-Up Roof Areas:

1.6.2.1	RA 1	1,128 square feet.
1.6.2.2	Total Area -	1,128 square feet.

1.6.3 Roof Area 1:

- 1.6.3.1 The existing low sloped roofing assembly consists of an aggregate surfaced Built-Up Roofing (BUR) membrane consisting of multiple ply felts adhered in hot asphalt to a 1" perlite insulation board, mechanically attached to a 3/4" plywood deck, supported by 2x8 framing spaced at 16" O.C.

- 1.6.3.2 Water drains to 3" main roof drains.

- 1.6.3.3 Roof slope is approximately 1/4":12.

- 1.6.3.4 Roof area is generally a rectilinear shape.

- 1.6.3.5 Rooftop Equipment:

- a. (2) Power Ventilators
- b. (3) Sanitary Vents

1.6.4 Approximate Square Footage of Existing Metal Panel Roof Areas (Projected Area):

1.6.4.1	RA 2	130 square feet.
1.6.4.2	RA 3	138 square feet.
1.6.4.3	RA 4	130 square feet.
1.6.4.4	Wall Panels 1, 2, & 3	175 square feet
1.6.4.5	Total Area -	573 square feet.
1.6.4.6	Coating rib factor	1.5
1.6.4.7	Total area of coatings	860 square feet

1.6.5 Roof Areas 2, 3 & 4:

1.6.5.1 The Low Sloped Metal Panel Roofing assembly consists of a prefinished galvanized metal roof panel over a plywood substrate decking. Underlayment is assumed to be present below the metal panel pans.

1.6.5.2 The metal panels are 12" wide with a 2" rib. The seams have a 1" wide t-batten strips.

1.6.5.3 Roof slope is approximately 1:12.

1.6.5.4 Roof areas are generally a rectilinear shape.

1.6.5.5 Rooftop Equipment:

a. None.

1.7 WORK SEQUENCE

1.7.1 Initial setup is to be determined in a pre-work conference. Work is to be performed in a manner so that prepared surfaces are not damaged as a result of subsequent surface coatings. Phased construction is unacceptable.

1.7.2 The Contractor shall strive to cause a minimum of disruption to the campus operations and occupancy during construction activities.

1.8 COMPLETION DATE

1.8.1 Scheduling and speed of construction are of prime importance in the completion of the Work. Demolition, Preparation and New Construction shall commence as established in the Notice to Proceed. BIDDER agrees that the BASE BID WORK will be substantially complete and ready for final payment in accordance with the General Conditions within 30 calendar days after Notice to Proceed.

1.8.2 BIDDER agrees further that construction will normally be performed Monday - Friday, inclusive. BIDDER acknowledges that in case of inclement weather during normal work days, additional weekend work may be required to complete the Work within the allotted time.

1.9 LIQUIDATED DAMAGES

1.9.1 Liquidated damages will be assessed in the amount of \$200.00 for each calendar day the actual Contract Time for Substantial Completion exceeds the specified Contract Time.

1.10 CONTRACTOR USE OF PREMISES

1.10.1 Limit use of premises for construction operations to allow for Owner occupancy.

1.10.2 Coordinate use of premises under direction of Owner.

1.10.3 The Contractor shall be held liable for any damages to the building, the building

contents, or its occupants resulting from work under this Contract. The Contractor shall take all precautions necessary to protect the occupants and the building during the construction period.

- 1.10.4 The Contractor shall have an established safety program in place, including a fall protection plan and must be able to provide this plan to the Owner no later than the pre-construction meeting.
- 1.10.5 The Contractor is to maintain the existing building in a safe, weather tight, and secure condition throughout the construction period. The Contractor is to repair any damage caused by him or any of his subcontractors. Should damage be to finishes or construction that is not defined in these Contract Documents, then repairs shall be made in compliance with the specifications approved by and at the sole discretion of the Owner.
- 1.10.6 The Contractor is to confine his operations to the site of the building. The site beyond this building is not to be disturbed. The Owner will identify parking for the Contractor and his employees.
- 1.10.7 The Contractor is to keep existing driveways and entrances serving the premises clear and available at all times. Do not use for parking or storage of materials or equipment. The stockpiling of materials must be confined to the area identified by the Owner.
- 1.10.8 The Contractor and his personnel are to lock their vehicles and other mechanical or motorized construction equipment when parked and unattended. Do not leave vehicles or equipment unattended with motor running or ignition key in place.
- 1.10.9 Open fires will not be permitted on the premises.
- 1.10.10 Utilities and Services: The Contractor will be provided water to the extent of the existing sources. The Contractor shall be responsible for any taps or connections that may be needed or desired by him/her. Contractor is also responsible for getting the service to any location where needed or desired. The Contractor will be provided without charge reasonable quantities of available utilities; however if the services are abused, they will be withdrawn. The Contractor shall provide temporary portable electric generators for electricity required during construction.

1.11 ASBESTOS PRODUCTS:

- 1.11.1 No products containing asbestos fibers are present in the work covered in the Base Bid.
- 1.11.2 No asbestos bearing materials are to be incorporated into the work as a part of this contract. No existing asbestos containing material is to be left or incorporated into the work of this contract.
- 1.11.3 In the event the Contractor finds asbestos-containing materials not previously identified, then Contractor shall stop all work in the affected area and notify the Owner and Architect. Additional work caused by the discovery, if authorized by the Owner, will be handled as a Change Order to this Contract.

1.12 CONTRACTOR'S CONDUCT: The following requirements are expressed to the Contractor, and he is asked to ensure that all employees, subcontractors, and suppliers are aware of these warnings.

1.12.1 No drugs, alcohol, or firearms will be permitted on the grounds of the facility.

1.12.2 There will be no favors or fraternizing with occupants or employees of the facility.

1.12.3 Contractors, subcontractors and their employees are required to wear appropriate work wear, hard hats and safety footwear, as the case may be, while on campus. Articles of clothing must be neat and tidy in appearance, and cannot display offensive or inappropriate language, symbols or graphics. The Owner has the right to decide if such clothing is inappropriate.

1.12.4 Contractor and subcontractors are to take necessary precautions to protect all occupants and employees of the facility, Contractor personnel, and personal property from any damage from their operations.

1.12.5 The Contractor, subcontractors, and material suppliers are to be careful during placement of materials and equipment. The Owner will in no way be responsible for equipment and materials lost as the result of being left unattended or misplaced.

1.12.6 The use of foul, obscene, or abusive language by the Contractor's or subcontractors' employees is prohibited on the grounds of the facility. Violations of this policy may result in the dismissal of the Contractor.

1.12.7 Smoking or use of any tobacco products by the Contractor's or subcontractors' employees is NOT allowed on the USC campus.

1.13 OWNER OCCUPANCY REQUIREMENTS

1.13.1 Owner will occupy premises during entire period of construction for conducting normal operations. Contractor is to cooperate with the Owner's operations.

1.13.2 Owner may require that the Contractor cease work with a prior days notice.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION 01010

SECTION 01021

CASH ALLOWANCES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- 1.2.1 This Section specifies administrative and procedural requirements for allowances and unit prices.
- 1.2.2 An Allowance is an amount determined by the Owner for work of indeterminate scope and cost. Each Bidder shall include the allowance amount in the Base Bid price.
- 1.2.3 Contingency Allowance included in the BASE BID for the Work, as specified in these Contract Documents, is \$ 3,000.00.
 - 1.2.3.1 The cost for work performed by the Contingency Allowance covers items not anticipated or specifically delineated in the documents and shall be determined in accordance with the Change Order procedures of the Contract Documents.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION 01021

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SUMMARY

- 1.1.1 A payment or payments made to Contractor for work performed shall not constitute acceptance or approval of the work and shall in no way relieve Contractor from the requirements of the Contract.
- 1.1.2 All sums received by the Contractor for any part or parts of the work furnished or performed by a subcontractor shall be paid promptly to the latter by Contractor and while in the hands of the Contractor shall constitute trust funds held for the use and benefit of Owner.
- 1.1.3 Contractor shall submit with payment request lien releases from material suppliers which state that suppliers have been paid for materials supplied to the project. Payment requests may be delayed if not received in a timely manner.
- 1.1.4 If payments are to be made on account of materials or equipment not incorporated in the work, but delivered and suitably stored at the Site, or at such other location agreed upon in writing, such payments shall be conditioned upon submission by Contractor of bills of sale or other documents satisfactory to the Owner establishing Owner's title to such materials or equipment or otherwise protecting Owner's interest therein including the prepayment of applicable insurance and transportation charges to the Site.
- 1.1.5 Contractor shall submit with payment application all claims for weather related delays on a monthly basis.

1.2 APPLICATION FOR PAYMENT

- 1.2.1 Monthly Application for Payment shall be submitted in triplicate to Architect for review and forwarding to Owner on AIA Documents G702 and G703. Provided an Application for Payment is received by the Architect not later than the 25th day of a month, the Owner shall make payment to the Contractor not later than the last day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner no later than 30 days after the Architect receives the Application for Payment. Contractor shall be furnished copy of Owner's Payment Schedule indicating payment dates and outline for receipt of payment requests.
- 1.2.2 Ninety-six and one-half percent (96.5%) of the value of materials stored at the site and 96.5% of work accomplished, less previous payments, shall be paid by Owner to Contractor in monthly installments upon Architect's certification.
- 1.2.3 Final payment shall be made 30 days after Architect has certified completion to the Owner, and specified warranties are provided in accordance with Section 01740.

1.3 UNIT PRICES

- 1.3.1 A Unit Price is an amount proposed by Bidders and stated on the Bid 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.
- 1.3.2 Before proceeding with work, Contractor shall survey the work to be covered under Unit Prices in the presence of the Architect for verification of quantities for the Project.
- 1.3.2.1 A Unit Price is an amount proposed by Bidders and stated on the Bid 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.
- 1.3.2.2 Before proceeding with work, Contractor shall survey the work to be covered under Unit Prices in the presence of the Architect for verification of quantities for the Project.
- 1.3.2.3 Unit Price Schedule: Unit Prices shall include costs of materials, delivery, labor (to remove and replace), insurance, rental of tools and equipment, overhead and margin of profit.
- 1.3.2.3.1 Include 128 square feet in the Base Bid costs for replacement of any damaged or deteriorated $\frac{3}{4}$ " plywood decking. Quote a separate unit price (per square foot) for such work. The final contract amount will be adjusted by change order increasing or decreasing the final contract price based on the actual replacement made during the course of the work using the quoted unit price.
- 1.3.2.3.2 Include 52 board feet in the Base Bid costs for replacement of any damaged or deteriorated 2x wood framing members. Quote a separate unit price (per square foot) for such work. The final contract amount will be adjusted by change order increasing or decreasing the final contract price based on the actual replacement made during the course of the work using the quoted unit price.
- 1.3.3 Contractor shall maintain a daily log showing dates, location, and exact quantities of unit price work. Copies of log and appropriate change order forms shall be submitted with each request for payment from the contractor unless no unit price work is accomplished during the payment period. If appropriate, Payment Applications containing unit price work will not be processed unless unit price logs are attached.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION 01025

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.1 PROCEDURES

- 1.1.1 Each transmitted document shall identify the project name and Contractor. Material submittals shall also identify the type and trade name of materials, material manufacturer, intended use, and specification number. Deviations from Contract Documents shall be identified.
- 1.1.2 Submittals shall bear the Contractor's stamp and indicate Contractor approval and date. Submittals shall be identified in numerical order, beginning with Submittal No. 1.
- 1.1.3 After Architect's review of materials, revise and resubmit as required, identifying changes made since previous submittal.

1.2 BID SUBMITTALS

- 1.2.1 Refer to Invitation to Bid, Instructions to Bidders, & Supplementary Instructions to Bidders.
- 1.2.2 Drug-Free Workplace Statement (a part of bid form agreements). The BIDDER certifies that it will provide a "Drug-Free Workplace" as that term is defined in Section 44-107-30 of the SC Code of Laws, and shall comply with the requirements set forth in Title 44, Chapter 107.
- 1.2.3 Illegal Immigration Reform Act of 2008 (a part of bid form agreements). The BIDDER certifies that it is in compliance with the requirements of Title 8, Chapter 14 of the South Carolina Code of Laws and agrees to provide to the State upon written request any documentation required to establish that he/she and his/her sub-contractors or sub-subcontractors are in compliance with Title 8, Chapter 14.

1.3 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- 1.3.1 Contractor submittals shall be forwarded to Architect within 14 calendar days after receipt of signed Contract. The successful Contractor shall submit 5 copies of the required information to the Architect. Two copies will be returned to the Contractor for his use.
- 1.3.2 Refer to Section 01340 "Shop Drawings, Product Data and Samples."

