

Shepard & Associates, LLC

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Location: Spartanburg Community College - Spartanburg

107 Community College Drive

Duncan, SC 29303

SCC – Maintenance Building

Roof Recover

Project Number: SCC MTS 087

State Project # SCC MTS 087

PF # 15004.017.004

January 2024

JAW: rcp

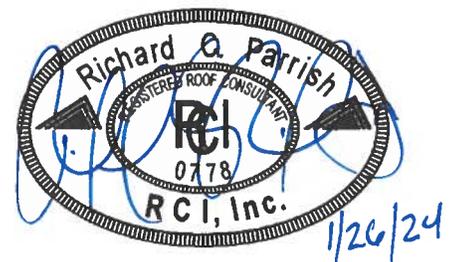


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PROJECT NUMBER: SCC MTS 087

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K1, R1, D1

SE-311

INVITATION FOR MINOR CONSTRUCTION QUOTES

AGENCY/OWNER: Spartanburg Community College

PROJECT NAME: SCC - Giles Campus Maintenance Building Roof Recover Project

PROJECT NUMBER: SCC MTS 087 **CONSTRUCTION COST RANGE:** \$ 25,000 to \$ 40,000

PROJECT LOCATION: Giles Campus Maintenance Building 136 Community College Drive, Spartanburg SC 29303

DESCRIPTION OF PROJECT: The complete removal and disposal of the existing metal rake trim, metal eave trim, gutters and downspouts; installation of: Expanded Polystyrene (EPS) insulation to fill R-panel roofing flutes, flat polyisocyanurate rigid insulation mechanically attached to existing Z-Purlins through the metal panel roofing, thermoplastic polyolefin (TPO) flexible sheet membrane roofing system mechanically attached to existing Z-Purlins; metal, TPO and PMMA resin flashings; new metal gutters, downspouts.

QUOTE DUE DATE: 2/12/24 **TIME:** 2:00 p.m.

AGENCY PROJECT COORDINATOR: Patrick Kennedy, Project Manager

EMAIL: kennedyp@sccsc.edu **TELEPHONE:** (864) 640-1651

DOCUMENTS MAY BE OBTAINED FROM: <https://www.sccsc.edu/about/vendors/construction-solicitations.php>

DOCUMENT DEPOSIT AMOUNT: \$ 0.00 **IS DEPOSIT REFUNDABLE** Yes No N/A

PERFORMANCE BOND REQUIRED? Yes No **PAYMENT BOND REQUIRED?** Yes No

Contractors must obtain Documents/Plans from the above listed source(s) to be listed as an official plan holder. All written communications with official plan holders & Contractors submitting quotes will be via email or website posting.

PUBLIC NOTICES: All notices (Notice of Award) shall be posted at the following location: Room 240, 103 Community College Drive, Spartanburg SC 29303

RIGHT TO PROTEST (SC Code § 11-35-4210) *(This only applies to contracts exceeding \$50,000.)*

Any actual bidder, offeror, contractor or subcontractor who is aggrieved in connection with this solicitation or the intended award or award of a contract under this solicitation may protest to the State Engineer in accordance with Section 11-35-4210 at: CPO, Office of State Engineer, 1201 Main Street, Suite 600, Columbia, SC 29201. EMAIL: protest-ose@mso.sc.gov

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

A/E NAME: Shepard & Associates, LLC **A/E CONTACT:** Adam Warren, RRO

EMAIL: becki@shepardandassociates.us **TELEPHONE:** (803) 407-8284

PRE-QUOTE CONFERENCE: Yes No **DATE:** 2/5/2024 **TIME:** 10:00 a.m.

PRE-QUOTE PLACE: 136 Community College Drive, Spartanburg SC 29303

QUOTE DELIVERY ADDRESSES:

HAND-DELIVERY:

Attn: Sheri Johnson - QUOTE ENCLOSED

Call (864)621-9511, Room 240, Ledbetter Building,

103 Community College Drive, Spartanburg, SC 29303

MAIL SERVICE:

Attn: Sheri Johnson - QUOTE ENCLOSED

Spartanburg Community College, 131 Community College Dr.,

Spartanburg, SC 29303

IS PROJECT WITHIN AGENCY CONSTRUCTION CERTIFICATION? (Agency MUST check one) Yes No

APPROVED BY: _____ **DATE:** _____

(OSE Project Manager)

**SE-331
QUOTE FORM**

QUOTE SUBMITTED BY: _____
(Offeror's Name)

QUOTE SUBMITTED TO: Spartanburg Community College
(Agency's Name)

FOR: PROJECT NAME: SCC - Giles Campus Maintenance Building Roof Recover Project
PROJECT NUMBER: SCC MTS 087

OFFER

§ 1. In response to the Invitation for Minor Construction Quotes for the above-named Project, the undersigned **OFFEROR** proposes and agrees, if this Quote is accepted, to enter into a Contract with the Agency 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. **OFFEROR** acknowledges the receipt of the following Addenda to the Solicitation documents and has incorporated the effects of said Addenda into its Quote (*Check only boxes that apply.*):

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

§ 3. **OFFEROR** agrees that this Quote, including all 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 Agency.

§ 4. **OFFEROR** agrees that the Date of Commencement of the Work shall be established in a Notice to Proceed to be issued by the Agency. Offeror agrees to substantially complete the Work within 30 Calendar Days from the Date of Commencement, subject to adjustments as provided in the Contract Documents.

§ 5. **OFFEROR** agrees that from the compensation to be paid, the Agency shall retain as Liquidated Damages the amount of \$ 100.00 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: _____

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: _____

DATE: _____

SE-377
MINOR CONSTRUCTION CONTRACT

AGENCY: Spartanburg Community College

PROJECT NAME: SCC - Giles Campus Maintenance Building Roof Recover Project

PROJECT NUMBER: SCC MTS 087

THIS AGREEMENT is made this the ____ day of ____ in the year Two Thousand ____ by and between

NAME: Spartanburg Community College

ADDRESS: 107 Community College Drive
Spartanburg, SC 29303

hereinafter called the “Agency”, and

NAME: _____

ADDRESS: _____

hereinafter called the “Contractor.”

WHEREAS, the Agency solicited for construction services, for the work description below:

WORK DESCRIPTION: The complete removal and disposal of the existing metal rake trim, metal eave trim, gutters and downspouts; installation of: Expanded Polystyrene (EPS) insulation to fill R-panel roofing flutes, flat polyisocyanurate rigid insulation mechanically attached to existing Z-Purlins through the metal panel roofing, thermoplastic polyolefin (TPO) flexible sheet membrane roofing system mechanically attached to existing Z-Purlins; metal, TPO and PMMA resin flashings; new metal gutters, downspouts.

WHEREAS, Contractor submitted the lowest responsive and responsible quote to provide the services described above.

NOWHEREFORE, in consideration of the mutual covenants and obligations set forth herein, the Agency and Contractor (hereinafter jointly referred to as the “parties”) agree as follows:

1. CONTRACT TERMS AND EXTENSIONS:

- 1.1 The effective date of this agreement shall be the date at the top of this page. The Date of Commencement of the Work shall be ____, 20____. The Contract Time is established as 30 calendar days and shall be measured from the Date of Commencement.
- 1.2 The Contractor agrees that the Agency shall be entitled to withhold or recover from the Contractor Liquidated Damages in the amount of \$100.00 for each Calendar Day the Contractor fails to achieve Substantial Completion of the Work within the Contract Time specified or adjusted as provided in the Contract Documents.
- 1.3 The Agency shall pay the Contractor the Contract Sum in current funds for the Contractor’s performance of the Contract. The Contract Sum shall be ____, subject to additions and deductions as provided in the Contract documents.
- 1.4 The Construction project is subject to the expenditure limits set forth in SC Code § 11-35-1550 and further explained in the Manual for Planning and Execution of State Permanent Improvements, (the “Manual”). The cost for the original scope of the Contract combined with any modification to the Contract purporting to exceed the limit of \$100,000 is null and void.

2. CONTRACT DOCUMENTS:

- 2.1 Documents forming a part of the contract are:
 - 2.1.1 This Minor Construction Contract (SE-377);

2.1.2 Agency purchase requisition form dated _____; and any modifications issued by the Agency pursuant to this Contract,

2.1.3 The following other documents:

Project Drawings & Specifications dated January 26, 2024

2.2 The Contract is the entire and integrated agreement between the parties and supersedes prior negotiations, representations, or agreements, whether written or oral.

2.3 The Contract can only be modified by written agreement signed by both the Agency and the Contractor. The Contract Documents do not create a contractual relationship between the Contractor and any separate Contractor having a contract with the Agency; between the Agency and any subcontractor to the Contractor of any tier; or between any persons or entities other than the Agency and the Contractor.

2.4 The “Work” means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor’s obligations. The Work may constitute the whole or a part of the Project.

2.5 The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

2.6 The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

2.7 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

2.7.1 The Contractor acknowledges that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to (a) conditions bearing upon transportation, disposal, handling, and storage of materials; (b) the availability of labor, water, electric power, and roads; (c) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (d) the conformation and conditions of the ground; and (e) the character of equipment and facilities needed preliminary to and during work performance.

2.7.2 The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Agency, as well as from the drawings and specifications made a part of this contract.

2.7.3 Any failure of the Contractor to take the actions described and acknowledged in this Section will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the Agency.

2.7.4 The Contractor acknowledges that it may be required to accept payment by electronic funds transfer (EFT).

3. AGENCY

3.1 The term “Agency” means the Agency or the Agency’s Representative. Agency designates the individual listed below as its Representative, which individual has the authority and responsibility to bind the Agency with respect to all matters regarding the Contract and requiring the Agency’s approval or authorization:

NAME: Patrick Kennedy

TITLE: Project Manager/Campus Operations

ADDRESS: 103 Community College Drive, Spartanburg, SC 29303

TELEPHONE: (864) 640-1651 **EMAIL:** kennedyp@sccsc.edu

3.2 The Agency shall furnish, with reasonable promptness, information requested by the Contractor that is necessary for the performance of the Contract Services and under the Agency’s control. Any information or documentation provided by the Agency to the Contractor relating to the Project or Site is provided only for the convenience of the Contractor. The Agency makes no representation or warranty to as to the sufficiency, completeness, or accuracy of such information.

3.3 Utility Access and Use:

If this box is checked, the Agency shall allow the Contractor to use reasonable quantities of water and electricity for construction purposes without charge, as long as these utilities are available and in close proximity to the Work area. Contractor shall be conscientious in controlling excessive or frivolous use of the utilities or the Agency may charge the Contractor for wasteful usage.

3.4 Sanitary Facilities:

The Contractor may use those sanitary facilities designated by the Agency as available for use.

The Contractor may not use the Agency's sanitary facilities. The Contractor shall provide sanitary facilities at the job site and maintain same in a clean and sanitary condition for the use of its employees and employees of its subcontractors for the duration of construction. The sanitary facilities shall conform to the requirements of the South Carolina Department of Health and Environmental Control.