1.4 CONTRACTOR INFORMATION

- 1.4.1 Submit to Architect on or before Pre-Construction Conference the following documents:

- 1.4.1.1 A letter from the Contractor, on Contractor letterhead, identifying the brand name, manufacturer and material proposed for use; including a statement that all proposed materials meet the specification requirements. Obtain Owner's approval before placing orders.
- 1.4.1.2 Emergency contact information including phone numbers of principals, superintendent, foreman, and project manager.
- 1.4.1.3 Foreman's Statement (copy attached).
- 1.4.1.4 Material Safety Data Sheets (3 copies).
- 1.4.2 Submit with each Monthly Payment Application a fully executed Contractor's Affidavit of Payment of Debts and Claims, AIA G706, and Contractor's Affidavit of Waiver and Release of Liens, AIA G706A.
- 1.4.3 Submit to Architect within 2 weeks of project startup and which must be approved prior to Contractor's First Application for Payment:
 - 1.4.3.1 A copy of AIA Document G703 listing each phase of the work and its scheduled value for approval.
 - 1.4.3.2 Furnish Manufacturer's Certificates of Compliance with materials' specifications for materials to be incorporated into the work. Certificates are to be signed by a responsible officer of the manufacturing firm and notarized.
- 1.4.4 Submit to Architect upon completion of the work and prior to Contractor's Final Application for Payment:
 - 1.4.4.1 Certificate of Substantial Completion, AIA G704.
 - 1.4.4.2 List of Subcontractors by specialty, including address and telephone number.
 - 1.4.4.3 Consent of Surety to Final Payment, AIA G707.
 - 1.4.4.4 Final Contractor's Affidavit of Payment of Debts and Claims, AIA G706.
 - 1.4.4.5 Final Contractor's Affidavit of Release of Liens, AIA G706A.
 - 1.4.4.6 Contractor's Waiver and Release of Liens Conditional Upon Receipt of Final Payment.
 - 1.4.4.7 "No Asbestos" Certification (Statement on Contractor's letterhead that no asbestos containing materials were used in the completion of the Work.)
 - 1.4.4.8 Contractor's 2 Year Warranty to Owner, using form included in Project Specifications without alteration.
 - 1.4.4.9 Manufacturer's Specified 20 yr. Labor & Material Warranty to Owner.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 TIMING

- 3.1.1 Make all submittals in accordance with schedules specified herein.
- 3.1.2 A minimum of 10 calendar days shall be allowed for review by the Architect following his receipt of the submittal.
- 3.1.3 If a submittal contains more than 10 shop drawings, Contractor shall indicate which drawings must be returned within 10 calendar days. Architect shall have an additional 10 days to return the balance of submittals.
- 3.1.4 Delays caused by tardiness in receipt of submittals shall not be an acceptable basis for extension of the Contract completion date.

3.2 REVIEW

- 3.2.1 Review by the Architect shall be directed to the general method of construction and shall not be construed as a complete check nor shall the review relieve the Contractor from responsibility for errors and/or omissions which may exist.
- 3.2.2 The notations "Reviewed" or "Make Corrections as Noted" shall authorize the Contractor to proceed with fabrication, purchase, or both, subject to the revisions, if any, required by the Architect's review comments.
- 3.2.3 The Contractor shall make all revisions as required. If the Contractor considers any required revisions to constitute a change, he shall notify the Architect under the provisions of the General Conditions.
- 3.2.4 Only those revisions directed or approved by the Architect shall be shown on the resubmittal.
- 3.2.5 After a submittal has been approved by the Architect, substitution of materials, equipment, and/or procedures shall not be considered unless accompanied by an acceptable explanation for the substitution.

END OF SECTION 01300

ENCLOSURE: Foreman's Statement Form

SECTION 01340

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 GENERAL

1.1 SHOP DRAWINGS

- 1.1.1 Shop drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data prepared by the Contractor, Subcontractor, manufacturer, supplier or distributor which illustrates some portion of the Work.
- 1.1.2 Shop drawings are to be submitted by transmittal letter with the following information:
 - 1.1.2.1 State Project Number
 - 1.1.2.2 Architect's Project Number
 - 1.1.2.3 Submittal Date
 - 1.1.2.4 Submittal Number
 - 1.1.2.5 Project Title
 - 1.1.2.6 Name of Contractor and Approval Date
 - 1.1.2.7 Reference to Specification Section, Paragraph and/or Drawing
 - 1.1.2.8 The location of the work covered by the shop drawing
 - 1.1.2.9 Any qualification, deviation or departure from Contract
 - 1.1.2.10 Any additional information required by the Specifications for the particular material being furnished
- 1.1.3 Each shop drawing shall be numbered. The same numbering system shall be retained through all revisions. Each drawing shall have a clear space for the approval stamps of Contractor and Consultant.
- 1.1.4 In submitting shop drawings for approval, all associated shop drawings related to a complete assembly shall, where possible, be submitted at the same time so that each may be checked in relation to the entire proposed assembly.
- 1.1.5 Contractor shall prepare composite shop drawings and installation layouts, when required, to depict proposed solutions for tight field conditions.
- 1.1.6 With respect to standard manufactured items, Contractor shall submit to Architect manufacturer's illustrated cuts of the items to be furnished showing details, sizes and dimensions, and all other pertinent information. Sufficient copies of cuts shall be furnished so that Architect may maintain a minimum of 2 copies and return to Contractor the number required for Contractor's use.
- 1.1.7 Contractor shall submit 5 copies of each drawing. Two final approved copies will be returned to the Contractor.
- 1.1.8 Submit shop drawings for the following details:
 - 1.1.8.1 Wood blocking attachment at perimeter parapet walls.

1.1.8.2 Coping cap, drain flashing, sanitary vent flashing and counter flashing. Provide complete with flashings and attachment method.

1.1.8.2.1 Minimum required components include wood blocking, fasteners, insulation, cover board, cants, tapered edge strips, adhesives, cements, membrane plies, cap sheet, metal, bituminous and acrylic resin flashings and sealant.

1.1.8.3 Tapered insulation layout for crickets and saddles.

1.2 PRODUCT DATA

1.2.1 On Contractor's letterhead, in a list form, submit a complete description of the materials to be used on the project, and a statement that all the listed items meet the requirements of the project specifications.

1.2.2 Submit each manufacturer's technical specifications and installation procedures for each major component required.

1.2.3 Minimum required components include acrylic resin and metal flashings, underlayment, metal roof panels, clips and fasteners.

1.3 RELATED SECTIONS

1.3.1 Section 01300 "Submittals."

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION 01340

SECTION 01400

QUALITY CONTROL

PART 1 GENERAL

1.1 QUALITY CONTROL – CONTRACTOR

- 1.1.1 Maintain quality control over products, services, site conditions, and workmanship to produce work of specified quality.

1.2 QUALITY CONTROL – OWNER

- 1.2.1 The Owner reserves the right, at his discretion, to retain the services of an independent construction monitoring representative to provide full or periodic inspection of the project. If Owner engages this service, the Contractor will be informed. Testing may be performed to determine any deficiencies in the assembly.
- 1.2.2 Work found in violation of the Specifications, or not in conformance with acceptable workmanship practices/standards, shall be subject to rejection, including complete removal and replacement with new materials at Contractor's expense.
- 1.2.3 Failure of Owner or Architect to discover or reject defective work, or work not in accordance with the Contract, shall not be deemed an acceptance thereof, or a waiver of Owner's rights to Contractor's compliance with the Contract or performance of the work, or any part thereof. No partial or final payment, or partial or entire occupancy, by Owner shall be deemed to be an acceptance of work or of material which is not strictly in accordance with the Contract, nor shall it be deemed a waiver by Owner or any of Owner's rights pursuant to this Contract or otherwise.
- 1.2.4 Contractor may be required to uncover work in-place to determine the quantity and quality of material and workmanship. Contractor photographs may or may not be accepted to validate fasteners, fastener frequency, unit price work, and other elements of the work concealed by project finishes.

1.3 QUALITY ASSURANCE

- 1.3.1 Roofing Contractor Qualifications: A Roofing Contractor experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance. Installer shall employ workers trained and approved by manufacturer. The Roofing Contractor shall be licensed as a specialty roofing contractor with at least 5 years of contracting experience in the type of work involved in this project, and must have performed work similar to the proposed scope of work. Evidence of qualifications must be available by the Contractor upon request of the Owner.

All subcontract trades to the Roofing Contractor must be licensed in their specialty trade area if specialty area is governed by SC Department of Labor, Licensing and Regulation. Evidence of qualifications must be available by the Contractor upon request of the Owner.

- 1.3.2 **Manufacturer Qualifications:** A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.

1.4 QUALITY CONTROL

- 1.4.1 **Owner Responsibilities:** Owner will provide inspections during the work. Such inspections may be daily or periodic.

- 1.4.2 **Contractor Responsibilities:** Contractor will provide a fully qualified, full-time project superintendent in addition to the working crew foreman. The crew foreman will be an English-speaking Foreman, who will be experienced in the application of the specified wall cladding system.

- 1.4.3 **Safety and Health Program:** Contractor shall have and maintain a written safety and health program in the form of a dedicated safety and health manual. The manual and program shall conform to applicable OSHA requirements. If requested by the Owner, a copy of the manual shall be made available to the Owner.

- 1.4.4 **Superintendent responsibilities will include, but are not limited to the following:**

1.4.4.1 Scheduling and coordination of the work;

1.4.4.2 Maintain daily log which will include quantities of unit price work;

1.4.4.3 Project safety, both general and specific to the daily activity;

1.4.4.4 Material delivery and storage;

1.4.4.5 Overall quality control regarding removals, preparations, and the installation of the new components;

1.4.4.6 Point of Contact with the Owner's designated point of contact and the Architect.

- 1.4.5 **Additional Contractor Responsibilities:** Unless otherwise indicated, provide quality-control inspections with Contractor's own work force. Repair or replace nonconforming work.

- 1.4.6 **Associated Services:** Cooperate with agencies performing inspections and similar quality-control services, and provide reasonable auxiliary services as requested. Provide the following:

1.4.6.1 Access to the Work.

1.4.6.2 Incidental labor and materials necessary to facilitate inspections.

1.4.7 Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate inspections.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 REPAIR AND PROTECTION

3.1.1 General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

3.1.1.1 Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.

3.1.2 Protect construction exposed by or for quality-control service activities.

END OF SECTION 01400

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 DESCRIPTION

- 1.1.1 Contractor shall provide for temporary facilities and controls required for the performance of the project except as otherwise noted. Such items include, but are not necessarily limited to, water, electricity, and telephone; sanitary facilities; protection, security, and safety materials; and enclosures such as tarpaulins, barricades, fences, and canopies.
- 1.1.2 All equipment furnished by Contractor shall comply with all pertinent safety requirements.
- 1.1.3 Scaffold, ladders, planks, hoists, chutes and all similar items furnished in the execution of the work are to comply with all requirements of OSHA and any other regulatory agency having jurisdiction over this project.
- 1.1.4 All temporary facilities will be subject to the Owner's approval.

1.2 PRODUCT HANDLING

- 1.2.1 Contractor shall exercise all means necessary to maintain temporary facilities and controls in proper and safe condition throughout the progress of the project.
- 1.2.2 All required connections to existing utility systems shall be made with minimum disruption. If disruption of existing service is required, notice shall be given to the Owner and connections shall not be made without Owner's approval. If necessary, Contractor shall provide for alternate temporary service.

PART 2 PRODUCTS

2.1 TEMPORARY UTILITIES

- 2.1.1 Electricity: Owner will not furnish electricity to the Contractor during this project. Contractor shall provide temporary power as necessary to complete the work of this project.
- 2.1.2 Water: The Contractor will be provided water to the extent of the existing sources. The Contractor shall be responsible for any additional water that may be needed or desired by them. They are also responsible for getting the water to any location where needed or desired.
- 2.1.3 Telephone: The project foreman and superintendent must have a cell phone, and it must be active the entire construction period.
- 2.1.4 Connects and Disconnects: In the event it is necessary to disconnect any electrical wiring or connections, plumbing lines, gas lines, or other building services, notify the Owner 72 hours in advance to provide sufficient advance time to minimize disruption of service. Contractor shall not disconnect or connect services unless authorized in writing by Owner.

2.2 TEMPORARY FACILITIES

- 2.2.1 Sanitary Facilities: The Contractor shall provide and maintain proper temporary self-contained sanitary facilities in the quantity required for use of all personnel. All facilities shall be maintained in a sanitary condition at all times.
- 2.2.2 Ventilated Storage Facilities: Provide, as required, facilities to maintain specific storage conditions as described within this Specification and as recommended by the materials' manufacturers for use in construction.

2.3 CONSTRUCTION AIDS

- 2.3.1 Roof Access: The Contractor shall provide equipment for access to the roof unless otherwise directed by Owner.
- 2.3.2 Ladders: The Contractor shall remove all ladders from the roof and site at the end of work each day. Ladders may be stored in locked storage trailer.
- 2.3.3 Fire Extinguishers: Contractor shall provide adequate sized fire extinguishers for the project site.
- 2.3.4 Contractor is to insure all moving equipment has a "Kill Switch" or emergency stop button. Switch is designed to disengage movement of equipment instantly.
- 2.3.5 Enclosures: The Contractor shall provide fencing, barricades, warning signs, and all necessary safeguards to warn and prevent workers, pedestrians, and Owner's personnel from being exposed to dangers or hazards created by this project.
- 2.3.6 Protective Fencing: The Contractor shall enclose the debris removal area and hoisting area with portable chain link fencing a minimum height of 6'.
- 2.3.7 Temporary Construction: The Contractor shall furnish, install, and maintain for the duration of the project all scaffolds, ladders, tarpaulins, platforms, bridges, canopies, steps, and other temporary construction required to properly facilitate completion of the project in compliance with all safety and other regulations.
- 2.3.8 Signs: No signs or advertising of any kind shall be allowed on the project site unless approved in advance by Owner.
- 2.3.9 Parking: Contractor will have parking available in project manager designated spaces with each vehicle showing a project manager supplied University hangtag

PART 3 EXECUTION

Not Used.

END OF SECTION 01500

SECTION 01560

CONSTRUCTION CLEANING

PART 1 GENERAL

1.1 SECTION INCLUDES

- 1.1.1 Scrap, debris, waste material, and other items from all operations shall not be allowed to accumulate on the Project site. Debris shall be removed and properly disposed of daily in accordance with all Federal, State, and Local regulations in a manner which prevents injury or damage to persons, adjoining properties and public rights-of-way.
- 1.1.2 The buildings and site shall be maintained in a clean condition throughout the duration of the Project. Contractor shall comply with all requirements for cleanliness described in other sections of these Specifications.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- 2.1.1 Contractor shall provide all required manpower, material, and equipment to maintain the specified standard of cleanliness.
- 2.1.2 Contractor shall use only those materials and equipment which are compatible with the surface being cleaned as recommended by the manufacturer or approved by the Architect.

PART 3 EXECUTION

3.1 PROGRESS CLEANING

- 3.1.1 Contractor shall conduct daily inspections to ensure that the requirements for cleanliness are being met. Building exterior and grounds in work area shall be cleaned before close of work each day.
- 3.1.2 Contractor shall provide storage containers for all items awaiting removal from the site. Storage containers and locations shall be approved by the Architect and promptly disposed of when at capacity.

3.2 STORED MATERIALS

- 3.2.1 Stored items shall be kept in an orderly arrangement allowing maximum access and shall not impede drainage or traffic.
- 3.2.2 Contractor shall inspect all arrangements of materials stored on the Project site on a minimum weekly basis and shall service all arrangements in accordance with the requirements of paragraph 3.1.1 of this Section.

END OF SECTION 01560

SECTION 01610

STORAGE AND PROTECTION

PART 1 GENERAL

1.1 FACILITY PROTECTION

- 1.1.1 Limit size of work sections to safeguard adjacent materials, structures, etc. and to minimize dust and noise.
- 1.1.2 Protect existing facilities from damage during work. Do not overload existing paving, curbs, sidewalks, etc. with vehicle traffic. Do not overload new or existing construction with demolition debris, equipment, new materials etc.
- 1.1.3 Protect existing facilities from fire. Contractor shall provide suitable and adequate fire extinguishers conveniently located on the premises at staging areas, storage areas, and at areas of equipment. Competent operators shall be in attendance at all times and shall be properly trained or instructed in fire protection.
- 1.1.4 Existing roof is fragile. Everything brought to roof will have a minimum 1.5" thick layer of molded expanded polystyrene insulation under a minimum ¾" thick CDX plywood, barrier. All roof traffic and material storage/handling will be limited to extent of roof that has been covered.
- 1.1.5 Site and roof traffic shall be confined to work areas. Contractor shall be responsible for leaks that develop in traffic areas during and after Project completion. Grounds damaged by work shall be restored to pre-work condition and shall include, but is not limited to, hauling in new acceptable fill dirt material and reseeding of the affected site.
- 1.1.6 Contractor shall protect interior operations from adverse weather during exterior wall cladding operations. This requirement extends beyond the immediate project scope of work to adjacent contiguous building areas.
- 1.1.7 The Contractor is responsible and shall be held liable for any damages to the adjacent roof assemblies, building, building contents, its occupancy, grounds, or landscaping resulting from work under the Contract. In the event of damage, Contractor will restore property to a condition equivalent to that at the time the Project started. Restoration may be necessary to construction assemblies not specified in this project manual. In such cases, repair methods and materials are subject to approval by Owner.
- 1.1.8 The Contractor shall keep existing drainage facilities clear of debris during construction.

1.2 MATERIAL PROTECTION

- 1.2.1 Products shall be transported by methods which avoid damage. Damaged

material shall be subject to rejection by the Architect.

1.2.2 Materials stored in open shall be placed on pallets with wood blocks underneath to provide ventilation.

1.2.3 It is the responsibility of the Contractor to ensure repair products are adequately protected from damage.

1.2.4 Damaged materials will be designated by spray painting and must be removed from the project site within 24 hrs.

1.3 STORAGE

1.3.1 Contractor shall be responsible for proper storage of equipment, materials, and devices furnished by themselves and/or their subcontractors and suppliers.

1.3.2 All storage areas are subject to approval by the Owner or Owner's authorized representative.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION 01610

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 FINAL CLEANING

- 1.1.1 Except as specifically provided otherwise, "clean" shall be interpreted as meaning the level of cleanliness generally attainable by skilled cleaners using commercially available building maintenance equipment and materials.
- 1.1.2 Execute cleaning prior to final inspection.
- 1.1.3 Unless otherwise directed by the Architect, the Contractor shall clean all adjacent areas on the site and completely remove all resultant debris.
- 1.1.4 Clean all roof areas and drainage systems. Clean interior and exterior surfaces exposed to view; remove stains and foreign substances. Such work shall be accomplished at no additional cost to the Owner.
- 1.1.5 Clean equipment as required.
- 1.1.6 Clean site; sweep paved areas; rake clean other areas.
- 1.1.7 All tools, equipment, construction materials, scrap, debris, and waste shall be removed from the project site.
- 1.1.8 Restore grass areas by filling ruts, compacting soil, raking, seeding, and fertilizing. Replace any damaged sidewalks or pavement.
- 1.1.9 Remove portable sanitary facilities from site. Clean and disinfect area as necessary to ensure sanitary health conditions.

1.2 Contractor Inspection and Punch-list Prior to Request for Substantial Completion

- 1.2.1 Contractor shall inspect all aspects of this project and prepare a punch-list of uncompleted and/or deficient work. All work and deficiencies will be corrected by Contractor before a Final Inspection is scheduled.

1.3 FINAL INSPECTION

- 1.3.1 Architect's representative will conduct a final inspection with Owner's representative and the Contractor's representative.
- 1.3.2 Any scheduled inspection reports by Local Jurisdiction Inspectors, if required, shall be furnished prior to Final Inspection and Contract Closeout.

1.4 WARRANTIES AND BONDS

- 1.4.1 Refer to Section 01740 "Warranties and Bonds" for requirements.

1.5 CLOSE-OUT

1.5.1 Final payment will be made to the Contractor only after the following have been submitted. Please provide (3) copies of each of the following documents.

1.5.1.1 Certificate of Substantial Completion, AIA G704.

1.5.1.2 List of Subcontractors by specialty, including address and telephone number.

1.5.1.3 Consent of Surety to Final Payment, AIA G707.

1.5.1.4 Contractor's Affidavit of Payment of Debts and Claims, AIA G706.

1.5.1.5 Contractor's Affidavit of Release of Liens, AIA G706A.

1.5.1.6 Contractor's Affidavit of Waiver and Release of Liens Conditional Upon Receipt of Final Payment.

1.5.1.7 "No Asbestos" Certification (Statement on Contractor's letterhead that no asbestos containing materials were used in the completion of the Work.)

1.5.1.8 Contractor's 2 Year Warranty to Owner.

1.5.1.9 Manufacturer's Specified 20 Year Labor and Material Warranty to Owner.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION 01700

SECTION 01740

WARRANTIES, INSURANCE, AND BONDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- 1.1.1 Upon completion of the work and prior to the final payment, the Contractor shall submit the following items to the Architect:
 - 1.1.1.1 Copies of all manufacturers' punch lists and documentation of completion.
 - 1.1.1.2 Copies of all punch lists prepared by the Architect and documentation of completion.
 - 1.1.1.3 Contractor's 2 Year Watertight Warranty to Owner.
 - 1.1.1.4 Roofing Manufacturer's 20 Year Labor and Material Warranty to Owner.
 - 1.1.1.5 Liquid Applied Roofing Manufacturer's 20 Year Labor and Material Warranty to Owner.
 - 1.1.1.6 Asbestos Free Warranty

1.2 RELATED SECTION

- 1.2.1 Submit all items required by this Section as part of Contract Closeout, Section 01700.

1.3 WARRANTIES

- 1.3.1 Contractor's Warranty: Comply with the General Conditions of the Contract concerning warranties and bonds. The Contractor shall agree that the work covered under this Contract shall remain free from any water penetration and physical defects caused by defective workmanship or materials for a period of 2 years from the date of final acceptance by Owner. Warranty shall be in the form enclosed at the end of this section.
 - 1.3.1.1 Emergency repairs to defects and leaks shall be performed within two working days of receiving notice from Owner. As soon as weather permits, permanent repairs and restoration of affected areas shall be accomplished in a manner in conformance with the original Contract requirements. This work shall be done without additional cost to the Owner, except if it is determined that such leaks and defects were caused by abuse, lightning, hurricane, tornado, hail storm, or other unusual phenomena.
 - 1.3.1.2 In addition, the Contractor and Owner's representative shall conduct an inspection approximately 30 days prior to the end of the Contractor's warranty to determine the present physical condition of the wall cladding system. The Owner's representative shall then submit a written report as to the findings of this inspection. The Sheet Metal Contractor, at his own expense, shall repair any defects covered under the scope of this contract.

- 1.3.1.3 The warranties shall also state that the Owner has the right, at any time during the 2 year Contractor's warranty period and the Manufacturer's warranty period, to make emergency repairs to protect the contents of the building or the building itself from damage due to leaking. The cost of emergency repairs made during the first two years of the warranty period shall be borne by the Contractor and action by the Owner shall not invalidate the warranty.
- 1.3.2 **Roof Manufacturer's Warranty:** Upon completion of the work, and before final payment, Contractor shall furnish Owner a **TOTAL ROOFING SYSTEM GUARANTEE** with flashing and insulation endorsements covering all workmanship and materials issued by the roofing materials manufacturer for a period of 20 years from date of acceptance by Owner. Warranty shall include **No Dollar Limit (NDL)** or **No Penal Sum** language to describe coverage. The Contractor's warranty shall neither replace nor negate any agreement furnished by the manufacturer.
- 1.3.3 **Liquid Applied Manufacturer's Warranty:** Upon completion of the work, and before final payment, Contractor shall furnish Owner a 20 year Labor and Material Warranty with flashings, covering all materials issued by the materials manufacturer. The Contractor's warranty shall neither replace nor negate any agreement furnished by the manufacturer.
- 1.3.4 **Asbestos Free Warranty:** Contractor shall obtain and submit an **ASBESTOS FREE WARRANTY** from each subcontractor, material supplier, and equipment manufacturer upon completion of the work and prior to final payment. Each shall be in the form of that found at the end of this section and shall be properly executed and printed on the Contractors' or material and/or equipment suppliers' standard letterhead.
- 1.3.5 Starting dates of all warranties shall be the date of the final inspection and Owner acceptance.
- 1.4 **INSURANCE AND BONDS**
- 1.4.1 Reference Supplemental Conditions Page 5 Article 11 **INSURANCE AND BONDS**.
- 1.4.2 There is a requirement for a Bid Bond in an amount equal to 5% of the Contract Base Bid price issued by a surety authorized to do business in the State of South Carolina.
- 1.4.3 Successful Contractor shall be required to provide Performance Bond in the amount of 100% of the contract for construction issued by a surety authorized to do business in the State of South Carolina.
- 1.4.4 Successful Contractor shall be required to provide Labor and Materials Payment Bond in the amount of 100% of the contract for construction issued by a surety authorized to do business in the State of South Carolina.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 Roofing Installer's Warranty and Asbestos Free Warranties

- 3.1.1 Following this section there are sample Roofing Installer's Watertight Warranty and ASBESTOS FREE WARRANTY forms. Prior to final payment, submit these documents as written on the corporate letterhead of the appropriate party.

END OF SECTION 01740

ENCLOSURES: Contractor's Two Year Warranty
ASBESTOS FREE WARRANTY

SECTION 06100
ROUGH CARPENTRY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- 1.2.1 This Section includes but is not limited to the following:
 - 1.2.1.1 Plywood decking, wood blocking, and wood framing.
- 1.2.2 Related Sections include the following:
 - 1.2.2.1 Division 7 Section 07591 "Removals and Preparation".

1.3 DEFINITIONS

- 1.3.1 Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - 1.3.1.1 NLGA - National Lumber Grades Authority.
 - 1.3.1.2 SPIB - Southern Pine Inspection Bureau.
 - 1.3.1.3 ALSCBR - American Lumber Standards Committee Board of Review

1.4 SUBMITTALS

- 1.4.1 Material Certificates: Prior to start of work, submit Wood Preservative and Treatment Facility Certificate of Compliance with the material specifications of this section, signed by a responsible officer of the facility and notarized.
 - 1.4.1.1 Certify as to Treatment Process; Treatment Chemical; and Chemical Retention.
 - 1.4.1.2 Certify as to Moisture Content after post-treatment kiln drying.

1.5 QUALITY ASSURANCE

- 1.5.1 Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, with the experience and capability to conduct the testing indicated as documented according to ASTM E 548.

PART 2 PRODUCTS

2.1 MANUFACTURERS

2.1.1 Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

2.1.1.1 Lumber:

2.1.1.1.1 Boise Cascade Corporation.

2.1.1.1.2 Georgia-Pacific Corporation.

2.1.1.1.3 Louisiana-Pacific Corporation.

2.1.1.1.4 International Paper Corp.

2.2 WOOD PRODUCTS, GENERAL

2.2.1 Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.

2.2.1.1 Factory mark each piece of lumber with grade stamp of grading agency.

2.2.1.2 Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified.

2.2.1.3 Provide dressed lumber, S4S, unless otherwise indicated.

2.2.1.4 Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal (38-mm actual) thickness or less, unless otherwise indicated.