3.5 Permits, Assessments, and Easements: The Agency shall secure and pay for all building permits, zoning permits, assessments, and easements except as required by the terms of the Contract.**3.6 Agency's Architect-Engineer (A/E):** The Agency may retain an independent A/E to prepare design documents for the work. In such event, the A/E will be a representative of the Agency during the performance of such work through final completion of such work. In the absence of an independent A/E, the Agency will assign one of its employees to act as A/E for the work. The Contractor shall cooperate with the A/E in the performance of its duties.**3.7 Construction by Agency:** The Agency may do work with its own forces or award separate contracts for work on the same project. The Contractor shall allow access to the site by the Agency's work force or separate Contractor(s) and shall cooperate in coordinating the progress of the work with the Agency. The Agency shall have the responsibility to coordinate the activities of the various Contractors working at the project location.**4. CONTRACTOR****4.1** The term "Contractor" means the Contractor or the Contractor's Representative. Contractor designates the individual listed below as its Contractor's Representative, which individual has the authority and responsibility to bind the Contractor with respect to all matters regarding the Contract and requiring the Contractor's approval or authorization:

NAME: _____

TITLE: _____

ADDRESS: _____

TELEPHONE: _____ **EMAIL:** _____

4.2 Supervision and Performance of the Work: The Contractor shall supervise, perform, and direct the Work, using the professional skill, care, and attention reasonably required for similar projects. The Contractor shall be solely responsible for and have control over means, methods, techniques, sequences, and procedures and for coordinating the Work, unless the Contract Documents give other specific instructions concerning these matters. The Contractor agrees to faithfully and fully perform the terms of this Contract and shall complete the Work in accordance with the Contract Documents and deliver the Work to the Agency free and clear of all liens and claims. The Contractor shall, at all times during the progress of the Work, employ enough skilled workers and have on hand and maintain an adequate supply of materials and equipment to complete the Work in accordance with the agreed to construction schedules.**4.3 Employee Discipline:** The Contractor shall enforce discipline and good order among the Contractor's and subcontractors' employees, and other persons carrying out the Work. Contractor shall be responsible to the Agency for acts and omissions of the Contractor's employees, subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.**4.4 Safety:** The Contractor shall comply with all federal and state work site safety requirements and shall be responsible for initiating, maintaining, and supervising reasonable safety precautions and programs in connection with the performance of the Contract Services. The Contractor shall take reasonable precautions for safety of, and shall provide reasonable and appropriate protection to prevent damage, injury or loss to (1) employees on the Work and other persons who may be affected thereby; (2) the Work and materials and equipment to be incorporated therein; and (3) other property at the site of the Work or adjacent thereto.**4.5 Waste Materials and Rubbish:** The Contractor shall keep the premises and surrounding areas free from accumulation of waste materials or rubbish caused by the Work. Upon Final Acceptance of the Work, the Contractor shall, to the Agency's satisfaction, remove from and about the site, all waste materials, rubbish, surplus material, and Contractor's tools, equipment, machinery.

- 4.6** Recycling: The Contractor shall give preference to the use of products containing recycled content in the performance of the Work. The Contractor shall cooperate with any recycling program established for the site of the work or available through the state or a political subdivision of the state.
- 4.7** Access to the Work: The Contractor shall provide the Agency with unrestricted access to the Work in preparation and progress wherever located.
- 4.8** Use of Site: The Contractor shall confine its operations to the portions of the site identified in the Drawings or otherwise approved by the Agency and shall not unreasonably encumber the portions of the site used for the Work with materials, equipment, or similar items. The Contractor and all subcontractors shall use only such entrances to the Site as are designated by the Agency. During occupied hours, Contractor shall limit construction operations to methods and procedures that do not adversely affect the environment of occupied spaces within the site, including but not limited to creating noise, odors, air pollution, ambient discomfort, or poor lighting.
- 4.9** Correction of the Work:
- 4.9.1** The Agency shall have the right and authority to reject Work that does not conform to the Contract Documents. The Contractor shall promptly correct Work rejected by the Agency for failing to conform to the requirements of the Contract Documents, whether or not fabricated, installed or completed. The provisions of this Section apply to Work done by subcontractors as well as to Work done by direct employees of the Contractor.
- 4.9.2** If the Contractor fails to correct the Work, or any portion thereof, that is not in accordance with the requirements of the Contract Documents or fails to carry out Work or provide information in accordance with the Contract Documents, the Agency may make written demand upon the Contractor to cure its defaults within seven days. Within seven days after receipt of the Agency's demand, the Contractor shall cure its defaults unless the default is such that it is not capable of cure within seven days. If the default is such that it is not capable of cure within seven days, the Contractor shall reach an agreement with the Agency on a plan to cure its defaults within five days after receipt of the Agency's demand. The Contractor shall commence and diligently and continuously pursue the cure of such defaults in accordance with the agreed plan. If the Contractor fails to cure its defaults as heretofore provided, the Agency may order the Contractor, in writing, to stop the Work, or any portion thereof, until the Contractor has eliminated the cause for such order or has provided the Agency with a plan for corrective action acceptable to the Agency. The right of the Agency to stop the Work shall not give rise to a duty on the part of the Agency to exercise this right for the benefit of the Contractor or any other person or entity.
- 4.9.3** Correction after Substantial Completion: If, within one year after the date of Substantial Completion of the Work, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Agency to do so. The Contractor's obligation set forth in this Section 4.9.3 is in addition to the Contractor's obligations under Section 4.11.
- 4.9.4** Nothing contained in this Section 4.9 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of such time period as described in this Section 4.9 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.
- 4.10** Manufacturers' Warranties: At Final Completion of the Work, the Contractor shall furnish the Agency two original complete sets of all manufacturers' warranties, guarantees, parts lists, and literature applicable to equipment, systems, fittings, and furnishings included in the Work (collectively referred to as "*Manufacturers' Warranties*"), completed in favor of the Agency. These Manufacturers' Warranties are in addition to and not in lieu of the Contractor's warranty set forth in Section 4.11, and the Agency is entitled to look to the Contractor for remedy in all cases where the Contractor's warranty applies regardless of whether a Manufacturer's Warranty also applies. The Agency shall acknowledge receipt of the sets of Manufacturers' Warranties on the set itself, and the Contractor shall cause six (6) copies of an acknowledged set to be made and furnished to the Agency. All Manufacturers' Warranties will be for applicable periods and contain terms not less favorable to the Agency than those terms that are standard for the applicable industries and will either be issued in the first instance in the name of and for benefit of the Agency or be in a freely assignable form and be assigned to the Agency without limitations.

- 4.11 Contractor Warranty:** The Contractor warrants to the Agency that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from faults and defects not inherent in the quality required or permitted, that the materials, equipment and Work will conform with the requirements of the Contract Documents, and that the Work will be free from any encumbrances, liens, security interests, or other defects in title upon conveyance of title to the Agency. The Contractor's warranty excludes remedy for damage or defect to the extent caused by (i) abuse by anyone other than the Contractor or those for whose acts the Contractor is responsible, (ii) modifications not approved or executed by the Contractor or subcontractors, (iii) improper or insufficient maintenance or operation not the fault of the Contractor or those for whose acts the Contractor is responsible, or (iv) normal wear and tear under normal usage. If required by the Agency, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment and the recommended maintenance thereto to meet the requirements of this Section.
- 4.12** After completion of the Work but no later than the date of Substantial Completion, the Contractor shall submit operation and maintenance manuals, recommended spare parts lists, and copies of all warranties to the Agency. As-Built drawings shall be submitted no later than the Final Completion Date.
- 4.13 Compliance with Law:**
- 4.13.1** The Contractor shall comply with and give all notices required by federal, state, county, and municipal laws, ordinances, regulations, and orders bearing on the performance by the Contractor of the duties or responsibilities under this Contract.
- 4.13.2** The Contractor shall promptly remedy any violation of any such law, ordinance, rule, regulation, or order that comes to its attention to the extent that the same results from its performance of the Work. The Contractor shall promptly, and in no event later than the close of the next business day following receipt, give notice to the Agency by telephone, with confirmation in writing, of receipt by the Contractor of any information relating to violations of laws, ordinances, rules, regulations, and orders.
- 4.14 Subcontractors:**
- 4.14.1** The Contractor shall furnish in writing to the Agency for its approval the names of the subcontractors to whom the Contractor plans to award any portion of the Contract Services.
- 4.14.2** Contracts between the Contractor and subcontractors shall require each subcontractor, to the extent of the Contract Services to be performed by the subcontractor, to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by the Contract Documents, assumes toward the Agency.
- 4.14.3** The Contractor shall be responsible to the Agency for acts and omissions of the subcontractors, their agents and employees, and any other persons performing portions of the Contract Services, to the same extent as the acts or omissions of the Contractor hereunder.
- 4.15** **Publicity:** Contractor shall not publish any comments or quotes by State employees or include the State in either news releases or a published list of agencies, without the prior written approval of the Agency.
- 4.16 Indemnification**
- 4.16.1** To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Agency and the Agency's agents and employees from and against claims, damages, losses and expenses, including, but not limited to, reasonable attorney's fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including loss of use resulting therefrom, but only to the extent caused by negligent acts or omissions of the Contractor, a subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder.
- 4.16.2** In claims against any person or entity indemnified under Section 4.16.1 by an employee of the Contractor, a subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Section 4.16 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for Contractor or a subcontractor under workers' or workmen's compensation acts, disability benefit acts, or other employee benefit acts.

4.17 Shop Drawings and Samples:

4.17.1 Contractor shall prepare or cause to be prepared shop drawings for fabricated items. Shop drawings shall consist of drawings, diagrams, illustrations, schedules, brochures, and other data which are prepared by the Contractor, sub-Contractor, manufacturer, supplier, or distributor and depict that portion of the work. Shop drawings shall be submitted, reviewed, and approved by the Contractor prior to submitting to the Agency and A/E. Shop drawings approved by the Contractor shall bear a stamp denoting that they have been review and are “approved” or “approved as noted” or similar designation. Contractor shall submit the number of sets as specified in the plans or specifications or in the absence of a specification submit enough copies for the Agency to retain two copies plus the number desired to be returned to the Contractor. The Agency and A/E will review the shop drawings with reasonable promptness but only for conformity with the design.

4.17.2 Contractor shall submit samples as required by the Drawings and Specifications. Samples are physical examples furnished by the Contractor of sufficient size and quantity to provide a good representation of the material proposed to be installed. Samples submitted will not be returned unless requested by Contractor and agreed to by the A/E. The Contractor shall pay shipping costs. The final installed product shall match the approved sample.

4.18 Inspection and Testing of Materials:

4.18.1 The Contractor shall leave uncovered all areas of work that will be covered that are called out in the construction documents to be left uncovered, or the Agency or A/E requests to be left uncovered prior to being inspected. The Contractor shall give adequate notice to the Agency and A/E of the time requested for an inspection of areas to be covered.

4.18.2 If the Contractor covers areas that were to be left uncovered, the Contractor shall cause the area to be uncovered for inspection. After being inspected, the Contractor shall repair the area with craftsmen skilled in the appropriate trades needed for the repair at no additional cost to the Agency.

4.19 Substitutions:

4.19.1 The Contractor shall submit proposed substitutions to the Agency for the Agency’s approval prior to execution of the Work.

4.19.2 Reference in the Contract Documents to a designated material, product, thing, or service by specific brand or trade name followed by the words “or equal” and “or approved equal” shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may use the products of other another manufacturer provided it is an ‘approved equal’ that meets or exceeds the specification for the specified product. The Contractor must submit adequate information about the product to show that the submitted product meets the level of quality as the product specified.

4.19.3 The Contractor shall not substitute any product, article, appliance, equipment, or material that is specified without prior written approval of the Agency.

4.20 Receiving and Storing Materials and Equipment: The Contractor shall have an authorized person or persons to receive all items delivered to the site of the Work and shall properly unload, check for completeness of shipment, and in-transit damage. The Contractor shall properly handle and store materials, supplies, equipment etc. in accordance with the Contract documents or manufacturer’s printed instructions for each product.

4.21 Schedule and Reports: Promptly after the award of the Contract, the Contractor shall present a construction schedule in a form satisfactory to the Agency. The schedule shall not exceed the time limits current under the Contract Documents. The Contractor shall update the schedule at appropriate intervals as required by the conditions of the Work, showing the actual progress of the Work and adjustment in completion dates. If the Work falls behind schedule, the Contractor shall present a plan for completion of the Work by the scheduled date for completion.

4.22 Time for Completion:

4.22.1 If the Contractor is delayed at any time in the commencement or progress of the Work, the Contractor shall make a request for extension of time within seven days of the event giving rise to the request. The Contractor shall adequately document delays of the work that are due to circumstances beyond the control of the Contractor and shall submit the documentation to the Agency with a request for an extension. In the event of ongoing delay, the Contractor shall notify the Agency in its request for an extension of time that the cause of delay is ongoing. In such case, the Contractor shall supplement its request when the cause of delay ends or the project is completed, whichever is sooner.

4.22.2 The Agency will review each request for time extension and equitably adjust the time for completion where (1) the event of delay actually impacted the critical path of the project and was beyond the control of the Contractor, and (2) completion of the Work was actually delayed.

5. INSURANCE AND BONDS

5.1 Commercial General Liability, Business Automobile Liability, and Worker’s Compensation: The Contractor shall purchase from and maintain, in a company or companies lawfully authorized to do business in South Carolina, such insurance as will protect Contractor from claims set forth below, which may arise out of or result from Contractor’s operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- a. claims under workers’ compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed.
- b. claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor’s employees.
- c. claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor’s employees.
- d. claims for damages insured by usual personal injury liability coverage.
- e. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom.
- f. claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle.
- g. claims for bodily injury or property damage arising out of completed operations; and
- h. claims involving contractual liability insurance applicable to the Contractor’s obligations under Section 3.17, Indemnification.

5.1.1 The insurance required by Section 5.1 shall be written for not less than the limits of liability specified below or required by law, whichever is greater. Coverage shall be written on an occurrence basis and shall be maintained without interruption from the date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment and, with respect to the Contractor’s completed operations coverage, until the expiration of the period for correction of Work set forth in Section 4.9 or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

a. COMMERCIAL GENERAL LIABILITY:

(1) General Aggregate (per project).....	\$1,000,000
(2) Products/Completed Operations.....	\$1,000,000
(3) Personal and Advertising Injury.....	\$1,000,000
(4) Each Occurrence	\$1,000,000
(5) Fire Damage (Any one fire)	\$50,000
(6) Medical Expense (Any one person)	\$5,000

b. BUSINESS AUTO LIABILITY (including All Owned, Non-owned, and Hired Vehicles):

(1) Combined Single Limit	\$1,000,000 OR
(2) Bodily Injury & Property Damage (each)	\$750,000

c. WORKER’S COMPENSATION:

(1) State Statutory	
(2) Employers Liability	\$100,000 per Acc.
	\$500,000 Disease, Policy Limit
	\$100,000 Disease, Each Employee

In lieu of separate insurance policies for Commercial General Liability, Business Auto Liability, and Employers Liability, the Contractor may provide an umbrella policy meeting or exceeding all coverage requirements set forth in this Section 5.1. The umbrella policy limits shall not be less than \$5,000,000.

5.1.2 Prior to commencement of the Work, and thereafter upon replacement of each required policy of insurance, Contractor shall provide to the Agency a written endorsement to the Contractor’s general liability insurance policy that:

- a. names the Agency as an additional insured for claims caused in whole or in part by the Contractor’s negligent acts or omissions during the Contractor’s operations;

- b. provides that no material alteration, cancellation, non-renewal, or expiration of the coverage contained in such policy shall have effect unless all additional insured have been given at least ten (10) days prior written notice of cancellation for non-payment of premiums and thirty (30) days prior written notice of cancellation for any other reason; and
- c. provides that the Contractor's liability insurance policy shall be primary, with any liability insurance of the Agency as secondary and noncontributory.

5.1.3 Before commencement of the Work, and thereafter upon renewal or replacement of each required policy of insurance, Contractor shall provide to the Agency a signed, original certificate of liability insurance (ACORD 25). Consistent with this Section 5.1, the certificate shall identify the types of insurance, state the limits of liability for each type of coverage, name the Agency as Certificate Holder, provide that the general aggregate limit applies per project, and provide that coverage is written on an occurrence basis. Both the certificates and the endorsements must be received directly from either the Contractor's insurance agent or the insurance company. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, naming the Agency as an additional insured for claims made under the Contractor's completed operations, and otherwise meeting the above requirements, shall be submitted with the Contractor's final request for payment for the Work and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 5.1. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

5.1.4 A failure by the Agency either (i) to demand a certificate of insurance or written endorsement required by Section 5.1, or (ii) to reject a certificate or endorsement on the grounds that it fails to comply with Section 5.1, shall not be considered a waiver of Contractor's obligations to obtain the required insurance.

5.2 Property Insurance:

If this box is checked, Contractor shall provide the following:

5.2.1 Builder's Risk Insurance: Contractor shall purchase property insurance written on a builder's risk "all risk" or equivalent policy form on a replacement cost basis. Contractor shall maintain such property insurance until the Agency has made final payment for the Work or until no person or entity other than the Agency has an insurable interest in the property required by this Section 5.2 to be covered, whichever is later. This insurance shall include and be in an amount sufficient to cover at all times during the performance of the Work, the interests of the Contractor, Subcontractors and Sub-subcontractors in the Project. The property insurance shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, false work, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

5.2.2 Equipment Breakdown Insurance: In the event the Contractor installs and runs and/or operates (whether for testing or other purposes) heating, air conditioning, and electrical machinery and equipment, the Contractor shall purchase and maintain equipment breakdown (boiler and machinery) insurance, which shall specifically cover such objects during installation and until final acceptance by the Agency. This insurance shall include interests of the Agency, Contractor, and subcontractors at any tier in the Work, and the Agency and Contractor shall both be named insured.

5.2.3 Before an exposure to loss may occur, the Contractor shall file with the Agency a copy of each policy that includes insurance coverage required by this Section 5.2. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project.

5.2.4 Waiver of Subrogation: The Agency and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, for damages caused by fire or other causes of loss to the extent the property insurance provided by the Contractor pursuant to this Section 5.2 covers and pays for the damage, except such rights as they have to proceeds of such insurance held by the Contractor. The Agency or Contractor, as appropriate, shall require of the subcontractors, sub-subcontractors, agents and employees, each of the other, by appropriate written agreements, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

5.3 Performance and Payment Bonds:

If this box is checked, prior to beginning work, the Contractor shall deliver to the Agency a Performance Bond and a Labor & Material Payment Bond. Each bond shall be in the amount of 100% of the Contract Sum. The Contractor's Performance Bond shall be in the form of the SE-355, Performance Bond, and the Labor & Material Payment Bond shall be in the form of the SE-357, Labor & Material Payment Bond. The surety company providing the Bonds shall have, at a minimum, a "Best Rating" of "A" as stated in the most current publication of "Best's Key Rating Guide, Property - Casualty." Contractor's failure to provide bonds as herein required shall be an event of default justifying the Agency, in its sole discretion, in terminating this Contract for cause.

6. CONTRACT ADMINISTRATION**6.1 Changes in the Work:**

6.1.1 Any changes in the work must be approved by the Agency and executed by a modification to the Agency purchase requisition form. The modification must be signed by the Contractor and Agency.

6.1.2 At the Agency's request, the Contractor shall prepare a proposal to perform the work of a proposed modification setting forth the amount of the proposed adjustment, if any, in the Contract Sum; and the extent of the proposed adjustment, if any, in the Contract Time. The Agency's request shall include any revisions to the Drawings or Specifications necessary to define the changes in the Work. Within fifteen days of receiving the request, the Contractor shall submit the proposal to the Agency and Architect along with all substantiating documentation.

6.1.3 In the absence of a total agreement concerning the item(s) for a contract modification, a Construction Change Directive shall be used.

6.1.4 Agreed Overhead and Profit Rates:

For any adjustment to the Contract Sum for which overhead and profit may be recovered, the combined overhead and profit included in the total cost to the Owner for a change in the Work shall be based on the following schedule:

- a. For the Contractor, for Work performed by the Contractor's own forces, not to exceed seventeen (17%) percent of the Contractor's actual costs.
- b. For the Contractor, for Work performed by the Contractor's Subcontractors, not to exceed ten (10%) percent of each Subcontractor's actual costs (not including the Subcontractor's overhead and profit.)
- c. For each Subcontractor involved, for Work performed by that Subcontractor's own forces, not to exceed seventeen (17%) percent of the Subcontractor's actual costs.

The percentages cited above shall be considered to include all indirect costs including, but not limited to, field and office managers, supervisors and assistants, incidental job burdens, small tools, and general overhead allocations.

6.2 Payments:

6.2.1 Contractor may submit monthly applications for payment for the Work scheduled to last two months or more in duration. Contractor shall submit only one application for payment for the Work scheduled to last less than two months in duration.

6.2.2 If the Contractor intends to submit more than one application for payment, the Contractor shall submit to the A/E, within ten days of Contract award, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the A/E may require. This schedule, unless objected to by the A/E, shall be used as a basis for reviewing the Contractor's Applications for Payment. Contractor shall base its monthly applications for payment on work completed up to the date of the application using the approved schedule of values. The sum of all payments to the Contractor shall not exceed the agreed upon cost of the work set forth in the Minor Construction Contract as adjusted by subsequent modifications to the Contract, if any.

6.2.3 Contractor's applications for payment may include materials suitably stored on site for use in the Work provided the Contractor submits:

- a. Proof of purchase & delivery;
- b. Documentation showing the location of the material;
- c. Certificate of insurance for the material with adequate coverage showing the Agency as the certificate holder.