2.3 MISCELLANEOUS LUMBER

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

2.3.1.1 Mixed southern pine, No. 2 grade; SPIB.

2.3.2 Do not use material that is warped or does not comply with requirements for untreated material.

2.3.3 Application: Treat all rough carpentry for use "above grade" to include, but not limited to, the following:

2.3.3.1 Framing, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, and waterproofing.

2.3.3.2 Plywood decking and backing panels.

2.4 PLYWOOD DECKING AND BACKING PANELS

2.4.1 Decking: DOC PS 1, Exterior Grade, Exposure 1, C-D Plugged, thickness indicated or, if not indicated, not less than 3/4 inch (12.7 mm) thick.

2.4.2 Miscellaneous Backing Panels: DOC PS 1, Exterior Grade; Exposure 1, C-D Plugged, 3/4 inch thickness indicated or, if not indicated, not less than 1/2 inch (12.7 mm) thick.

2.5 FASTENERS

2.5.1 All fasteners, connections, clips or strap anchors for preservative-treated wood shall be either hot-dipped zinc coated galvanized steel or stainless steel (Type 304 or 316 SS).

PART 3 EXECUTION

3.1 INSTALLATION, GENERAL

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

3.1.2 Separate any aluminum metal component from preservative treated lumber with minimum divorcing layer of 15-lb asphalt saturated building paper. Use appropriate ring-shank, stainless steel fasteners.

3.1.3 Never use aluminum fasteners with preservative treated wood. Only use hot-dipped galvanized or stainless steel fasteners with treated wood.

3.1.4 Securely anchor wood blocking with appropriate fasteners a minimum of two (2) for every 16". Perimeter wood blocking and at openings shall be a minimum nominal width of 6".

3.1.5 Securely anchor new plywood decking at 9" O.C. at every framing member. New plywood decking shall span a minimum of 3 spans.

3.1.6 Do not use materials with defects that impair quality of rough carpentry or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

3.1.7 Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

3.1.7.1 Published requirements of metal framing anchor manufacturer.

3.1.7.2 Table 2304.9.1, "Fastening Schedule," in the International Building Code.

- 3.1.8 For wood to wood connections use ring shanked, hot dipped galvanized nails, 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; predrill as required.

END OF SECTION 06100

SECTION 07550

MODIFIED BITUMEN MEMBRANE ROOFING

PART 1. GENERAL

1.1. SECTION INCLUDES:

- 1.1.1. Two Ply Roof Membrane Application.
- 1.1.2. Roof Flashing Application.
- 1.1.3. Incorporation of Sheet Metal Flashing Components and Roofing Accessories into the Roof System
- 1.1.4. 20 Year, Total System NDL Labor and Material Warranty

1.2. RELATED SECTIONS

- 1.2.1. Section 01300 – Submittals
- 1.2.2. Section 06100 – Rough Carpentry
- 1.2.3. Section 07620 – Sheet Metal Flashing and Trim
- 1.2.4. Section 07591 – Roof Removal and Preparation

1.3. REFERENCE STANDARDS

- 1.3.1. References in these specifications to standards, test methods and codes, are implied to mean the latest edition of each such standard adopted. The following is an abbreviated list of associations, institutions, and societies which may be used as references throughout these specifications.

- 1.3.1.1. ASTM American Society for Testing and Materials, Philadelphia, PA
- 1.3.1.2. FM Factory Mutual Engineering and Research, Norwood, MA
- 1.3.1.3. NRCA National Roofing Contractors Association, Rosemont, IL
- 1.3.1.4. OSHA Occupational Safety and Health Administration, Washington, DC
- 1.3.1.5. SMACNA Sheet Metal and Air Conditioning Contractors National Association, Chantilly, VA
- 1.3.1.6. UL Underwriters Laboratories, Northbrook, IL

1.4. DESCRIPTION OF WORK

1.4.1. Description of Work: Work required in this specification is referenced below and is based on Siplast Roofing Systems Products and Specifications. A SBS modified bitumen roof system from Johns Mansville (JM) or Soprema (S) installed in accordance with the requirements and procedures listed in this Specification will be accepted. Acceptable JM and Soprema products are listed in parentheses following listed Siplast products in Part 2 of this Spec Section.

1.4.1.1. Roof System:

1.4.1.1.1. Cold Applied Modified Bitumen such as:

1.4.1.1.1.1. Siplast Paradiene 20/30 IH-A

1.4.1.1.1.2. Johns Manville 2CID-CA

1.4.1.1.1.3. Soprema IS-25/92-C

1.5. SUPERVISION

1.5.1. Contractor shall assign a full-time, English speaking, qualified Roofing Sup't. to the project to coordinate the various aspects of the work; to provide Quality Control Services for the project; and to serve as liason with the Owner's representative.

1.5.2. The roofing crew shall be supervised at all times by Contractor's full-time, English speaking Foreman.

1.6. SUBMITTALS

1.6.1. Refer to Section 01300 of these Specifications for a Listing of Other Submittals required for this Project.

1.6.2. All submittals which do not conform to the following requirements will be rejected.

1.6.3. Submittals Prior to Contract Award:

1.6.3.1. Letter from the proposed primary roofing manufacturer confirming that the bidder is an acceptable Contractor authorized to install the proposed system.

1.6.3.2. Letter from the primary roofing manufacturer stating that the proposed application will comply with the manufacturer's requirements in order to qualify the project for the specified guarantee/warranty.

1.6.3.3. Manufacturer's Certification clearly stating that the specified roof covering meets the requirements for an Underwriter's Laboratories, Inc. Class A roof covering.

1.6.4. Submittals Prior to Project Closeout: Final payment will be made to the Contractor only after the following have been submitted. Please provide three (3) copies of the following documents.

1.6.4.1. Manufacturer's printed recommendations for proper maintenance of the specified roof system including inspection frequencies, penetration addition policies, temporary repairs, and leak call procedures.

1.6.4.2. Manufacturer's Certification clearly stating that the installed roof covering meets the requirements for an Underwriter's Laboratories, Inc. Class A roof covering.

1.6.4.3. Certificate of Substantial Completion, AIA G704, with executed Architect's final punch list attached.

1.6.4.4. List of Subcontractors by specialty, if any, including address and telephone number.

1.6.4.5. Contractor's Affidavit of Payment of Debts and Claims, AIA G706.

1.6.4.6. Contractor's Affidavit of Release of Liens, AIA G706A.

1.6.4.7. Consent of Surety to Final Payment, AIA G707.

1.6.4.8. "No Asbestos" Certification (Statement on Contractor's letterhead that no asbestos containing materials were used in the completion of the Work.)

1.6.4.9. Contractor's warranty to Owner.

1.6.4.10. Manufacturer's warranty to Owner.

1.7. QUALITY ASSURANCE

1.7.1. Acceptable Products: Primary roofing products, including each type of sheet, all manufactured in the United States, shall be supplied by a single manufacturer which has been successfully producing the specified types of primary products for not less than 10 years. The primary roofing products shall have maintained a consistent composition for a minimum of five years.

1.7.2. Product Quality Assurance Program: Primary roofing materials shall be manufactured under a quality management system that is monitored regularly by a third party auditor under the ISO 9001:2000 audit process. A certificate of analysis for reporting/confirming the tested values of the actual material being supplied for the project will be required prior to project close-out.

1.7.3. Roof System Manufacturer Quality Control Inspections: Provide as a part of the Contractor's Base Bid price the following level of roofing system inspections by the roofing system manufacturer during the installation of the new roofing system:

- 1.7.3.1. Attend the Pre-Roofing Conference with Owner's Agent, Architect, Installing Roofing Contractor, Manufacturer's Representative and General Contractor.
- 1.7.3.2. Manufacturer's Inspector shall be present along w/Architect at initial project startup, 50% and 100% inspections.
- 1.7.4. Work found in violation of the Specifications, or not in conformance with acceptable workmanship practices/standards, shall be subject to rejection including complete removal and replacement with new materials at Contractor's expense.
- 1.7.5. Failure of Owner or Architect to discover or reject defective work, or work not in accordance with the Contract, shall not be deemed an acceptance thereof, or a waiver of Owner's rights to Contractor's compliance with the Contract or performance of the work, or any part thereof. No partial or final payment, or partial or entire occupancy, by Owner shall be deemed to be an acceptance of work or of material which is not strictly in accordance with the Contract, nor shall it be deemed a waiver by Owner or any of Owner's rights pursuant to this Contract or otherwise.
- 1.7.6. Contractor may be made to uncover work in-place to determine the quantity and quality of material and workmanship. Contractor photographs may or may not be accepted to validate fasteners, fastener frequency, unit price work and other elements of the work concealed by project finishes.
- 1.7.7. Owner Responsibilities: Owner will provide inspections during the work. Such inspections may be daily or periodic.
- 1.7.8. Contractor Responsibilities: Unless otherwise indicated, provide quality-control inspections with Contractor's own work force. Repair or replace nonconforming work.
 - 1.7.8.1. Associated Services: Cooperate with agencies performing inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Provide the following:
 - 1.7.8.1.1. Access to the Work.
 - 1.7.8.1.2. Incidental labor and materials necessary to facilitate inspections.
 - 1.7.8.2. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate inspections.
 - 1.7.8.3. Agency Approvals: The proposed roof system shall conform to the following requirements. No other testing agency approvals will be accepted. Underwriters Laboratories Class A acceptance of the proposed roofing system, including cold adhesive, without additional requirements for gravel or coatings.

- 1.7.8.4. Acceptable Contractor: Contractor shall have a minimum of 4 years experience in successfully installing the same or similar roofing materials and be certified in writing by the roofing materials manufacturer to install the primary roofing products.
- 1.7.8.5. Scope of Work: The work to be performed under this specification shall include but is not limited to the following: Attend necessary job meetings and furnish competent and full time supervision, experienced roof mechanics, all materials, tools, and equipment necessary to complete, in an acceptable manner, the roof installation in accordance with this specification. Comply with the latest written application instructions of the manufacturer of the primary roofing products. In addition, application practice shall comply with requirements and recommendations contained in the latest edition of the Handbook of Accepted Roofing Knowledge (HARK) as published by the National Roofing Contractor's Association, amended to include the acceptance of a phased roof system installation.
- 1.7.8.6. Local Regulations: Conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction, including, but not limited to, permitting of work and licensing of contractors performing the work
- 1.7.8.7. Manufacturer Requirements: Ensure that the primary roofing materials manufacturer provides direct trained company personnel to attend necessary job meetings, perform periodic inspections as necessary, and conducts a final inspection upon successful completion of the project.

1.8. PRODUCT DELIVERY STORAGE AND HANDLING

- 1.8.1. Delivery: Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.
- 1.8.2. Storage: Store materials out of direct exposure to the elements. Store roll-goods on a clean, flat and dry surface. All material stored on the roof overnight shall be stored on pallets. Rolls of roofing must be stored on ends. Store materials on the roof in a manner so as to preclude overloading of deck and building structure. Store materials such as solvents, adhesives and asphalt cutback products away from open flames, sparks or excessive heat. Cover all material using a breathable cover such as a canvas. Polyethylene or other non-breathable plastic coverings are not acceptable.
- 1.8.3. Handling: Handle all materials in such a manner as to preclude damage and contamination with moisture or foreign matter. Handle rolled goods to prevent damage to edges or ends.
- 1.8.4. Damaged Material: Any materials that are found to be damaged or stored in any manner other than stated above will be automatically rejected, removed and replaced at the Contractor's expense.

1.9. PROJECT/SITE CONDITIONS

1.9.1. Requirements Prior to Job Start

- 1.9.1.1. Pre-Roofing Conference: Roofing Contractor shall schedule a pre-roofing construction conference to be conducted by the Project Architect or his Representative, and attended by the installing roofing contractor, the roofing system manufacturer, the owner's representative and sub-contractors engaged in the work of this project.
- 1.9.1.2. Notification: Give a minimum of 5 days notice to the Owner, Project Architect, and Manufacturer prior to commencing any work and notify all parties on a daily basis of any change in work schedule.
- 1.9.1.3. Permits: Obtain all permits required by local agencies and pay all fees which may be required for the performance of the work.
- 1.9.1.4. Safety: Familiarize every member of the application crew with all fire and safety regulations recommended by OSHA, NRCA and other industry or local governmental groups.

1.9.2. Asbestos Products

- 1.9.2.1. No Asbestos Containing materials were found in the roof membrane, cap sheet, base flashings, backer plys or stripping plys.
- 1.9.2.2. No Asbestos Containing Materials are to be incorporated into the work as a part of this contract. No existing asbestos containing material is to be left or incorporated into the work of this contract. In the event the Contractor finds asbestos containing materials not previously identified, then Contractor shall stop all work in the affected area and notify the Owner and Architect. Contractor shall provide all materials necessary to temporarily dry-in the affected area in the Base Bid. Additional work caused by the discovery, if authorized by the Owner, will be handled as a Change Order to this Contract

1.9.3. Environmental Requirements

- 1.9.3.1. Precipitation: Do not apply roofing materials during precipitation or in the event there is a probability of precipitation during application. Take adequate precautions to ensure that materials, applied roofing, and building interiors are protected from possible moisture damage or contamination.
- 1.9.3.2. Temperature Restrictions - cold adhesive: At low temperatures, the specified cold adhesive becomes more viscous, making even distribution more difficult. The optimal temperature of the adhesive at point of application is 70°F (21°C). To facilitate application when ambient temperatures are below 50°F (10°C), store the adhesive and roll goods in a warm place immediately prior to use. Suspend application in situations where the adhesive cannot be kept at temperatures allowing for even distribution. Roll or broom base ply and

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finish ply sheets across their full width to ensure contact with the underlying adhesive.