- 6.2.4** The Agency will make payments to the Contractor for completed work based on the actual units or quantity of work completed. The Agency will make payments on the undisputed amounts of an application for payment within 21 days of receipt of the application.
- 6.2.5** Subcontractor Payments (Chapter 6 of Title 29 of the South Carolina Code of Laws, as amended): The Contractor shall pay each subcontractor no later than seven (7) days after receipt of payment from the Agency the amount to which the subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the subcontractor's portion of the Work. By appropriate agreement with its subcontractors, the Contractor shall require each subcontractor to make payments to Sub-subcontractors in a similar manner.
- 6.2.6** If the Agency does not pay the Contractor within seven (7) days after the time established in Section 6.2.4 the undisputed amount of a payment request, then upon seven (7) additional days written notice to the Agency, the Contractor may stop the Work until the Contractor has received payment of the undisputed amount owing. The Contract Time and the Contract Sum shall be equitably adjusted by the amount of the Contractor's reasonable costs of shut down, delay and start-up, plus interest as provided for in the Contract Documents.
- 6.2.7** Retainage: The Agency, at its option, may withhold retainage as provided in SC Code § 11-35-3030(4).
- 6.2.8** Final Payment: Upon final payment by the Agency to the Contractor for the Work, all rights, title, and interest in and to all improvements and equipment constructed or installed on the premises shall vest in the Agency at no additional cost, free and clear of all any liens and encumbrances created or caused by the Contractor.
- 6.2.9** Withholding of Payments: Payments may be withheld to the extent of, and on account of:
- a. defective Work not remedied, or Work not performed in accordance with the Contract Documents;
 - b. claims filed by third parties;
 - c. failure of the Contractor to make payments promptly to the subcontractors for labor, materials, or equipment;
 - d. persistent failure to carry perform the Work in accordance with the Contract Documents;
 - e. failure by the Contractor to perform its obligations under the Contract Documents; or
 - f. a default by the Contractor under the Contract Documents.

The Agency shall promptly notify the Contractor of any reason for withholding payment.

- 6.3** Completion and Closeout: Upon Final Completion of all Work, the Contractor shall notify the Agency of its completion. The Agency shall schedule a Final Inspection and allow the Contractor to demonstrate that all equipment and systems operate as designed. The Agency may elect to have other persons, firms or agencies participate in the inspections. Projects exceeding the Agency's construction procurement certification level shall require an inspection by the Office of State Engineer (OSE) and the State Engineer's issuance of a Certificate of Occupancy. (The Contractor may find Agency construction procurement certification limits on Procurement Services website at <https://procurement.sc.gov/agency/audits/cert-limits>) Final payment will not be due nor retained funds released until:
- a. the Agency agrees that the project is complete;
 - b. OSE or the Agency, whichever has authority, issues a Certificate of Occupancy (SE-585); and
 - c. the Agency receives from the Contractor the following:
 - (1) Affidavit of payment of debts and claims;
 - (2) Consent of Surety, if any, to final payment.

7. DISPUTE RESOLUTION

- 7.1** Both parties shall attempt to resolve disputes through good faith negotiations.
- 7.2** All disputes, claims, or controversies relating to the Contract, that cannot be resolved through good faith negotiations between the parties shall be resolved exclusively by the appropriate Chief Procurement Officer in accordance with Title 11, Chapter 35, Article 17 of the South Carolina Code of Laws, or in the absence of jurisdiction, only in the Court of Common Pleas for, or a federal court located in, Richland County, State of South Carolina. Contractor agrees that any act by the State regarding the Contract is not a waiver of either the State's sovereign immunity or the State's immunity under the Eleventh Amendment of the United States Constitution. As used herein, "the State" includes the Agency and the State Fiscal Accountability Authority.
- 7.3** Interest: Payments due to the Contractor and unpaid under the Contract Documents shall bear interest only if and to the extent allowed by Title 29, Chapter 6, Article 1 of the South Carolina Code of Laws. Amounts due to the Agency shall bear interest at the rate of one percent a month or a pro rata fraction thereof on the unpaid balance as may be due.

- 7.4 Contractor consents that any papers, notices, or process necessary or proper for the initiation or continuation of any claims or controversies relating to the Contract; for any court action in connection therewith; or for the entry of judgment on any award made, may be served on Contractor by certified mail (return receipt requested) addressed to Contractor at the address provided for the Contractor's Representative or by personal service or by any other manner that is permitted by law, in or outside South Carolina. Notice by certified mail is deemed duly given upon deposit in the United States mail.
- 7.5 Continuation of Work: Pending final resolution of any dispute under this Contract, the Contractor will proceed diligently with the performance of its duties and obligations under the Contract Documents, and the Agency will continue to make payments of undisputed amounts in accordance with the Contract Documents.

8. LIMITATION OF LIABILITY

- 8.1 Notwithstanding any other provision of the Contract Documents, but subject to a duty of good faith and fair dealing, the Contractor and Agency waive Claims against each other for listed damages arising out of or relating to this Contract. This mutual waiver includes:
- 8.1.1 For the Agency, listed damages are (i) lost revenue and profit, (ii) losses resulting from injury to business or reputation, (iii) additional or escalated overhead and administration expenses, (iv) additional financing costs, (v) costs suffered by a third party unable to commence work, (vi) reasonable attorney's fees, (vii) any interest, except to the extent allowed by Section 6.3 (Interest), (viii) lost revenue and profit for lost use of the property, (ix) costs resulting from lost productivity or efficiency, and (x) damages incurred by the Agency for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- 8.1.2 For the Contractor, listed damages are (i) lost revenue and profit, (ii) losses resulting from injury to business or reputation, (iii) additional or escalated overhead and administration expenses, (iv) additional financing costs, (v) reasonable attorney's fees, (vi) any interest, except to the extent allowed by Section 6.3 (Interest); (vii) unamortized equipment costs; and (viii) losses incurred by subcontractors for the types of damages the Contractor has waived as against the Agency.
- 8.2 This mutual waiver is applicable, without limitation, to all listed damages due to either party's termination in accordance with Section 11. Nothing contained in this Section 8 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents. This mutual waiver is not applicable to amounts due or obligations under Section 4.16 (Indemnification).

9. HAZARDOUS MATERIALS

- 9.1 Contractor's Responsibilities with Respect to Hazardous Materials:
- 9.1.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance which was not discoverable as provided in Section 2.7 and not addressed in the Contract Documents, and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons or serious loss to real or personal property resulting from such a material or substance encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Agency of the condition. Hazardous materials or substances are those hazardous, toxic, or radioactive materials or substances subject to regulations by applicable governmental authorities having jurisdiction, such as, but not limited to, the S.C. Department of Health and Environmental Control, the U.S. Environmental Protection Agency, and the U.S. Nuclear Regulatory Commission.
- 9.1.2 Upon receipt of the Contractor's notice, the Agency shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Agency and Contractor. By Change Order, the Contract Time shall be extended appropriately, and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.
- 9.2 Hazardous Materials Introduced to the Site by Contractor: If the Contractor, its subcontractors, and any party for whom they may be liable, introduces any Hazardous Materials to the Site then the Contractor, at its sole cost and expense, shall be responsible for any response, removal, cleanup, and/or other remedial action required by applicable law. If any Mold occurs within the Site as the result of the negligent implementation of the Project or the improper functioning of the Conservation Measures, then the Contractor, at its sole cost and expense, shall be responsible for any response, removal, cleanup, or other remedial action required by applicable law. Except as to the Contractor's initial response to an emergency, any such remedial action(s) shall require the prior review and approval of the Agency.

10. MISCELLANEOUS PROVISIONS

- 10.1** Governing Law: This Contract shall be governed by the laws of South Carolina, except its choice of law rules.
- 10.2** Severability: If any provision of this Contract shall be held to be invalid, illegal, or unenforceable, the validity, legality and enforceability of the remaining provisions shall not be affected or impaired thereby.
- 10.3** No Waiver: No course of dealing or failure of the Agency and/or the Contractor to enforce strictly any term, right or condition of this Contract shall be construed as a waiver of such term, right or condition. No express waiver of any term, right, or condition of this Contract shall operate as a waiver of any other term, right, or condition.
- 10.4** Rights Cumulative: Except as otherwise provided in this Contract, (i) rights and remedies available to the Agency and/or the Contractor as set forth in this Contract shall be cumulative with and in addition to, and not in limitation of, any other rights or remedies available to the Parties at law and/or in equity, and (ii) any specific right or remedy conferred upon or reserved to the Agency and/or the Contractor in any provision of this Contract shall not preclude the concurrent or consecutive exercise of a right or remedy provided for in any other provision hereof.
- 10.5** Notices: Any notices required to be given under this Contract shall be in writing and shall be delivered either by (i) certified mail, return receipt requested, in which case notice shall be deemed delivered three (3) business days after deposit, postage prepaid, in the U.S. mail; (ii) a reputable messenger service or a nationally recognized overnight courier, in which case notice shall be deemed delivered one (1) business day after deposit with such messenger or courier; or (iii) personal delivery with receipt acknowledged in writing, in which case notice shall be deemed delivered when received. All notices shall be sent to the representatives identified in the Part G of the Agreement at the addresses provided therein. The foregoing addresses may be changed from time to time by notice to the other Party in the manner herein provided for.
- 10.6** Economic Conflict of Interest: A Contractor shall not have or exercise any official responsibility regarding a public contract in which the Contractor, or a business with which he is associated, has an economic interest. A person working for Contractor shall not have or exercise any official responsibility regarding a public contract in which the person, an individual with whom he is associated, or his family members have an economic interest. If Contractor is asked by any person to violate, or does violate, either of these restrictions, Contractor shall immediately communicate such information to the Agency Representative. The State may rescind, and recover any amount expended as a result of, any action taken, or contract entered in violation of this provision. The terms “business with which he is associated,” “economic interest,” “family member,” “immediate family,” “individual with whom he is associated,” “official responsibility” and “person” have the meanings provided in SC Code § 8-13-100.
- 10.7** Illegal Immigration: Contractor certifies and agrees that it will comply with the applicable requirements of Title 8, Chapter 14 of the South Carolina Code of Laws and agrees to provide to the State upon request any documentation required to establish either: (a) that Title 8, Chapter 14 is inapplicable both to Contractor and its subcontractors or sub-subcontractors; or (b) that Contractor and its subcontractors or sub-subcontractors are in compliance with Title 8, Chapter 14. Pursuant to SC Code § 8-14-60, “A person who knowingly makes or files any false, fictitious, or fraudulent document, statement, or report pursuant to this chapter is guilty of a felony and, upon conviction, must be fined within the discretion of the court or imprisoned for not more than five years, or both.” Contractor agrees to include in any contracts with its subcontractors language requiring its subcontractors to (a) comply with the applicable requirements of Title 8, Chapter 14, and (b) include in their contracts with the sub-subcontractors language requiring the sub-subcontractors to comply with the applicable requirements of Title 8, Chapter 14. (An overview is available at www.procurement.sc.gov)
- 10.8** Drug-Free Workplace: The Contractor certifies to the Agency that Contractor will provide a Drug-Free Workplace, as required by Title 44, Chapter 107 of the South Carolina Code of Laws, as amended.
- 10.9** False Claims: According to the SC Code § 16-13-240, “a person who by false pretense or representation obtains the signature of a person to a written instrument or obtains from another person any chattel, money, valuable security, or other property, real or personal, with intent to cheat and defraud a person of that property is guilty” of a crime.
- 10.10** Non-Indemnification: Any term or condition is void to the extent it requires the State to indemnify anyone. It is unlawful for a person charged with disbursements of state funds appropriated by the General Assembly to exceed the amounts and purposes stated in the appropriations (SC Code § 11-9-20). It is unlawful for an authorized public officer to enter into a contract for a purpose in which the sum is in excess of the amount appropriated for that purpose. It is unlawful for an authorized public officer to divert or appropriate the funds arising from any tax levied and collected for any one fiscal year to the payment of an indebtedness contracted or incurred for a previous year. (SC Code § 11-1-40)

- 10.11 Enforcement and Interpretation of Building Codes: As required by SC Code § 10-1-180), OSE shall determine the enforcement and interpretation of all building codes and referenced standards on state buildings. The Contractor shall refer any questions, comments, or directives from local officials to the Agency and OSE for resolution. When the amount of the contract exceeds the construction procurement certification of the Agency, the Contractor shall not commence the Work before receiving a copy of the Building permit issued by OSE. (The Contractor may find Agency construction certification limits on Procurement Services website at <https://procurement.sc.gov/agency/audits/cert-limits>)
- 10.12 Assignment: The Agency and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements and obligations contained in this Contract. Neither party to the Contract shall assign the Contract as a whole, or in part, without written consent of the other and then only in accordance with and as permitted by SC Regulation 19-445.2180. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.
- 10.13 Open Trade: During the Contract term, including any renewals or extensions, Contractor will not engage in the boycott of a person or an entity based in or doing business with a jurisdiction with whom South Carolina can enjoy open trade, as defined in SC Code § 11-35-5300.