1.9.4. Protection Requirements

- 1.9.4.1. Membrane Protection: Provide protection against staining and mechanical damage to newly applied roofing and adjacent surfaces throughout this project.
- 1.9.4.2. Limited Access: Prevent access by the public to materials, tools and equipment during the course of the project.
- 1.9.4.3. Debris Removal: Remove all debris daily from the project site and take to a legal dumping area authorized to receive such materials.
- 1.9.4.4. Site Condition: Complete, to the owner's satisfaction, all job site clean-up including building interior, exterior and landscaping where affected by the construction.
- 1.9.4.5. Facility Protection:
 - 1.9.4.5.1. Limit size of work sections to safeguard adjacent materials, structures, etc., and to minimize dust and noise.
 - 1.9.4.5.2. Protect existing facilities from damage during work. Do not overload existing paving, curbs, sidewalks, etc. with vehicle traffic. Do not overload new or existing construction with demolition debris, equipment, new materials etc.
 - 1.9.4.5.3. Protect existing facilities from fire. Contractor shall provide suitable and adequate fire extinguishers conveniently located on the premises at staging areas, storage areas and at areas of equipment. Competent operators shall be in attendance at all times and shall be properly trained or instructed in fire protection.
 - 1.9.4.5.4. Plywood, minimum 3/4 inch thick, or other suitable materials shall be used to protect roof areas from damage that may be caused by concentrated equipment loads and foot traffic.
 - 1.9.4.5.5. Site and roof traffic shall be confined to work areas. Contractor shall be responsible for leaks that develop in traffic areas during and after Project completion.
 - 1.9.4.5.6. Contractor shall protect interior operations from adverse weather during roofing operations. This requirement extends beyond the immediate project scope of work to adjacent contiguous roof areas.
 - 1.9.4.5.7. The Contractor is responsible and shall be held liable for any damages to the adjacent roof assemblies, building, building contents, its occupancy, grounds or landscaping resulting

from work under the Contract. In the event of damage, Contractor will restore property to a condition equivalent to that at the time the Project started. Restoration may be necessary to construction assemblies not specified in this project manual. In such cases, repair methods and materials are subject to approval by Owner.

1.9.4.6. The Contractor shall keep existing drainage facilities clear of debris during construction.

1.10. MANUFACTURER'S 20 YEAR GUARANTEE/WARRANTY

1.10.1. Roof System Guarantee: Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with the roof system manufacturer's 20 year, No Dollar Limit, Labor and Materials Total Roof System Guarantee. The roof system guarantee shall include both the modified bitumen roofing, surfacing, and flashing membranes, catalyzed resin flashing system, roof insulation, insulation overlay, insulation adhesives, insulation fasteners, flashing adhesives, and accessory roofing materials.

1.10.2. All repair or replacement costs covered under the guarantee shall be borne by the roofing membrane manufacturer. The guarantee shall be a term type, without deductibles or limitations on coverage amount, and be issued at no additional cost to the Owner.

1.11. CONTRATOR'S TWO YEAR WARRANTY

1.11.1. All new materials and workmanship covering work provided under this section of the specifications shall be guaranteed in writing by the contractor to maintain in a watertight condition without cost to the Owner for a period of two (2) years after date of substantial completion.

PART 2. PRODUCTS

2.1. ROOFING SYSTEM ASSEMBLY/PRODUCTS

2.1.1. ROOF INSULATION

2.1.1.1. Polyisocyanurate Roof Insulation – 2" Flat: ASTM C 1289 Type II such as Siplast Paratherm, 4' x 8' maximum size for mechanically attached.

2.1.1.2. Tapered Polyisocyanurate Insulation: Provide factory-tapered polyisocyanurate insulation boards fabricated to slope of ½ inch per 12 inches at all saddles and crickets. Use monolithic board only, factory laminated board is not acceptable.

2.1.1.3. Insulation Overlayment: Georgia Pacific DensDeck Prime; ¼" x 4' x 4'; furnished by Siplast as part of the guaranteed roof system.

2.1.1.4. Cant Strips: Siplast: Mineral perlite board cut to fit at 45 degrees with 5" face.

2.1.1.5. Tapered Edge Strips: Mineral perlite in full range as provided by Manufacturer from ½ inch to 2 inch at thick edge; Provide 0" – ½" x 6" tapered edge strip at leading edge of tapered insulation saddles.

2.1.1.6. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain and to provide constant eave height where indicated and as necessary. Fabricate to slopes indicated.

2.1.2. Base Ply

2.1.2.1. Siplast Paradiene 20: 62# / 100 sq. ft. minimum weight, applied to coverboard with hot asphalt (JM: DynaBase; S: Elastophene Sanded).

2.1.3. Finish Ply

2.1.3.1. Siplast Paradiene 30 FR CR, white: 75# / 100 sq. ft. minimum weight, applied to Base Ply with cold adhesive and heat welded laps (JM: DynaKap FR T1 CR; S: Sopralene 180 Granule LS FR (SG)).

2.1.4. Flashing Membrane

2.1.4.1. Siplast Veral Aluminum: aluminum clad asphalt elastomer sheet: 96# / 100 sq. ft. minimum weight, applied with solvent-free adhesive (JM: DynaClad; S: Sopralast 50 TV ALU sanded).

2.1.5. Fluid Applied Flashing Systems

2.1.5.1. Siplast Parapro 123 Flashing System: A Catalyzed Acrylic Resin Flashing System: A specialty flashing system consisting of a liquid-applied, fully reinforced, multi-component acrylic membrane installed over a prepared or primed substrate. The flashing system consists of a catalyzed acrylic resin primer, basecoat and topcoat, combined with a non-woven polyester fleece. The resin and catalyst are pre-mixed immediately prior to installation. The use of the specialty flashing system shall be specifically approved in advance by the membrane manufacturer for each application. (JM: PermaFlash; S: Alsan Flashing).

2.2. ASPHALT MATERIALS

2.2.1. Asphalt Primer: ASTM D41.

2.3. AUXILIARY ROOFING MATERIALS

2.3.1. Adhesives

2.3.1.1. Adhesive for Membrane Plies: Siplast PA-311 M Adhesive. (JM: MBR Cold Application Adhesive; S: Colply Adhesive VOC).

2.3.1.2. Adhesive for Membrane Plies at Pipe Penetrations Receiving Catalyzed Resin Flashing System: Siplast Solvent Free Adhesive. (JM: MBR Cold Application Adhesive; S: Colply Adhesive VOC).

2.3.1.3. Insulation Overlayment Adhesive

2.3.1.3.1. Siplast: ParaStik (JM: Dow Instastik QS; S: Duotack)

2.3.2. Bituminous Cutback Materials

2.3.2.1. Mastic: Siplast PA-1021 Plastic Cement (JM: MBR Utility Cement; S: FM Adhesive (VOC) Trowel Grade)

2.3.3. Sealant at Membrane/metal junctions:

2.3.3.1. Siplast PS-304 Elastomeric Sealant

2.3.4. Reflective Coating for Liquid Applied Membrane and Adhesive Overruns:

2.3.4.1. Siplast #11 Roofing Granules (JM & S: Mineral Granules; white)

2.4. ROOF ACCESSORIES

2.4.1. Fasteners

2.4.1.1. Insulation Fasteners for Metal Roof Decks: Insulation fasteners shall be approved and furnished by the manufacturer of the selected roof system. Fasteners shall be treated with a corrosion resistant coating exceeding FM Approval Standard #4470 and shall be installed with 3" diameter, round, premium Galvalume metal plates.

2.4.1.2. Capped Nails: Hot-dip galvanized ring shank or Stainless Steel ring shank nail as manufactured by Maze Nails or Simplex.

2.4.1.3. Fasteners for miscellaneous attachments not specified: Hot-dipped galvanized Ring Shank or Stainless Steel Roofing Nails as mfg. by Maze Nails. Only stainless steel nails may be used in conjunction with aluminum sheet and aluminium fabrications.

2.4.1.4. Masonry Expansion Fasteners: Rawl Zamac Nailin® drive anchor w/ Type 304 stainless steel nail 1/4" x 1 1/4".

PART 3. EXECUTION

3.1. PREPARATION

3.1.1. Refer to Section 07591 for work required prior to removal of existing roof system, and preparations required to receive new roofing.

3.1.2. General: After removal of existing roof system and deck preparation is complete, remove all dirt, dust, debris and foreign substances from the surface of the plywood roof deck, prior to commencement of roofing.

- 3.1.3. Examine roof deck to verify deck is in sound condition without visible damage or deterioration. Repair or replace existing roof deck as specified in Section 07591 of these specifications.
- 3.1.4. Remove and replace wet, damaged, or deteriorated plywood deck before beginning application of new roof insulation.

3.2. GENERAL INSULATION APPLICATION

- 3.2.1. Edges of adjacent insulation boards shall be in moderate contact, without forcing.
- 3.2.2. Gaps in insulation joints over ¼" wide shall be filled.
- 3.2.3. Broken corners and edges of any insulation board shall be cut out and repaired with square-cut pieces of insulation no less than 8" x 8" in size.
- 3.2.4. Insulation boards shall be cut neatly to fit tight against vertical surfaces.
- 3.2.5. Insulation surface shall present a smooth surface to receive the roof membrane.
- 3.2.6. All joints of insulation board layer above base layer insulation shall be offset 24" from joints in base layer or fill insulation, below.
- 3.2.7. All joints in insulation overlay shall be offset 24" from joints of flat and tapered insulation, below.
- 3.2.8. Partial insulation units less than 2 square feet in area must be fastened with a minimum of two fasteners.

3.3. INSULATION ATTACHMENT TO PLYWOOD DECK

- 3.3.1. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- 3.3.2. Comply with roofing system manufacturer's written instructions for installing roof insulation.
- 3.3.3. Apply insulation with end joints staggered approximately one-half the length of the units.
- 3.3.4. Form 4' insulation sumps with tapered polyisocyanurate insulation at main roof drains as shown on Project Drawings.
- 3.3.5. At RA 1, loose lay two layers of 1.5" polyisocyanurate base insulation, offsetting joints of adjacent insulation boards, between rows, a minimum of 12".
- 3.3.6. Loose lay tapered insulation boards and fill over base layer insulation at crickets and saddles, offsetting joints of adjacent insulation boards, between rows and layers, a minimum of 12".
- 3.3.7. Form crickets along the upslope side of all curb mounted equipment with base widths exceeding 18" using factory tapered polyisocyanurate insulation (1/2":12"), fill units and tapered edge strips.

3.3.8. Mechanically fasten through all layers of insulation to the plywood deck with specified fasteners, using pattern described below.

3.3.8.1. In the field of roof, install 12 fasteners in each 4' x 8' insulation board in a pattern as found in FM Property Loss Prevention Data Sheet 1-29.

3.3.8.2. In the 4' perimeter, install 15 fasteners in each 4' x 8' insulation board in a pattern as found in FM Property Loss Prevention Data Sheet 1-29.

3.3.8.3. In 4' X 4' corner conditions, install 24 fasteners in each 4' x 8' insulation board in a pattern as found in FM Property Loss Prevention Data Sheet 1-29.

3.3.9. Crickets, saddles and tapered edge strips must be installed before application of insulation overlayment.

3.4. INSTALLATION OF INSULATION OVERLAYMENT

3.4.1. Adhere each overlayment board, approved and furnished by manufacturer of selected roof system, in ribbons of foamed, insulation adhesive, spaced at 12" centers.

3.4.1.1. At 4' perimeter and 4' X 4' corner conditions, adhere overlayment board in ribbons of insulation adhesive spaced at 6" centers.

3.4.2. Size adhesive ribbons in accordance with manufacturer's instructions.

3.4.3. Space ribbons approx. 3" in from sides of insulation and overlay boards and extend ribbons to within 3" of board ends

3.4.4. Lay boards onto adhesive ribbons, without sliding across roof surface to position in final location.

3.4.5. Walk all boards down immediately after installation, before adhesive has set.

3.4.6. Remove excess adhesive from surface of overlay boards to provide a plane surface for membrane above.

3.4.7. Offset insulation and overlayment joints a minimum of 12", in both directions, in each layer and between layers.

3.5. ROOF MEMBRANE INSTALLATION

3.5.1. Membrane Application: Apply roofing in accordance with roofing system manufacturer's current instructions and the following requirements. Application of roofing membrane components shall immediately follow application of insulation overlay, as a continuous operation.

3.5.2. Aesthetic Considerations: An aesthetically pleasing overall appearance of the finished roof application is a standard requirement for this project. Make necessary preparations, utilize recommended application techniques to apply the

specified materials, and exercise care in ensuring that the finished application is acceptable to the Owner.