11. SUSPENSION OR TERMINATION

- 11.1 Agency Right of Suspension: The Agency may, at any time, suspend the work, in whole or in part, with or without cause for such period of time as determined by the Agency. Except in the event of suspension due to a default of the Contractor, the Contract sum will be equitably adjusted to reflect reasonable costs actually incurred by the Contractor due to delay or interruption resulting from such suspension.
- 11.2 Agency Right of Termination:
 - 11.2.1 Termination for Cause: If the Contractor defaults, persistently fails or neglects to perform the Work in accordance with the Contract Documents, or fails to perform a provision of the Contract, the Agency shall provide written notice of such default, failure, or neglect to the Contractor. If the Contractor fails to cure such default, failure, or neglect within fifteen days from receipt of the Agency’s notice, the Agency may, without prejudice to any other right or remedy the Agency may have, terminate the Contract and take possession of the area at the Site affected by the Work.
 - 11.2.2 Termination for Convenience: The Agency may, for its convenience, terminate all or any portion of the Work, or terminate this entire Contract, by ten (10) days written notice stating the effective date of the termination. Thereafter, the Agency shall pay the Contractor for Work actually performed before the date of termination. No payments shall be made for Work not actually performed, and no payment shall be made or due for lost profits on account of Work not performed.
- 11.3 Contractor Right of Termination:
 - 11.3.1 The Contractor may terminate the Contract if work is stopped through no fault of the Contractor, or other persons performing work either directly or indirectly for the Contractor, for a period of time exceeding 60 consecutive calendar days due to a court order or other public authority having jurisdiction; or a Declared National emergency which requires the work to be stopped.
 - 11.3.2 Agency Failure to Make Payment: Subject to the Agency’s right to withhold payments pursuant to Section 6.2.9, if the Agency fails to make payments to the Contractor as set forth in Section 6.2 and any other applicable provisions of the Contract Documents, the Contractor may, upon thirty (30) days’ prior written notice to the Agency, terminate the Contract and recover from the Agency payment for all Work performed and for proven loss with respect to materials, equipment, tools, and machinery, including reasonable overhead, profit and damages applicable to the Work for the Contract Services performed through the date thereof.

<p><u>AGENCY:</u></p> <p>BY: _____ <i>(Signature of Representative)</i></p> <p>PRINT NAME: _____</p> <p>PRINT TITLE: _____</p> <p>DATE: _____</p>	<p><u>CONTRACTOR:</u></p> <p>BY: _____ <i>(Signature of Representative)</i></p> <p>PRINT NAME: _____</p> <p>PRINT TITLE: _____</p> <p>DATE: _____</p>
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SE-381

CHANGE ORDER NO.: _____

CHANGE ORDER TO MINOR CONSTRUCTION CONTRACT

AGENCY: Spartanburg Community College

PROJECT NAME: SCC - Giles Campus Maintenance Building Roof Recover Project

PROJECT NUMBER: SCC MTS 087

CONTRACTOR: _____

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. Initial Date for Substantial Completion:		
2. Sum of previously approved increases and decreases in Days:		Days
3. Change in Days for this Change Order		Days
4. Total Number of Days added to this Contract including this Change Order	0 Day	s
5. New Date for Substantial Completion:		

AGENCY ACCEPTANCE AND CERTIFICATION:

I certify that the Agency has authorized, unencumbered funds available for obligation to this contract.

BY: _____ **Date:** _____
(Signature of Representative)

Print Name of Representative: _____

Change is within Agency Construction Contract Change Order Certification of: \$ _____ Yes No

APPROVED BY: _____ **DATE:** _____
(OSE Project Manager)

SUBMIT THE FOLLOWING TO OSE

- SE-381, completed and signed by the Agency.
- SE-381, Page 2, completed and signed by the Contractor, A/E and Agency, with back-up information to support request.

CHANGE ORDER REQUEST SUMMARY – MINOR CONSTRUCTION

AGENCY: Spartanburg Community College

PROJECT NAME: SCC - Giles Campus Maintenance Building Roof Recover Project

PROJECT NUMBER: SCC MTS 087

CONTRACTOR: _____

This Contract is requested to be changed as follows: *(Insert description of change in space provided below.)*

ADJUSTMENTS IN THE CONTRACT TIME: Requested Change in Days for this Change Order: _____ Days

			(1) Contractor	(2) Subcontractor	(3) TOTAL
Direct Costs (provide back-up, including hourly rates, invoices, manhours, etc.)	1.	Labor			
	2.	Materials (including Sales Tax)			
	3.	Rental Charges			
	4.	Subtotal Direct Costs (sum lines 1 – 3)	\$ 0.00	\$ 0.00	\$ 0.00
Contractor Markup (per AIA A201, Section 7.1.5)	5.	Contractor OH&P (Not to Exceed 17% of line 4, col 1)			
	6.	Subcontractor's OH&P (Not to Exceed 17% of line 4, col 2)			
	7.	Contractor markup on Subcontractor (Not to Exceed 10% of line 4, col 2)			
	8.	Total Contractor Markup (sum lines 5 – 7)	\$ 0.00	\$ 0.00	\$ 0.00
Additional Bonding, Insurance and Permit Costs Associated with Change Order	9.	Bonds			
	10.	Insurance			
	11.	Permits, Licenses or Fees			
	12.	Subtotal (sum lines 9 – 11)	\$ 0.00	\$ 0.00	\$ 0.00
TOTAL	13.	Change Order Cost (sum lines 4, 8, 12, col 3)			\$ 0.00

ADJUSTMENTS IN THE CONTRACT SUM: Requested Amount of this Change Order: \$ _____

CONTRACTOR ACCEPTANCE:

BY: _____ Date: _____
(Signature of Representative)

Print Name of Representative: _____

A/E RECOMMENDATION FOR ACCEPTANCE:

BY: _____ Date: _____
(Signature of Representative)

Print Name of Representative: _____

AGENCY ACCEPTANCE:

BY: _____ Date: _____
(Signature of Representative)

Print Name of Representative: _____

Instruction to Contractor: Attach documentation as needed to justify the requested change to the contract and submit to A/E or Agency.

SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.1 WORK INCLUDED

1.1.1 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.

1.1.2 All work is located at the Main Campus of Spartanburg Community College, 136 Community College Drive, Spartanburg, SC 29303. Refer to drawing K1.

1.2 BASE BID WORK:

1.2.1 Maintenance Building (Approximately 2,805 SF)

Work generally consists of:

1.2.1.1 The complete removal and disposal of the existing metal rake trim, metal eave trim, gutters and downspouts.

1.2.1.2 preparations include the inspection of the existing metal R-Panel roofing, cutting back the panels at the eaves, making repairs and replacements of fasteners as necessary, and the installation of new wood blocking at field of roof terminations, eaves, and rakes.

1.2.1.3 and the new installation of: Expanded Polystyrene (EPS) insulation to fill R-panel roofing flutes, flat polyisocyanurate rigid insulation mechanically attached to existing Z-Purlins through the metal panel roofing, thermoplastic polyolefin (TPO) flexible sheet membrane roofing system mechanically attached to existing Z-Purlins; metal, TPO and PMMA resin flashings; new metal gutters, downspouts, and miscellaneous work as specified herein.

UNIT PRICES

1.2.1 Do include in the BASE BID the following quantities of unit price materials:

1.2.1.1 Unit Price 1 – Removal and replacement of any damaged or deteriorated wood blocking. 100 BF

1.3 CONTRACT METHOD

1.3.1 Construct the work as a single lump sum contract. For the items that are bid on a unit price basis, follow procedures indicated on the Bid Form and as specified in Section 01025 MEASUREMENT AND PAYMENT.

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

1.7 COMPLETION DATE

1.7.1 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. BIDDER acknowledges that in case of inclement weather during normal workdays, weekend work may be required to complete the Work within the allotted time.

1.8 LIQUIDATED DAMAGES

1.8.1 Liquidated damages will be assessed in the amount of \$250.00 for each calendar day the actual Contract Time for Substantial Completion exceeds the specified Contract Time.

1.9 CONTRACTOR USE OF PREMISES

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

1.9.2 Coordinate use of premises under direction of Owner.

1.9.3 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.

1.9.4 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 them or any of their subcontractors. Should damage be to finishes or construction that is not defined in these Contract Documents, then repairs shall be made to the specifications approved by and at the sole discretion of the Owner.

1.9.5 The Contractor is to confine their 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.

1.9.6 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.

- 1.9.7 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.
- 1.9.8 Open fires will not be permitted on the premises.
- 1.9.9 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 them. They are 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.
- 1.9.10 Asbestos Products:
- 1.9.10.1 No products containing asbestos fibers are present in the work covered in the Base Bid work.
- 1.9.10.2 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.
- 1.9.10.3 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 Roof Consultant. 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.
- 1.9.11 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.
- 1.9.11.1 No drugs, alcohol, or firearms will be permitted on the grounds of the facility.
- 1.9.11.2 There will be no favors or fraternizing with occupants or employees of the facility.
- 1.9.11.3 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.

- 1.9.11.4 Contractor and sub-contractors 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.
- 1.9.11.5 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.
- 1.9.11.6 The use of foul, obscene, or abusive language by the Contractor's or subcontractor's employees is prohibited on the grounds of the facility. Violations of this policy may result in the dismissal of the Contractor.
- 1.9.11.7 Smoking or use of any tobacco products by the Contractor's or subcontractor's employees is prohibited on the grounds of the facility. Violations of this policy may result in the dismissal of the Contractor.

1.10 OWNER OCCUPANCY REQUIREMENTS

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

PART 2 PRODUCTS Not Used.

PART 3 EXECUTION Not Used.

END OF SECTION 01010

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 Roof Consultant for review and forwarding to Owner on AIA Documents G702 and G703. Provided an Application for Payment is received by the Roof Consultant 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 Roof Consultant after the application date fixed above, payment shall be made by the Owner no later than 30 days after the Roof Consultant 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 Roof Consultant's certification.

- 1.2.3 Final payment shall be made 30 days after Roof Consultant 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 Roof Consultant for verification of quantities for the Project.
- 1.3.3 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.
 - 1.3.3.1 Include 100 board feet in the Base Bid costs for replacement of any damaged or deteriorated wood blocking members. Quote a separate unit price (per board 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.

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 approval and date.

1.1.3 After Roof Consultant'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).

1.2.3 Illegal Immigration Reform Act of 2008 (a part of bid form agreements).

1.3 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

~~1.3.1~~ Contractor submittals shall be forwarded to Roof Consultant within 14 calendar days after receipt of signed Contract. The successful Contractor shall submit electronic copies of the required information to the Roof Consultant.

1.3.2 Refer to Section 01340 "Shop Drawings, Product Data and Samples."

1.4 CONTRACTOR INFORMATION

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

1.4.1.1 A letter from the Contractor identifying the brand name, manufacturer and material proposed for use and include a statement that all proposed materials meet the specification requirements. Obtain Owner's approval before placing orders.

1.4.1.2 A manufacturer's Certificate clearly stating that the specified roof covering meets the requirements for an Underwriter's Laboratories, Inc. Class A roof covering.

1.4.1.3 Emergency contact information including phone numbers of principals,

superintendent, foreman, and project manager.

- 1.4.1.4 Foreman's Statement (copy attached).
- 1.4.1.5 Material Safety Data Sheets (Submit an electronic copy to Consultant and Provide one hard copy to be kept on the jobsite).
- 1.4.2 Submit to Roof Consultant within 2 weeks of project startup and must be approved prior to Contractor's First Application for Payment:
 - 1.4.2.1 A copy of AIA Document G703 listing each phase of the work and its scheduled value for approval.
 - 1.4.2.2 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.
- 1.4.3 Submit to Roof Consultant upon completion of the work and prior to Contractor's Final Application for Payment:
 - 1.4.3.1 Signed copy of the Certificate of Substantial Completion, SE-550, which will be filled out and provided to the contractor by the Consultant.
 - 1.4.3.2 Certificate of Final Completion, SE-560, with executed Roof Consultant's final punch list completed by Contractor attached.
 - 1.4.3.3 List of Subcontractors by specialty, including address and telephone number.
 - 1.4.3.4 Consent of Surety to Final Payment, AIA G707.
 - 1.4.3.5 "No Asbestos" Certification (Statement on Contractor's letterhead that no asbestos containing materials were used in the completion of the Work.)
 - 1.4.3.6 Contractor's warranty to Owner.
 - 1.4.3.7 Manufacturer's warranties to Owner for the Flexible Sheet Membrane FSM Assembly.

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 Roof Consultant 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. Roof Consultant 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 Roof Consultant 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 Roof Consultant'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 Roof Consultant under the provisions of the General Conditions.
- 3.2.4 Only those revisions directed or approved by the Roof Consultant shall be shown on the resubmittal.
- 3.2.5 After a submittal has been approved by the Roof Consultant, 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

FOREMAN'S STATEMENT

A PROJECT MANUAL FOR THE
SCC – MAINTENANCE BUILDING
ROOF RECOVER CONSTRUCTION PROJECT
JANUARY 2024

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 _____

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 Roof Consultant's Project Number
 - 1.1.2.2 Submittal Data
 - 1.1.2.3 Submittal Number
 - 1.1.2.4 Project Title
 - 1.1.2.5 Name of Contractor and Approval Date
 - 1.1.2.6 Reference to Specification Section, Paragraph and/or Drawing
 - 1.1.2.7 The location of the work covered by the shop drawing
 - 1.1.2.8 Any qualification, deviation, or departure from Contract
 - 1.1.2.9 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 Roof Consultant 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 Roof Consultant 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 Metal rake trim; metal edge flashings; metal counterflashing; metal gutters and downspouts with mounting brackets for each; & power vent flashings.

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 including coating and roofing system and all their components, the respective manufacturer, 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 roofing component required.

1.2.3 Minimum required components include wood blocking, fasteners, cants, tapered edge strips, adhesives, cements, single ply roofing membrane, metal, flexible sheet membrane, coatings, acrylic resin flashings, sealants, and sheet metal.

1.3 SAMPLES

1.3.1 Submit two 6-inch long samples of each metal shape to be used on this Project to Roof Consultant for approval. Metal shapes are to be constructed in accordance with approved shop drawings and will be used for establishment of quality standards during installation.

1.4 RELATED SECTIONS

1.4.1 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 Roof Consultant 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 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.

1.3 QUALITY ASSURANCE

1.3.1 Contractor Qualifications: A Flexible Sheet Membrane (FSM) Roofing Contractor experienced in performing 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 employing workers trained and approved by manufacturer. The FSM Roofing Contractor shall be licensed as a specialty roofing contractor with at least 4 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.

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

1.4.3 A Flexible Sheet Membrane (FSM) 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:

1.4.3.1 Attend the Pre-Roofing Conference with Owner's Agent, Roof Consultant, Installing Roofing Contractor, Manufacturer's Representative, and General Contractor.

1.4.3.2 Manufacturer's Inspector shall be present along with Roof Consultant at initial project startup, 25%, 75%, and 100% inspections.

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

1.4.4.1 Access to the Work.

1.4.4.2 Incidental labor and materials necessary to facilitate inspections.

1.4.5 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.
- 3.1.3 Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

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 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 to 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 adequately sized fire extinguishers for the project site.

2.3.4 Contractor is to ensure 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 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.

2.3.7 Signs: No signs or advertising of any kind shall be allowed on the project site unless approved in advance by Owner.

2.3.8 Parking: Contractor's construction vehicles shall enter the project site and park in areas as directed by the Owner. The Contractor shall be responsible for coordination of traffic by his subcontractors, suppliers, etc., so as not to disrupt ongoing operations of the Owner.

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 Roof Consultant.

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. Roof surface, building interiors, 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 Roof Consultant 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. At all times during the application of roofing materials, appropriate fire extinguishers shall be located at the grade and on the roof.
- 1.1.4 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.
- 1.1.5 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, pavement, and sidewalks 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, asphalt patching, and concrete walk and curb replacement.
- 1.1.6 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.
- 1.1.7 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 Roof Consultant.
- 1.2.2 Store roll good materials in covered trailers or trailers with materials covered with tarps.
- 1.2.3 Materials stored in open shall be placed on pallets with wood blocks underneath to provide ventilation.
- 1.2.4 It is the responsibility of the Contractor to ensure roofing material and other products are adequately protected from damage.
- 1.2.5 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 their 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 Roof Consultant, 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.
- 1.1.10 A final cleaning of all roof surfaces shall be performed after all work has been completed, all materials and equipment removed, all blemishes removed, and any irregularities corrected. This cleaning shall leave roof surfaces basically spotless.

1.2 FINAL INSPECTION

- 1.2.1 Roof Consultant's representative will conduct a final inspection with Owner's representative and the Contractor's representative.
- 1.2.2 Any scheduled inspection reports by the roof system manufacturer's representative or Local Jurisdiction Inspectors, if required, shall be furnished prior to Final Inspection and Contract Closeout.

1.3 WARRANTIES AND BONDS

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

1.4 CLOSE-OUT

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

1.4.1.1 Certificate of Substantial Completion, SE-550, with executed Roof Consultant's final punch list attached.

1.4.1.2 Certificate of Final Completion, SE-560, with executed Roof Consultant's final punch list completed by Contractor attached.

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

1.4.1.4 Consent of Surety to Final Payment, AIA G707.

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

1.4.1.6 Contractor's warranty to Owner.

1.4.1.7 Manufacturer's warranties 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 Roof Consultant.

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 Roof Consultant and documentation of completion.

1.1.1.3 Contractor's 2-year Watertight warranty to Owner.

1.1.1.4 Manufacturer's 20-year NDL warranty to Owner.

1.1.1.5 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, hailstorm, 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 roofing system. The Owner's representative shall then submit a written report as

to the findings of this inspection. The Roofing 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: Contractor shall furnish Owner the Roof Manufacturer's No Dollar Limit Unlimited Roofing System Guarantee with flashing endorsement covering all workmanship and materials issued by the roofing materials manufacturer for a period of 20 years from the date of substantial completion.

1.3.2.1 Provide 90 MPH Wind Rider with Mfg.'s 20 Year NDL Warranty.

1.3.2.2 Mfg.'s 20 Year NDL Warranty cannot be Pro-Rated.

1.3.3 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.

1.4 INSURANCE AND BONDS

1.4.1 Reference Supplemental Conditions Page 8 Article 11 INSURANCE AND BONDS.

1.4.2 There is a requirement for Bid Bonds 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

(CONTRACTOR'S LETTERHEAD)
TWO YEAR WARRANTY

Known all men by these presents, that we, (Insert Contractor Name), having installed a new FSM single ply TPO roof assembly with flashings and/or miscellaneous roof system components and having accomplished certain other miscellaneous work on the **SCC – Maintenance Building Roof Recover** under contract between **Spartanburg Community College** and (Insert Contractor Name), warrant to **Spartanburg Community College** with respect to said work that for a period of two years from date of final acceptance of said work, the new FSM single ply TPO roof assembly with flashings and/or miscellaneous roof system components at existing metal panel roofing 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 roofing, we will promptly remedy said leaks in a manner to restore the roof to a watertight condition by methods compatible to the system and acceptable under industry standards and general practice.

We, (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 membrane, coatings and/or metal flashings, sheet metal copings, counterflashings 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: Spartanburg Community College
Location of Buildings: 136 Community College Drive, Spartanburg, SC 29303
Name of Buildings: SCC – Maintenance Building
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; accomplished reroofing construction at SCC – Maintenance Building including removals of existing roofing, flashings, and/or miscellaneous roof components; and installation of new FSM single ply TPO roof assembly with flashings and/or miscellaneous roof system components at existing metal panel roofing under contract between:

Spartanburg Community College

and

(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.



 MAINTENANCE BUILDING KEY PLAN

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

WITNESS:

Company

By

Notary Public

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 Wood blocking and nailers.

1.2.1.2 Plywood backing panels and blocking.

1.2.2 Related Sections include the following:

1.2.2.1 Division 7 Section 07540 "Thermoplastic Membrane Roofing".

1.2.2.2 Division 7 Section 07591 "Reroofing Removals & 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 manufacturer's Certificate of Compliance with the material specifications of this section, signed by a responsible officer of the manufacturing firm and notarized.

1.4.1.1 Certify as to Treatment Process; Treatment Chemical; and Chemical Retention.

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.

2.4 PLYWOOD BACKING PANELS AND BLOCKING

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

2.4.2 Sheathing: 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.

2.5 FASTENERS

2.5.1 Reference Division 7 Section 07591 "Reroofing Removals & Preparation".

2.5.2 All fasteners, connections, clips, or strap anchors for preservative-treated wood shall be 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. Use only stainless-steel fasteners with treated wood.

3.1.4 All wood nailers shall be of sufficient thickness so as to finish flush with the adjacent insulation. Securely anchor wood blocking with appropriate fasteners in two staggered rows, 16" O.C. minimum. Perimeter wood blocking and at openings shall be a minimum nominal width of 6".

3.1.5 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.

3.1.6 Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.

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 2304.10.1, "Fastening Schedule," in the International Building Code.