- 3.5.3. Priming: Prime wood, metal, concrete, and masonry surfaces, and both sides of metal flashings, in contact with bituminous products, with a uniform coating of the specified asphalt primer.
- 3.5.4. Membrane Adhesive Application: Membrane adhesive can be applied by roller, squeegee or spray unit, as recommended by manufacturer of roofing system. Apply cold adhesive in a smooth, even, continuous layer without breaks or voids. Utilize an application rate of 1 1/2 to 2 gal/sq for interply applications. Utilize an application rate of 2 to 2 1/2 gal/sq over irregular or porous substrates.
- 3.5.5. Adhesive and Primer Consistency: Thinning or alterations of adhesives, primer, and sealants will not be permitted.
- 3.5.6. Roof Membrane Application: Apply all layers of roofing free of wrinkles, creases or fishmouths. Exert sufficient pressure on the roll during application to ensure prevention of air pockets. Broom base ply and top ply across their full width and along its full length. "Mop and flop" installation of cap sheet will not be permitted.
 - 3.5.6.1. Apply all layers of roofing perpendicular to the slope of the roof, starting installation at drain valleys and working upslope. Extend all layers of roof membrane across hips of tapered insulation system. Offset base ply and finish ply end laps at hips.
 - 3.5.6.2. Apply all layers of the roof membrane without backwater or side-hill laps.
 - 3.5.6.3. Fully bond the base ply to the surface of the adhesive adhered cover board. Install with minimum 3 inch side laps and 6" end laps. Apply each sheet directly behind the cold adhesive applicator.
 - 3.5.6.4. Adhere cant strips to surface of roof insulation and to vertical face of curbs.
 - 3.5.6.5. Extend the base ply, dry, across the face of all cant strips, and cut off at top of cant strips.
 - 3.5.6.6. Cut a dog ear angle at the end laps of the base ply, on overlapping selvage edges. Using a clean trowel, apply top pressure to seal T-laps immediately following sheet application. Stagger end laps a minimum of 3 feet.
 - 3.5.6.7. Before installation of the finish ply begins, install an additional, fully adhered layer of base ply, as reinforcing sheet, across the cant strip, using specified flashing cement, extending 3" above the cant strip and 3" onto the surface of the previously installed base ply, in accordance with system manufacturer's instructions.

- 3.5.6.8. At wood substrates, extend the backer ply, dry, above the cant strip, to the height of the finished base flashing and fasten to the substrate at 6" centers, in both directions, using specified, capped nails.
- 3.5.6.9. Before installation of finish ply begins, install all flanged flashings over base ply as outlined in Roof System Interface with Related Components, below.
- 3.5.6.10. Fully bond the finish ply to the base ply, utilizing minimum 3 inch side and 6" end laps. Apply each sheet directly behind the cold adhesive applicator. Stagger end laps of the finish ply a minimum 3 feet.
- 3.5.6.11. Cut a dog ear angle, at the end laps of the finish ply, on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application.
- 3.5.6.12. Offset side laps of the finish ply 18 inches from side laps in the underlying base ply. Stagger end laps of the finish ply a minimum 3 feet from end laps in the underlying base ply and from the adjacent sheets of finish ply.
- 3.5.7. Adhesive and Cement Overruns: Cover all adhesive and cement overruns on the finish ply surface with specified granules (reflective coating for Alternate Bid products) while the adhesive is soft, to ensure a monolithic surface color.
- 3.5.8. Base Flashing Application: Flash walls and curbs using the reinforcing sheet and the aluminum clad flashing sheet, applied in specified flashing cement.
 - 3.5.8.1. Except as noted above for wood substrates, fully adhere the reinforcing sheet to the base ply and other substrates using specified flashing cement, prior to installation of the finish ply. Incorporate minimum 3 inch side laps; extending the sheets a minimum of 3 inches onto the base ply surface and 3 inches up the wall or curb, above the cant, unless otherwise required by roof system manufacturer.
 - 3.5.8.2. Terminate the finish ply at the top of the cant. Cut the specified surface flashing sheet across the width of each roll, maintaining the selvage edge along one side of the cut flashing sheet.
 - 3.5.8.3. Apply a uniform coat of the specified flashing cement to the area to receive flashing coverage and to the backside of the precut section of base flashing. Set the flashing in place while exerting pressure on the flashing sheet to ensure complete contact with the wall/roof surfaces and to prevent air pockets. Check and seal all loose laps and edges.
 - 3.5.8.4. Fasten the top edge of the flashing sheet to concrete and masonry substrates using an aluminum termination bar secured to the substrate with drive pins spaced at 6 inch centers.
 - 3.5.8.5. Fasten the top edge of the flashing sheet to wood blocking or to wood substrates using 1-1/4", stainless steel, capped, ring shank nails spaced at 4" centers.

3.5.9. Catalyzed Acrylic Resin Flashing System: Install the liquid-applied primer and flashing system in accordance with the system manufacturer's printed installer's guidelines. Observe all other applicable written recommendations as provided by the manufacturer.

3.5.9.1. Remove all bitumen, debris, rust, scale and other foreign matter from surfaces receiving catalyzed flashing system, prior to installation. Use scrapers, wire brush and/or grinders, as necessary.

3.5.9.2. Mask off areas to receive acrylic resin flashing with tape. Remove tape prior to flashing setting up and discard.

3.5.9.3. Treat cleaned areas receiving ParaPro Flashing with Siplast Pro-Prep and allow to dry.

3.5.9.4. Apply Siplast ParaPro ProFleece to prepared surface of roof and penetrations thru roof in strict accordance with manufacturer's written instructions, including pre-saturation of ProFleece laps with the Catalyzed Acrylic Resin.

3.5.9.5. Apply base coat and top coat of catalyzed acrylic resin to ParaPro fleece. Allow manufacturer's instructions regarding drying and curing time between coats.

3.5.10. Covering of Adhesive and Cement Overruns: Cover all adhesive and flashing cement overruns on the base flashing or finish ply surface with specified reflective coating while the adhesive or cement is still soft to ensure a monolithic surface color.

3.5.11. Water Cut-Offs: At end of each day's work, or when precipitation is imminent, construct water cut-offs at all open edges. Cut-offs can be built using asphalt or plastic cement and roofing felts, and shall be constructed so as to withstand protracted periods of service. Cut-offs must be completely removed prior to the resumption of roofing.

3.6. ROOF SYSTEM INTERFACE WITH RELATED COMPONENTS

3.6.1. Lead Drain Flashings: Completely prime both sides of the 30" x 30" sheet lead drain flashing and allow to dry prior to installation. After the base ply has been applied, set the lead flashing sheet in a full bed of roof cement and form the lead sheet to turn down 1-1/2" inside of the drain bowl. Strip-in the lead flashing using a layer of the base ply or base sheet material, overlapping the outside perimeter of the lead a minimum of 6 inches. Terminate the finish ply so as to extend beneath the clamping ring. Install the clamping ring with all bolts set in place and tightened.

3.6.2. Sealant: Apply a smooth continuous bead of the specified sealant at the exposed edges of the finish ply at the transition to all metal flashings incorporated into the roof system.

3.6.3. Miscellaneous Flanged Flashings

- 3.6.3.1. Coat both top and bottom surfaces of miscellaneous flanged flashing with asphalt primer and allow to dry. When dry, set primed flange over field membrane plies in solid bed of black plastic roof cement.
- 3.6.3.2. If flange width exceeds 12 inches, secure it to previously installed wood blocking with suitable fasteners placed near each corner and at the center of each side.
- 3.6.3.3. Seal flange with one base ply to field membrane ply. Fit stripping ply snugly to vertical flanges. Extend stripping ply at least six inches beyond the flange.
- 3.6.3.4. Extend flashing sleeves a minimum height of 8" above the roof surface.

3.7. FIELD QUALITY CONTROL AND INSPECTIONS

- 3.7.1. Site Condition: Leave all areas around job site free of debris, roofing materials, equipment and related items after completion of job.
- 3.7.2. Schedule required manufacturer's progress inspections at specified intervals. Notify Project Architect of scheduled inspection dates. Provide Project Architect with copies of manufacturer's inspection reports in a timely fashion. Provide pertinent information regarding proposed and completed repairs required by the manufacturer.
- 3.7.3. Notification of Completion: Notify the manufacturer by means of manufacturer's printed Notification of Completion form of job completion in order to schedule a final inspection date.
- 3.7.4. Final Inspection
 - 3.7.4.1. Notify Project Architect of scheduled time and date of manufacturer's final inspection.
 - 3.7.4.2. Post-Installation Meeting: Hold a meeting at the completion of the project, attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the Contractor and the manufacturer's representative. Complete, sign, and mail the punch list form to the manufacturer's headquarters and to the Project Architect.
- 3.7.5. Issuance of The Guarantee: Complete all post installation procedures and meet the manufacturer's final endorsement for issuance of the specified guarantee.

END OF SECTION 07550

SECTION 07560

FLUID APPLIED ROOFING

PART 1 GENERAL

1.1 DESCRIPTION

- 1.1.1 Fluid applied flexible acrylic waterproofing system over existing metal roofing panel assembly. This work shall include the preparation of the metal roofing panel, application of the primer coat, first coat, and a second finish coat at RAs 2, 3 & 4, and clean up.

1.2 DESCRIPTION OF FLUID APPLIED ROOFING SYSTEM

- 1.2.1 The fluid applied roofing system must consist of an elastomeric system specifically designed for use on a metal roofing panel assembly. The system must have been approved by FMRC (Factory Mutual Research Corporation) according to Standard 4470 for Class 1 Roof Constructions which includes - Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.3 RELATED WORK

- 1.3.1 The Contractor shall review all sections of these specifications to determine items of work that will interface with the application of this roofing coating system. Coordination and execution of related sections shall be the responsibility of the Contractor.

1.4 REFERENCES

- 1.4.1 ASTM B117 - Test Method of Salt Spray (Fog) Testing.
- 1.4.2 ASTM G29 - Test Methods for Algae Resistance.
- 1.4.3 ASTM E108 - Test Method for Fire Test of Roof Coverings.
- 1.4.4 ASTM D1653 - Water Vapor Transmission of Materials.
- 1.4.5 ASTM G26 - Practice for Operating Light- and Water-Exposure Apparatus (Xenon Arc Type) for Exposure of Nonmetallic Materials.
- 1.4.6 ASTM D412 - Ultimate Tensile Strength at Break.
- 1.4.7 ASTM D6083 - Standard Specification for Liquid Applied Acrylic Coatings used in roofing.
- 1.4.8 ASTM C1549 - Standard test method for determination of solar reflectance near ambient temperature using a portable solar reflectometer.
- 1.4.9 ASTM C1371- Standard test method for determination of emittance of materials near room temperature using portable emissometers.

- 1.4.10 FM 4470 - Standard for Class 1 Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.5 SUBMITTALS

- 1.5.1 Shop Drawings: Submit a scaled drawing showing the layout of joint reinforcing and all flashing details.
- 1.5.2 Product Data: Provide manufacturer's technical literature on products that make up the roofing system. This shall include, but is not limited to, coatings, reinforcing fabrics, flashing materials, fasteners, etc.
- 1.5.3 Manufacturer's Installation Instructions: Submit all data sheets available from the manufacturer on the installation of the roofing system applicable to the work.
- 1.5.4 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.6 QUALIFICATIONS

- 1.6.1 Applicator Qualifications: The applicator of the roofing material specified herein shall be an approved applicator (designated by the Manufacturer). Proof of this qualification shall be provided in written form from the manufacturer of the roofing system.

1.7 QUALITY CONTROL

- 1.7.1 Codes and Standards: The contractor shall make him/herself thoroughly familiar with all codes, regulations, and standards governing the specified work. Any contradiction between the manufacturer's requirements and these specifications shall be brought to the attention of the manufacturer and the specifier.
- 1.7.2 Deviations: There shall not be any deviations from these specifications unless the deviation is submitted in writing to the specifier. The request for deviation must have a letter from the roofing manufacturer's technical department approving the details of the deviation.
- 1.7.3 An Approved Applicator (as designated by the Manufacturer) shall be on site during all applications of any Manufacturer products.
- 1.7.4 Manufacturer's Technical Representative: An employee of the roofing material manufacturer shall be on site at least once every 7-calendar days during the work specified herein. Upon request the technical representative shall provide a written inspection report, during each site visit and submit the reports to the Owner/Owner's representative. The manufacturer's representative must approve the application process at specific stages before the Contractor may continue including: Prior to the application of the Foundation Coat and fabric, at the completion of both Foundation Coat and fabric layers, and after the Finish Coat is applied.

1.8 DELIVERY, STORAGE, AND HANDLING

1.8.1 Deliver materials to site in manufacturer's unopened and undamaged containers bearing the following information:

- 1.8.1.1 Name of manufacturer.
- 1.8.1.2 Name of contents and products code.
- 1.8.1.3 Net volume of contents.
- 1.8.1.4 Lot or batch number.
- 1.8.1.5 VOC content.
- 1.8.1.6 Storage temperature limits.
- 1.8.1.7 Shelf life expiration date.
- 1.8.1.8 Mixing instructions and proportions of contents.
- 1.8.1.9 Safety information and instructions.

1.8.2 Store and protect materials from damage and weather in accordance with manufacturer's instructions.

1.8.3 Store materials at temperatures between 50 and 90 degrees F (10 and 32 degrees C). Keep out of direct sunlight.

1.8.4 Support stored material containers on pallets and cover with tarpaulin tied to bottom of pallets.

1.9 ENVIRONMENTAL REQUIREMENTS

1.9.1 Do not apply if ambient temperatures are expected to fall below 40 degrees F (4.5 degrees C) or if rain is expected before the application has time to dry.