3.1.8 For wood to wood connections use ring shanked, stainless steel 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 07540

THERMOPLASTIC MEMBRANE ROOFING

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 the following:

1.2.1.1 Roof insulation.

1.2.1.2 Mechanically fastened membrane roofing system.

1.2.2 Related Sections include the following:

1.2.2.1 Division 6 Section 06100 "Rough Carpentry".

1.2.2.2 Division 7 Section 07591 "Removals and Preparation".

1.2.2.3 Division 7 Section 07620 "Flashing and Sheet Metal".

1.2.2.4 Division 7 Section 07920 "Sealants and Caulking."

1.2.3 Unit Prices: Refer to Division 1 Section 01010 "Summary of Work" for description of Work in this Section affected by unit prices.

1.3 DEFINITIONS

1.3.1 Roofing Terminology: Refer to ASTM D1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

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

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

1.4 PERFORMANCE REQUIREMENTS

1.4.1 General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift

pressures, thermally induced movement, and exposure to weather without failure.

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

1.4.3 Roofing System Design: Provide a membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist the factored design uplift pressures calculated according to SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems."

1.4.3.1 Roofing system design shall meet or exceed a FM 1-90 rated system.

1.5 SUPERVISION

1.5.1 Contractor shall assign a full-time, English speaking, qualified Roofing Superintendent to the project to coordinate the various aspects of the work; to provide Quality Control Services for the project; and to serve as liaison 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 Product Data: For each type of product indicated.

1.6.2 Shop Drawings: For roofing system. Include plans, sections, and details of attachments to other Work.

1.6.2.1 Base flashings and membrane terminations.

1.6.2.2 Tapered insulation, including slopes.

1.6.2.3 Insulation fastening patterns.

1.6.2.4 TPO Seam layout.

1.6.3 Samples for Verification: For the following products:

1.6.3.1 12-by-12-inch (300-by-300-mm) square of sheet roofing of color specified, including T-shaped side and end lap seam.

1.6.3.2 12-by-12-inch (300-by-300-mm) square of roof recover board.

1.6.3.3 12-by-12-inch (300-by-300-mm) square of walkway pads or rolls.

1.6.3.4 12-inch (300-mm) length of metal termination bars.

1.6.3.5 12-inch (300-mm) length of battens.

- 1.6.3.6 Four insulation and recover board fasteners of each type, length, and finish.
 - 1.6.3.7 Four roof membrane cover fasteners of each type, length, and finish.
 - 1.6.4 Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
 - 1.6.5 Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - 1.6.5.1 Submit evidence of meeting performance requirements.
 - 1.6.6 Qualification Data: For Installer and manufacturer.
 - 1.6.7 Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.
 - 1.6.8 Research/Evaluation Reports: For components of membrane roofing system.
 - 1.6.9 Maintenance Data: For roofing system to include in maintenance manuals.
 - 1.6.10 Warranties: Special warranties specified in this Section.
 - 1.6.11 Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.
- 1.7 QUALITY ASSURANCE
- 1.7.1 Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.
 - 1.7.2 Manufacturer Qualifications: A qualified manufacturer that has UL listing and FMG approval for membrane roofing system identical to that used for this Project.
 - 1.7.3 Source Limitations: Obtain components for membrane roofing system approved by roofing membrane manufacturer.
 - 1.7.4 Fire-Test-Response Characteristics: Provide membrane roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
 - 1.7.4.1 Exterior Fire-Test Exposure: Class A; ASTM E108, for application and roof slopes indicated.

- 1.7.5 Preinstallation Roofing Conference: Before starting removals and roof recover construction, conduct conference at Project site. Review methods and procedures related to reroof construction and roofing system including, but not limited to, the following:
 - 1.7.5.1 Meet with Owner, Roof Consultant, and roofing system manufacturer's representative.
 - 1.7.5.2 Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 - 1.7.5.3 Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 1.7.5.4 Examine existing substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 - 1.7.5.5 Review structural loading limitations of roof deck during and after roofing.
 - 1.7.5.6 Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
 - 1.7.5.7 Review governing regulations and requirements for insurance and certificates if applicable.
 - 1.7.5.8 Review temporary protection requirements for roofing system during and after installation.
 - 1.7.5.9 Review roof observation and repair procedures after roofing installation.

1.8 DELIVERY, STORAGE, AND HANDLING

- 1.8.1 Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- 1.8.2 Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - 1.8.2.1 Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- 1.8.3 Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation. Storage exposed to weather in manufacturer's

original packaging alone is not sufficient. Provide tarps and store above ground on pallets at a minimum.

- 1.8.4 Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck. Do Not Stockpile equipment or materials on the roof.

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

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 $\frac{3}{4}$ -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.

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

1.10 WARRANTY

1.10.1 Manufacturer's Warranty: Manufacturer's standard form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks. Reference WARRANTIES Section 01740.

1.10.1.1 Manufacturer's warranty includes roofing membrane, base flashings, roofing membrane accessories, fasteners, cover boards, walkway products and other components of membrane recover roofing system.

1.10.1.2 Warranty Period: 20 years from date of Substantial Completion.

1.10.1.3 Warranty shall include a 90 MPH wind speed rider.

1.10.2 Contractor's 2 Year Watertight Warranty: Submit roofing Installer's watertight warranty, on warranty form provided in WARRANTIES Section 01740, signed by Installer, covering Work of this Section, including all components of membrane roofing system such as roofing membrane, base flashing, flexible sheet and metal flashings, roof recover board, fasteners, sheet metal components, metal siding and walkway products for the following warranty period:

1.10.2.1 Warranty Period: Two years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

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

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

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

2.2 THERMOPLASTIC POLYOLEFIN ROOFING MEMBRANE

2.2.1 Fabric-Reinforced Thermoplastic Polyolefin Sheet: Uniform, flexible sheet formed from a thermoplastic polyolefin, internally fabric or scrim reinforced, and as follows:

2.2.1.1 Manufacturers:

- 2.2.1.1.1 Johns Manville International, Inc.
- 2.2.1.1.2 Carlisle SynTec Incorporated.
- 2.2.1.1.3 GAF.
- 2.2.1.2 Thickness: 60 mils, nominal.
- 2.2.1.3 Field Sheet Width: 12' max.
- 2.2.1.4 Perimeter Half Sheet Width: Not Required. Decrease fastener spacing at perimeter & corners.
- 2.2.1.5 Exposed Face Color: White
- 2.2.1.6 Physical Properties:
 - 2.2.1.6.1 Breaking Strength: 225 lbf (1 kN); ASTM D751, grab method.
 - 2.2.1.6.2 Elongation Ultimate: 500% ASTM D412.
 - 2.2.1.6.3 Tearing Strength: 55 lbf (245 N) minimum; ASTM D751, Procedure B.
 - 2.2.1.6.4 Brittleness Point: Pass at Minus 22 deg F (30 deg C).
 - 2.2.1.6.5 Ozone Resistance: Pass ASTM D1149.
 - 2.2.1.6.6 Resistance to Heat Aging: 90 percent minimum retention of breaking strength, elongation at break, and tearing strength after 166 hours at 240 deg F (116 deg C); ASTM D573.
 - 2.2.1.6.7 Water Absorption: Less than 4 percent mass change after 166 hours' immersion at 158 deg F (70 deg C); ASTM D471.
 - 2.2.1.6.8 Linear Dimension Change: Plus or minus 2 percent; ASTM D1204.

2.3 AUXILIARY MATERIALS

- 2.3.1 General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
 - 2.3.1.1 Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.
- 2.3.2 Sheet Flashing: Manufacturer's standard unreinforced thermoplastic polyolefin sheet flashing, 55 mils thick, minimum, of same color as sheet membrane.

- 2.3.3 Bonding Adhesive: Manufacturer's standard solvent-based bonding adhesive for base flashings.
- 2.3.4 Metal Battens: Manufacturer's standard aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch (25 mm) wide by 0.05 inch (1.3 mm) thick, prepunched.
- 2.3.5 Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
- 2.3.6 Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, termination reglets, cover strips, and other accessories.
- 2.3.7 Outside Foam R Panel Closure: 1 ¼ x 36" as manufactured by SFS Intec, Material No. 799457.

2.4 ROOF INSULATION

- 2.4.1 General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.
- 2.4.2 Expanded Polystyrene Flute Fill Insulation: R-Panel Roofing profile conforming EPS fill insulation approximately 1.75" thick at the pan of the roofing panel, ½" thick as it passes over the panel ribs, 11.75" width at top & 8" wide at the bottom such as manufactured by Atlas®EPS-ThermalStar® Flute Fill 10.
- 2.4.3 Polyisocyanurate Board Insulation: 1.5" ASTM C 1289, Type II, Class 1, Grade 2 glass reinforced facer on both major surfaces such as JM's ENERGY3. Maximum board size for mechanical attachment: 4'x8'x1.5" maximum thickness, a minimum of 1.5 lb/ft³ density. Maximum board size for adhesive attachment is 4ft. x 4ft.
 - 2.4.3.1 Manufacturers:
 - 2.4.3.1.1 Johns Manville International, Inc.
 - 2.4.3.1.2 Carlisle SynTec Incorporated.
 - 2.4.3.1.3 GAF.
- 2.4.4 Tapered Polyisocyanurate Insulation: Provide factory-tapered polyisocyanurate roof insulation boards fabricated to 1/8", ¼" or ½" per foot slope, with 1/2" starting thickness, as indicated in Project Drawings. Provide factory-tapered polyisocyanurate insulation boards fabricated to slope of ½ inch per 12 inches at all back slopes, saddles and crickets. Use monolithic board only, factory laminated board is not acceptable.

- 2.4.5 Tapered Edge Strips: Wood fiber 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.
- 2.4.6 Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping around fixed equipment and to gutters. At cricket conditions, fabricate to slopes double the normal slope of the roof.

2.5 INSULATION ACCESSORIES

- 2.5.1 General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.
- 2.5.2 Mechanical Fasteners:
 - 2.5.2.1 Drill•Tec™ XHD Screws: Heavy gauge alloy steel fastener with CR-10 coating with a .275" diameter thread. Factory Mutual Standard 4470 Approved, #3 Phillips truss head for use on heavy steel decks
 - 2.5.2.2 Drill•Tec™ RhinoBond® Insulation Plates: Galvalume, 3" diameter, specially coated for use in RhinoBond® attachment systems.
- 2.5.3 Insulation Adhesive
 - 2.5.3.1 Dow Instastik QS

2.6 PMMA LIQUID PENETRATION FLASHING SYSTEMS (Not Used this Project)

- 2.6.1 LIQUISEAL CST-8844 PMMA Liquid Flashing Resin by Carlisle Syntec Systems with primer, 2-Part Resin Mixture, Polyester Flashing Fleece reinforcing, and accessories recommended by system manufacturer (Sika-Sarnifil Liquid Flashing SW or WW Liquid Flashing System; Soprema Alsan RS230 Liquid Flashing System; GAF Liquid Flashing System.).