1.10 WARRANTY

1.10.1 Provide twenty (20) year Manufacturer's Labor and Material warranty.

PART 2 PRODUCTS

2.1 MANUFACTURER

- | | |
|---|--|
| 2.1.1 Sealoflex Waterproofing Systems
PO Box 3135
Summerville, SC 29484 | Toll Free: (800) 770-6466
Phone: (843) 873-9500
Fax: (843) 873-9566
Web: www.sealoflex.com |
| 2.1.1 Hydro-Stop, LLC
1465 Pipefitter Street
North Charleston, SC 29405 | Toll Free: (800) 739-5566
Phone: (843) 745-9600
Fax: (843) 745-9602
Web: www.hydro-stop.com |
| 2.1.2 E.R. Systems
6900 Bleck Drive
Rockford, MN 55373 | Toll Free: (800) 403-7747
Phone: (763) 565-6900
Fax: (763) 565-6901
Web: www.ersystems.com |

2.2 MEMBRANE COMPOUND MATERIAL

2.2.1 Waterproofing Material: Sealoflex Waterproofing System (HydroStop/ United Coatings: Kymax System; ER Systems: Reflecticlean System) two-stage, flexible acrylic coating, fluid applied in successive stages to form one continuous, seamless, watertight membrane; 15 mil minimum cured total system thickness; comprised of the following:

2.2.1.1 Foundation and Saturation Coats: None Required.

2.2.1.2 Fabric: None required except as necessary to cover horizontal metal panel end laps and exposed fasteners.

2.2.1.3 Primer: Prior to application of primer; pull test required with manufacturer's representative in attendance.

2.2.1.3.1 If required a primer such as Metal Etch by Sealoflex Waterproofing Systems will be applied. Provide Sealobond Primer WB™ as BASE BID primer.

2.2.1.3.2 If no primer required provide Additive 100 by Sealoflex is to first coat of Extreme

2.2.1.4 Finish Coat: Sealoflex Extreme, ultraviolet light resistant, blend of highly flexible water based 100% pure acrylic polymer resin coating (HydroStop: Kymax; ER Systems: Reflecticlean); color to match new pre-finished sheet metal.

2.3 ACCESSORIES

2.3.1 Primer: Sealoflex Sealobond Primer WB™; a water based surfactant-free primer used in direct metal applications to stabilize and protect metal surfaces (HydroStop: StableRust Primer; ER System: Reflecticlean Primer).

2.3.2 Rust Neutralizer: Sealoflex Rust X-2020; a thin, milky liquid polymer which transforms iron oxide into a stable and insoluble blue-black metallo-organic complex (ER Systems: Airguard 2000 Primer).

PART 3 EXECUTION

3.1 EXAMINATION

3.1.1 Verify substrate surfaces are durable, free of frozen matter, dampness, loose particles, cracks, pits, projections, or foreign matter detrimental to adhesion or application of waterproofing system.

3.1.2 Verify that substrate surfaces are smooth and not detrimental to full contact bond of waterproofing materials.

3.1.3 Verify items that penetrate surfaces to receive waterproofing are securely installed.

3.1.4 Verify that substrate areas are adequately supported and firmly fastened in place.

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3.1.5 Verify that all attached vertical walls are properly waterproofed.

3.2 PREPARATION

3.2.1 Protect adjacent surfaces not designated to receive waterproofing.

3.2.2 As a minimum, clean and prepare surfaces to receive waterproofing by removing all loose and flaking particles, grease and laitance with the use of a stiff bristle push broom and or power washing. Care should be taken not to inject water into the substrate during washing. In some cases additional drying time may be required after the cleaning process.

3.2.3 Oxidized Metal: After power washing the existing metal roofing panels, remove all scale and apply rust neutralizer at a rate of 600 ft²/ gal to all rusted areas. Allow to dry. Protect from weather until dry.

3.2.4 Pre-Finished Metal Panel: After power washing the existing metal roofing panels, apply primer at a rate of 250 ft²/ gal to all rusted areas. Allow to dry. Protect from weather until dry.

3.2.5 Make all necessary repairs to existing substrate.

3.2.6 Do not apply waterproofing to surfaces unacceptable to manufacturer.

3.3 WATERPROOFING APPLICATION

3.3.1 Primer Coat Component:

3.3.1.1 Consist of one coat of the primer applied to the prepared substrate. Primer coat is applied at a total rate of 250 ft²/gal. Primer coat may be applied with the use of approved roof brushes, rollers, or spraying of the primer.

3.3.1.1.1 Metal Roofing Panel End Laps - Using a 6 in. strip of polyester fabric and the foundation components (described above) seal all end laps in the metal roofing panel assembly. Protect from weather until dry.

3.3.1.1.2 Exposed Mechanical Fasteners - Using a 6 in. x 6 in. piece of polyester fabric and the foundation components (described above) seal all mechanical fasteners. Protect from weather until dry.

3.3.2 Finish Coat Component:

3.3.2.1 Apply a detail coat of the finish coat to all vertical surfaces prior to field application.

3.3.2.2 Apply each coat of finish coating at a combined total rate of 100 ft²/gal over RAs 2, 3 & 4. Minimum mil requirements are 15 mils (.015 inches / .381 millimeters) wet and 7.5 mils dry per coat. Allow to dry between coats. Total finish coat dry thickness should be a minimum of 15 mils

(.015 inches / .381 millimeters).

3.3.3 Completed Fluid Applied System:

3.3.3.1 System must be installed to a minimum 15 mil (.015 inches / .381 millimeters) total cured thickness over **all** seams, laps, fasteners, wall junctions, and penetrations.

3.4 PROTECTION OF FINISHED WORK

3.4.1 Monitor finished system for 7 day, sweeping off birdbaths to allow for full cure.

3.5 CLEANING

3.5.1 Immediately clean unscheduled surfaces receiving waterproofing in accordance with manufacturer's instructions.

END OF SECTION 07560

SECTION 07591

REROOFING REMOVALS & PREPARATION

PART 1 GENERAL

1.1 SUMMARY

1.1.1 This Section includes the following:

1.1.1.1 Low Sloped Roof Removals

1.1.1.2 Metal Panel Roof System Assembly Removals

1.1.1.3 Plywood Deck Preparation

1.1.1.4 Metal Panel Preparations

1.1.1.5 Disposal

1.2 RELATED WORK SPECIFIED ELSEWHERE

1.2.1 Allowances: Refer to Division 1 Section "Cash Allowances" for description of Work in this Section affected by allowances.

1.2.2 Unit Prices: Refer to Division 1 Section "Measurement and Payment" for description of Work in this Section affected by unit prices.

1.3 SUBMITTALS

1.3.1 Product Data: Reference Section 01300 "Submittals."

1.3.2 Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces that might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.

1.4 QUALITY ASSURANCE

1.4.1 Installer Qualifications: Reference Section 01400 "Quality Control."

1.4.2 Pre-roofing Conference: Prior to the work beginning conduct a pre-construction conference with the Owner and Architect at USC Aiken Campus Sports Concession Building with the Contractor's project foreman and project manager in attendance.

1.5 PROJECT CONDITIONS

1.5.1 Owner will occupy portions of building immediately below reroofing area. Conduct reroofing 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.

- 1.5.2 Coordinate work activities daily with Owner so Contractor 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.
- 1.5.3 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.
- 1.5.4 Protect building to be reroofed, building interiors, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations. Repair affected areas to original existing condition previous to reroofing project.
- 1.5.5 Protect occupants and property below roofing activity at all times until work overhead is complete to the point that protection is no longer required.
- 1.5.6 Maintain access to existing walkways, corridors and other occupied or used facilities.
 - 1.5.6.1 Do not close or obstruct walkways, corridors and other occupied or used facilities without written permission from authorities having jurisdiction.
- 1.5.7 Limit construction loads on roof to 20 lbs/SF for uniformly distributed loads which includes rooftop equipment wheel loads.
- 1.5.8 Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering into existing roofing system or building.

PART 2 PRODUCTS

2.1 AUXILIARY REROOFING MATERIALS

- 2.1.1 General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new roofing systems.
- 2.1.2 Wood blocking to wood substrate: Stormguard® hot dipped galvanized ring shanked or spiral decking nails with minimum 3/8" head as manufactured by Maze Nails.
- 2.1.3 Wood to Wood Screws: Shall be ITW Buildex DEC-KING™ Climacoat™ bugle head, size for length required 6x1- 1/4" (part No. 2176500) for sheathing to sheathing application.
- 2.1.4 Fasteners for wood sheathing: Hot dipped galvanized or Stainless Steel ring-shank 8D nails as mfg. by Maze Nails.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- 3.1.1 Protect existing roofing systems that are indicated not to be reroofed.
- 3.1.2 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.
- 3.1.3 Check all internal roof drains for clear passage of storm water. Report any clogged drains, drain leaders, gutters or downspouts to OWNER prior to the start of reroofing work. Contractor's start of work is regarded as Contractor's acceptance of clear drainage. Contractor will be responsible for all work required to clear drainage path after work under this contract has begun.
- 3.1.4 Raise mechanical equipment, ductwork, and curbs as necessary to maintain minimum 8" base flashing height.
 - 3.1.4.1 Extend sanitary vents as necessary to a minimum height of 8" above the finished roof surface.
- 3.1.5 Maintain roof drainage path in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drainage path and conductors. For internal drainage systems, use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
- 3.1.6 Storage or sale of removed items or materials on-site will not be permitted.
- 3.1.7 Utility Service: Maintain existing utilities in service and protect them against damage during the selective demolition operations.
 - 3.1.7.1 Maintain security and fire protection facilities in service during selective demolition operations.
 - 3.1.7.2 When unanticipated mechanical, electrical or structural elements that conflict with the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly submit in writing a report to the Architect.
 - 3.1.7.3 Verify that rooftop utilities and service piping have been shut off before commencing work which may not be safe if service is left on.
 - 3.1.7.4 Coordinate shutdown or disconnect of rooftop utilities or service piping with Owner, no less than 72 hours before shutdown or disconnect area scheduled.
- 3.1.8 Site Access and Temporary Controls: Conduct removals, preparations and roofing installation operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

- 3.1.8.1 Do not close or obstruct roads, streets, walks, walkways and other adjacent occupied and used facilities without written permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- 3.1.8.2 Erect temporary protection where required by authorities having jurisdiction.
- 3.1.9 Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 3.1.9.1 Provide Temporary toilet facilities on site in location to be determined by Owner and Architect.
- 3.1.10 Examination of Roof Drains
 - 3.1.10.1 Remove all asphalt or misc. sealant accumulations from interior of all drain bowls prior to start of roof removals. Water test all prepared drain bowls and overflow drain bowls to locate any existing defects in drain casting.
 - 3.1.10.2 Verify integrity of anchor lugs or threaded attachment points for drain clamping rings.
 - 3.1.10.3 Advise Project Architect of any defect found in drain assemblies prior to start of roof removal.

3.2 LOW SLOPED ROOF REMOVALS

- 3.2.1 General: Notify Owner each day of extent of roof tear-off proposed and obtain authorization to proceed from Owner's point of contact.
- 3.2.2 Roof System Removals:
 - 3.2.2.1 Remove existing aggregate surfaced BUR system, base flashings and other roofing system components, down to the surface of the plywood deck, and discard.
 - 3.2.2.2 Remove and discard coping caps, sheet metal flashing, and counter flashings.
 - 3.2.2.3 Remove or repair any obstruction which may interfere with the proper application of new materials.

3.3 METAL PANEL ROOF SYSTEM ASSEMBLY REMOVALS

- 3.3.1 Remove all existing ridge apron flashings and rake flashings and discard.
- 3.3.2 Remove all deteriorated tube and butyl tape sealant from outside closures and surfaces of the metal roof panels.

- 3.3.3 Remove or repair any obstruction which may interfere with the proper application of new materials.

3.4 PLYWOOD DECK PREPARATION

- 3.4.1 Inspect roof deck, daily, during and after tear-off of aggregate surfaced built-up roofing system. Provide fall-thru protection over known or suspected areas of deteriorated roof deck
- 3.4.2 Fasten all loose plywood decking to wood framing using hot dipped galvanized or stainless steel ring shank nails at 6" O.C.
- 3.4.3 Remove any existing deteriorated wood deck and replace with new plywood deck to match existing thickness.
- 3.4.4 Do not proceed with installation of new roof decking until directed to do so by Architect or Owner. If found necessary, remove and replace wood decking. See Section 01010 of these specifications for Unit Price Quantities to include in Base Bid for wood deck replacement.

3.5 METAL PANEL PREPARATIONS

- 3.5.1 Fully seam "T" rib battens that are not fully seamed.
- 3.5.2 Use a rotary wire brush to remove scale and rust from existing metal roof panels.
- 3.5.3 Coat prepared areas with one coat of the coating Manufacturers' metal primer.
- 3.5.4 Power wash metal roof panels.
- 3.5.5 Clean and dry all metal components to receive new sealants.
- 3.5.6 Apply new tube polyurethane sealant to the dry side of the existing outside closures bottom flange and vertical legs.
- 3.5.7 Perform Adhesion Testing prior to the application of primers and coatings

3.6 EXISTING BASE FLASHINGS

- 3.6.1 Remove existing base flashings, backer plies and stripping plies around parapets, curbs, walls, and penetrations.
- 3.6.2 Clean substrates of contaminants such as asphalt, sheet materials, dirt, and debris.

3.7 DISPOSAL

- 3.7.1 Collect and place demolished materials in containers daily. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- 3.7.2 Do not burn demolished material on site.

3.7.3 Transport demolished materials off Owner's property and dispose of legally.

END OF SECTION 07591

SECTION 07620

FLASHING, SHEET METAL, AND MISCELLANEOUS METALS

PART 1 GENERAL

1.1 WORK INCLUDED.

- 1.1.1 Fabrication and installation of new sheet metal coping cap.
- 1.1.2 Fabrication and installation of new sheet metal apron flashing.
- 1.1.3 Fabrication and installation of new sheet metal rake flashing.
- 1.1.4 Fabrication and installation of new sheet metal counterflashing.
- 1.1.5 Installation of roof drain flashing.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- 1.2.1 Rough Carpentry – Section 06100
- 1.2.2 Modified Bitumen Membrane Roofing – Section 07550
- 1.2.3 Fluid Applied Roofing – Section 07560

1.3 QUALITY ASSURANCE

- 1.3.1 Qualifications of the Manufacturer: Products used in the work of this section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Architect.
- 1.3.2 Qualifications of the Installers: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and are completely familiar with the specified requirements and the methods needed for the proper performance of the work in this section.

1.4 SHOP DRAWINGS

- 1.4.1 Submit shop drawings for all metal component shapes in accordance with specifications.
- 1.4.2 Indicate material profile, jointing pattern, jointing details, fastening methods, and installation details.

1.5 SUBMITTALS

- 1.5.1 Refer to Shop drawings, Product Data and Samples - SECTION 01340

1.6 STORAGE AND HANDLING

- 1.6.1 Store materials dry in accordance with specifications.

- 1.6.2 Stack material to prevent twisting, bending, or abrasion.
- 1.6.3 During storage prevent material contact with any substance that would discolor or stain, including soil and water.

1.7 SCHEDULING

- 1.7.1 Installation of all new sheet metal work shall be closely coordinated with the installation of the new low sloped roof system such that roof system terminations will not be left unprotected by metal.

1.8 GUARANTEE

- 1.8.1 Installing Contractor shall guarantee, in writing, that all new materials and workmanship covering work provided under this section of the specifications shall be maintained in a watertight condition, without cost to the Owner, for a period of two (2) years after date of final completion.

PART 2 PRODUCTS

2.1 SHEET METAL MATERIAL

- 2.1.1 Sheet Metal: Shall be formed from minimum 24 gauge pre-finished galvalume sheets conforming to ASTM A-792, AZ50 or greater and Kynar 500/Hylar 5000 fluorocarbon coating applied in two steps, with protective film to be removed after coating installation. Pre-finished sheets shall be as manufactured by Metal Roofing Systems, Inc., or approved equal such as Vincent Metals.
- 2.1.2 Sheet Metal: Shall be formed from minimum 22 gauge galvalume plus sheets conforming to ASTM A-792, AZ50 or greater. Note: Divorce from any preservative treated lumber with at a minimum one layer of 15 lb. asphalt saturated felt.
- 2.1.3 METAL COMPONENT WEIGHT & FINISH SUMMARY:

2.1.3.1	coping cap	24 ga. pre-finished galvalume
2.1.3.2	locking cleats	22 ga. galvalume
2.1.3.3	counter flashing	24 ga. pre-finished galvalume
2.1.3.4	lead flashings	4 Lb. soft
2.1.3.5	outside closure	22 ga. galvalume
2.1.3.6	apron flashing	24 ga. pre-finished galvalume
2.1.3.7	rake flashing	24 ga. pre-finished galvalume

2.2 ACCESSORY MATERIALS

- 2.2.1 All miscellaneous clamps, straps and supports, not otherwise designated above, to be stainless steel.
- 2.2.2 Nails: Shall be hot-dipped galvanized or stainless steel ring shank nails, size as required by construction. Use only stainless steel nails with aluminum fabrications.
- 2.2.3 Metal to Metal Screws: Shall be ITW Buildex SCOTS stainless steel 12-14x1" (Part No. 1165209) with bonded washer.

- 2.2.4 Wood to Metal Screws: Shall be ITW Buildex TRAXX™ Climacoat™ flat head 12-24X2 1/2" (part No. 1094000).
- 2.2.5 Wood to Wood Screws: Shall be ITW Buildex DEC-KING™ Climacoat™ bugle head, size for length required 6x1- 1/4" (part No. 2176500) for sheathing to sheathing application.
- 2.2.6 Caulking: Sealant shall be Sikaflex - 1a, manufactured by Sika Corporation; Chem-Calk 900, manufactured by Bostik, Inc.; or Sonolastic NP-1, manufactured by Sonneborn Building Products or approval equal. Color shall be selected by Owner.
- 2.2.7 Cleaner: For Sikaflex 1a, cleaner shall be Xylol, Toluol, Methly ethyl ketone or commercial solvent recommended by the sealant manufacturer.
- 2.2.8 Primer: Shall be as recommended by sealant manufacturer.
- 2.2.9 Flexible Vinyl Flashing: Shall be 20 mil PVC, width as required, such as that manufactured by BMCA, a division of GAF.
- 2.2.10 Butyl Tape Sealant: 7/8" wide, tri-bead, high temperature self adhering double sided butyl rubber sealant tape as distributed by Best Materials.

PART 3 EXECUTION

3.1 INSPECTION

- 3.1.1 Inspect all surfaces to which metal is to be applied to verify they are clean, smooth, free of depressions, waves, or projections, and have solidly supported joints. Do not install underlayment or metal unless surfaces are even, sound, clean, dry and free from defects that might affect the application of the new material.

3.2 FABRICATION AND INSTALLATION

- 3.2.1 Dissimilar metals shall be kept separated to prevent galvanic action. Preventative measures shall include separation by suitable electrolysis breaking material.
- 3.2.2 Separate any aluminum components from preservative treated lumber with a minimum divorcing layer of 20 mil PVC. NEVER USE ALUMINUM FASTENERS IN PRESERVATIVE TREATED LUMBER.
- 3.2.3 All metal flanges shall be installed on top of membrane in accordance with membrane manufacturer's written installation instructions.
- 3.2.4 Flash in metal flanges per roofing system manufacturer's written recommendations unless in conflict with contract documents and/or detail drawings. Resolve any conflict with Architect, prior to installation of stripping plys.
- 3.2.5 Install metal to be water and weather tight with lines, arises, and angles sharp and true with plane surfaces free of waves or buckles.

- 3.2.6 Use maximum 10' sections with minimum number of sections in each straight run. Observe specified minimum dimension at corners and ends.
 - 3.2.7 Form sections square, true, and accurate to size, free from distortion, sharp edges, and other defects detrimental to appearance or performance.
 - 3.2.8 Junctures, intersections, corners, and unions of sheet metal shall be held to 24-inch leg minimum.
 - 3.2.9 All exposed edges of sheet metal shall be folded back, or hemmed, onto concealed surfaces (minimum 1/2").
 - 3.2.10 All hemmed edges to be engaged in locking cleats shall have 3/4" hem with a folded back return of 5/8". Hem angle maximum 30°. Reference SMACNA Architectural Sheet Metal Manual (Fifth Edition), Figure 2-1 Detail 1.
 - 3.2.11 All locking cleats are to be one gauge heavier than metal fabrication being secured by the cleat.
- 3.3 FABRICATION AND INSTALLATION OF NEW METAL COPING CAP:
- 3.3.1 Form and install new standing seam metal coping cap in accordance with SMACNA Architectural Sheet Metal Manual Figure 3-4 A.
 - 3.3.2 Attach interior and exterior locking cleats to the new or existing wood blocking with fasteners spaced at 6" O.C.
 - 3.3.3 Prior to the application of the metal coping cap, install a strip of 20 mil PVC flashing in as long a strip as practical over the wood blocking and metal locking cleats. Lap ends 6" minimum and cement with flashing cement.
 - 3.3.4 Use maximum 10' sections with minimum number of sections in each straight run. Form 1" standing seam at ends of sections and seal.
 - 3.3.5 Engage the coping cap with locking cleats on the interior and exterior face of the parapet wall.
 - 3.3.6 Continuously crimp the hem of the coping cap to the locking cleat on the exterior and interior sides of the parapet wall.
- 3.4 FABRICATION AND INSTALLATION OF NEW METAL RAKE FLASHING:
- 3.4.1 Form and install new pre-finished metal rake in accordance with Project Drawings.
 - 3.4.2 Fasten new continuous metal locking cleat to the existing wood blocking at 6" OC.
 - 3.4.3 Lock new metal rake trim onto the continuous locking cleat and over the rake clip. Fasten the rake trim to the rake clip with pop rivets at 6" OC.
- 3.5 FABRICATION AND INSTALLATION OF NEW APRON FLASHING:
- 3.5.1 Form and install new pre-finished metal ridge flashing at top edge of roof panels

in accordance with project drawings.

3.5.1.1 Apron flashing should be formed with a minimum 8" exposure so that the apron flashing extends a minimum of ½" beyond the zee closure.

3.5.2 Apply a continuous strip of 1" butyl tape over the top flange of the zee closure and set ridge flashing into the butyl tape.

3.5.3 Fasten the apron flashing to the wood blocking with appropriate fasteners at 6" OC.

3.6 NEW COUNTERFLASHING INSTALLATION:

3.6.1 Form and install new counterflashing metal with lap in joints a minimum of 3 inches and lock joint lap. Notch and lap counterflashing sections a minimum of 3 inches.

3.6.2 At equipment curbs, form counter flashings with a minimum 1-½" flange that rests on top of the curb and secure to the top of the curb with roofing nails spaced at 6" O.C.

3.7 NEW DRAIN FLASHING INSTALLATION:

3.7.1 Prior to the installation of the new modified bitumen cap sheet, install new drain flashings at existing roof drains and overflow drain over the base ply.

3.7.2 Use 4 lb. Lead sheet 3'x3' or at least large enough to extend a minimum of 12" outside the drain flashing flange.

3.7.3 Cut hole in the center of the lead flashing with a diameter 2" less than the inside diameter of the flashing flange.

3.7.4 Prior to the application, prime top and bottom surface of lead flashing with asphalt primer, center over drain and set in a bed of black plastic roofing cement. Install drain clamping ring over lead sheet and pull it down uniformly and tight.

3.7.5 Trim excess lead from inside flashing flange leaving approximately 1-1/2" of lead extending into the drain bowl. Mallet lead to conform to shape of drain bowl. Remove and install new lead flashing if flashing is torn or cut.

3.7.6 Where bolts penetrate lead flashings assure holes are punched through lead flashings at a smaller diameter than that of bolts. Apply clamping flange and secure uniformly and tight.

3.7.7 Cover lead flashing sheet with one stripping ply base ply. Extend the ply at least 12" beyond the lead flashing. Stripping plies to be the same as membrane plies.

END OF SECTION 07620

Enclosures

FOREMAN'S STATEMENT
A PROJECT MANUAL FOR THE
LOW SLOPED ROOF REPLACEMENT AND METAL ROOF COATING
AT THE USC AIKEN SPORTS CONCESSION BUILDING
521 SCHOLAR LOOP, AIKEN, SC 29801

OCTOBER 2015

I, _____ (Print Name), an employee of

_____ (Print Contractor Name) hereby

state that I have my own personal copy of the above referenced project specifications and drawings, have thoroughly read them, and have visited the work site.

By _____

Date _____

(CONTRACTOR'S LETTERHEAD)
TWO YEAR WARRANTY

Known all men by these presents, that we, (Insert Contractor Name), having installed wood blocking, rigid insulation, insulation overlayment, modified asphalt built-up roofing membrane with cap sheet surfacing, bituminous, metal and acrylic resin flashings, coping cap, counterflashing, fluid applied coating, and associated sheet metal work, and having accomplished certain other work on the **USC Aiken Sports Concession Building** under contract between the **University of South Carolina** and (Insert Contractor Name), warrant to the **University of South Carolina** with respect to said work that for a period of two years from date of final acceptance of said work the low sloped roofing assembly and steep sloped metal panel roofing assembly, including wood blocking, rigid insulation, insulation overlayment, modified asphalt built-up roofing membrane with cap sheet surfacing, bituminous, metal and acrylic resin flashings, coping cap, counterflashing, fluid applied coating, and associated sheet metal work, shall be absolutely watertight and free from all leaks, provided however that the following are excluded from this warranty:

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

We, (Insert Contractor Name), agree that should any leaks occur in the wall cladding system, we will promptly remedy said leaks in a manner to restore the wall cladding to a watertight condition by methods compatible to the system and acceptable under industry standards and general practice.

We, (Insert Contractor Name), further agree that for a period of two years from date of final acceptance referred to above, we will make repairs at no expense to the Owner to any defects which may develop in the work including, but not limited to, blisters, wrinkles, ridges, splits and loose base flashing membrane and/or metal flashings, sheet metal lap joints and metal wall panel flashings in a manner compatible to the system and acceptable under industry standards and general practice.

We, (Insert Contractor Name), also agree that the Owner has the right, at any time during the two-year warranty period, to make emergency repairs to protect the contents of the building or the building itself from damage due to leaking. The cost of emergency repairs made during the first two years of the warranty period shall be borne by the Contractor, and action by the Owner shall not invalidate the warranty.

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

CONTRACTOR:

WITNESS:

by _____
President (Owner)

Notary Public

Asbestos Free Warranty

Owner: University of South Carolina

Location of Building: 521 Scholar Loop, Aiken, SC 29801

Name of Building: Sports Concession Building, University of South Carolina Aiken Campus

Date of Substantial Completion: _____

Know all men by these presents that we, _____

(Contractor, Subcontractor, Material Supplier or Equipment Manufacturer)

having furnished labor, materials, equipment and/or supplies; to include the removal of existing aggregate surfaced Built-Up Roofing assembly down to the surface of the plywood deck, preparations to the existing plywood deck, and the new installation of wood blocking, rigid insulation, insulation overlayment, modified asphalt built-up roofing membrane with cap sheet surfacing, bituminous, metal and acrylic resin flashings, coping cap, counterflashing, fluid applied coating, and associated sheet metal work, from, to, and/or on the Sports Concession Building of USC Aiken Campus, 521 Scholar Loop, Aiken, SC as under contract between

_____ and _____

(Owner or Contractor)

(Contractor and/or Subcontractor, Material Supplier or Equipment Supplies)

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

Exceptions: _____

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

(INSERT ROOF PLAN HERE)

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

WITNESS:

Company

By _____

Notary Public