2.7 INDUCTION WELDING EQUIPMENT

- 2.7.1 RhinoBond® Portable Bonding Machine
- 2.7.2 Minimum 5,000-watt, continuous generator per two RhinoBond® Portable Bonding Machines.
- 2.7.3 100' max length, #12 minimum gauge electrical cords.
- 2.7.4 6 cooling clamps (stand-up magnets that put pressure on the newly welded plate).
- 2.7.5 Pliers
- 2.7.6 Heavy Duty Plunger
- 2.7.7 Lumber Crayon

2.8 ROBOTIC SEAM WELDING EQUIPMENT

2.8.1 Robotic hot air welder (e.g., Leister)

2.8.2 Generator that meets the membrane manufacturer's minimum continuous power output.

2.8.3 Extension cable that meets the welder manufacturer's minimum requirements regarding gauge and length.

2.8.4 Roof probe

2.8.5 Lumber crayon

2.9 WALKWAYS

2.9.1 Flexible Walkways: Factory-formed, nonporous, heavy-duty, solid-rubber, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch (5 mm) thick, and acceptable to membrane roofing system manufacturer.

2.9.1.1 Apply at Ladder step-off entrance onto roof, Power Ventilators & Exhaust Fans.

PART 3 EXECUTION

3.1 EXAMINATION

3.1.1 Examine substrates, areas, and conditions for compliance with the following requirements and other conditions affecting performance of roofing system:

3.1.1.1 Verify that roof openings and penetrations are in place and set and braced.

3.1.1.2 Verify that abandoned roof openings have been appropriately covered and attached to existing or new structural members.

3.1.1.3 Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.

3.1.1.4 Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

3.2.1 Reference Section 07591 Removals and Preparation for work required prior to installation of new insulation and TPO membrane.

3.2.2 Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

- 3.2.3 Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.
- 3.2.4 Remove existing abandoned curbs and discard. Replace steel decking and stitch to adjacent steel deck with fasteners at 6" O.C.

3.3 INSULATION INSTALLATION

3.3.1 Install roof system insulation material as follows:

- 3.3.1.1 Coordinate installing membrane roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.
- 3.3.1.2 Comply with membrane roofing system manufacturer's written instructions for installing roof insulation.
- 3.3.1.3 After the installation of the EPS fill insulation in the R-panel flutes, install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
- 3.3.1.4 Apply insulation with end joints staggered approximately one-half the length of the units.
- 3.3.1.5 Where two or more insulation layers occur, install layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
- 3.3.1.6 Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- 3.3.1.7 Maintenance Building:
 - 3.3.1.7.1 Loose lay one base layer of Flute Fill expanded polystyrene insulation (1.75" thick for R panels) manufactured to fit between the ribs of the existing metal panel roofing. Loose lay a second continuous layer of 4'x8'x1.5" polyisocyanurate insulation over the infill insulation.
 - 3.3.1.7.2 Through fasten polyisocyanurate insulation to the underlying metal decking using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
 - 3.3.1.7.1 Fasten each full insulation board with 5 fasteners per board in a pattern where no fastener is closer than 12" from the edge of the board. In no case less than 2 fasteners per single board segment.

- 3.3.1.7.2 Install tapered polyisocyanurate insulation crickets on the upslope side of any roof penetration exceeding 18" in width and where they form saddles between drains.
- 3.3.1.7.3 Use tapered edge strip to provide a smooth transition between tapered insulation crickets and base insulation layer.
- 3.3.1.7.4 For RhinoBond® system: Install fasteners through purlins so that the membrane is attached at each purlin at the following spacing:
 - Field of Roof = 12" On Center
 - Perimeter (12' along rakes and eaves) = 6" On Center
 - Corners (12' x 12') = 4" On Center.
- 3.3.1.7.5 Fasteners must be tight enough that the RhinoBond® Plate does not turn or rock.
- 3.3.1.7.1 Over-driven fasteners that distort the face or top of the plate must be removed and discarded. A new RhinoBond® Plate and Fastener must be reinstalled next to the original, but not into the same space and hole.
- 3.3.1.7.2 Under driven or "high fasteners" must be re-driven to proper depth.
- 3.3.1.7.3 When installation of RhinoBond® Plates and Fasteners are complete, the area should be blown or broomed clean to remove any dirt or debris from the substrate surface or contaminates from the plate's bonding surface. This is critical so as not to puncture the membrane from beneath or to impair the welding of the membrane to the RhinoBond® Plate.

3.4 INDUCTION WELDING ROOFING MEMBRANE INSTALLATION

- 3.4.1 Install roofing membrane over area to receive roofing according to roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing.
 - 3.4.1.1 Install sheet according to ASTM D5082.
- 3.4.2 Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.
- 3.4.3 Equipment Settings

- 3.4.3.1 As with any electrical tool, it is imperative that the tool receive the recommended amount of current for its proper operation. Damage could result from overload (surge) as well as a low voltage situation. No other electrical devices shall be run at the same time as the RhinoBond® Portable Bonding Machines.
- 3.4.3.2 The RhinoBond® tool must be adjusted to achieve the maximum bond strength with most roofing membranes between 0° and 120° F.
- 3.4.4 Calibration of the Machine
 - 3.4.4.1 The user must adjust the RhinoBond® tool to achieve maximum bond strength with TPO roofing membranes from 0° to 120° F ambient temperatures. The tool leaves the factory set to deliver an optimal weld with most membranes at 70°F when set to an energy level of “0”. The energy level must be adjusted up (+1, +2, etc.) when temperatures are below 70°F, and down (-1, -2 etc.) when temperatures are above 70°F. These adjustments can be made by using the up/down arrow keys next to the display window on the machine.
 - 3.4.4.2 In an area adjacent to the day’s work, lay out 5 RhinoBond® Plates 10” apart and cover them with a fresh piece of field membrane approximately 18” x 5’.
 - 3.4.4.3 Locate the plates under the membrane by dragging your foot across the surface of the membrane. After locating the RhinoBond® Plate, center the machine’s red location circle directly over the plate.
 - 3.4.4.4 Determine an initial setting based on the ambient temperature. Remember that 70°F is a “0” energy setting on the display. On a 110° F day in Phoenix, AZ your initial energy setting may be “2” or “3”.
 - 3.4.4.5 Weld the first plate at your initial energy setting and immediately place the cooling clamp onto the plate and mark the setting with the lumber crayon. Increase the energy setting using the “up” arrow on the machine by a unit of 1. Weld the second plate to the right of the first plate; mark the setting in crayon and put the second cooling clamp on the plate. Increase by another unit of 1 and weld the third plate. Repeat this process for the next two plates – installing them to the left of your first weld – except reduce the energy setting by a unit of 1 from your original setting each time. From left to right, your set of plates will be marked as follows (on a 70-degree F day): -2, -1, 0, 1, 2.
 - 3.4.4.6 Let the membrane over the plates cool to ambient temperature and fold the membrane over, exposing the RhinoBond® Plates. Standing on the membrane, use your pliers to grip the plate and pull the plate from the test material, delaminating the plate from the membrane in the process.
 - 3.4.4.7 Three distinct types of bonds are probable, and are as follows: Full bond, an even and consistent weld of the membrane to the plate. The plate will also leave an impression in the membrane. This is a spec

installation. Uneven/incomplete weld of the plate to the membrane. Cause of failure may be energy source set too low, machine not centered over the plate completely, or the plate may be over-driven. This would be a complete or partial hit of the plate. Remember, a full concentration of heat applied to the plate is needed to achieve a spec weld.

- 3.4.5 Accurately align roofing membranes and maintain uniform side and end laps of minimum dimensions required by manufacturer to meet the design pressures specified in this section. Stagger end laps at a minimum by the width of the membrane roll.
- 3.4.6 Full-width rolls shall be installed in the field and perimeter regions of the roof.
- 3.4.7 Overlap full roof membrane sheets a minimum of 3" for side and end laps.
- 3.4.8 Install membrane so that the lap runs across the roof slope and lapped toward the drainage points, if possible.
- 3.4.9 All exposed sheet corners shall be rounded a minimum of 1".
- 3.4.10 All cut edges of reinforced TPO membrane must be sealed with TPO Cut Edge Sealant.
- 3.4.11 Weld TPO to RhinoBond® Plates with RhinoBond® Portable Bonding Tool. Weighted cooling magnets are placed over the bonded membrane/plates for a minimum of 45 seconds.
- 3.4.12 Calibrate heat and speed of robot hot air welder according to membrane manufacturer's instructions.
- 3.4.13 Seams: Clean seam areas, overlap roofing membrane, and hot-air weld side and end laps of roofing membrane with 2" machine welds or 1.5" field welds, or according to manufacturer's written instructions to ensure a watertight seam installation.
 - 3.4.13.1 Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roofing membrane.
 - 3.4.13.2 Verify field strength of seams a minimum of twice daily and repair seam sample areas.
 - 3.4.13.3 Repair tears, voids, and lapped seams in roofing membrane that does not meet requirements.
- 3.4.14 In-Splice Attachment: Secure one edge of roofing membrane using fastening plates or metal battens centered within membrane splice and mechanically fasten roofing membrane to roof deck. Field-splice seam.
- 3.4.15 Install roofing membrane and auxiliary materials to tie into existing conditions.

3.5 MECHANICALLY FASTENED ROOFING MEMBRANE INSTALLATION

3.5.1 Fasten roofing membrane at each purlin at the following rate:

Field of Roof = 12" On Center

Perimeter (12' along rakes and eaves) = 6" On Center

Corners (12' x 12') = 4" On Center.

3.5.2 All cut edges of reinforced TPO membrane must be sealed with TPO Cut Edge Sealant.

3.5.3 Accurately align roofing membranes and maintain uniform side and end laps of minimum dimensions required by manufacturer to meet the design pressures specified in this section. Stagger end laps at a minimum by the width of the membrane roll.

3.5.4 Full-width rolls shall be installed in the field and perimeter regions of the roof.

3.5.5 Overlap full roof membrane sheets a minimum of 3" for side and end laps.

3.5.6 Install membrane so that the lap runs across the roof slope and lapped toward the drainage points.

3.5.7 All exposed sheet corners shall be rounded a minimum of 1".

3.5.8 Calibrate heat and speed of robot hot air welder according to membrane manufacturer's instructions.

3.5.9 Seams: Clean seam areas, overlap roofing membrane, and hot-air weld side and end laps of roofing membrane with 2" machine welds or 1.5" field welds, or according to manufacturer's written instructions to ensure a watertight seam installation.

3.5.9.1 Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roofing membrane.

3.5.9.2 Verify field strength of seams a minimum of twice daily and repair seam sample areas.

3.5.9.3 Repair tears, voids, and lapped seams in roofing membrane that does not meet requirements.

3.5.10 In-Splice Attachment: Secure one edge of roofing membrane using fastening plates or metal battens centered within membrane splice and mechanically fasten roofing membrane to roof deck. Field-splice seam.

3.6 BASE FLASHING INSTALLATION

- 3.6.1 Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- 3.6.2 Apply solvent-based bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.
- 3.6.3 Flash penetrations and field-formed inside and outside corners with sheet flashing.
- 3.6.4 Clean seam areas and overlap and firmly roll sheet flashings into the adhesive. Weld side and end laps to ensure a watertight seam installation.
- 3.6.5 Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars or piping clamps.

3.7 WALKWAY INSTALLATION

- 3.7.1 Flexible Walkways: Install walkway products in front of all access locations to all roof mounted equipment, ladder landings & hatch entrances. Minimum 22" X 48". Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.8 FIELD QUALITY CONTROL

- 3.8.1 Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Roof Consultant.
 - 3.8.1.1 Notify Roof Consultant or Owner 48 hours in advance of date and time of inspection.
- 3.8.2 Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.
- 3.8.3 Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.9 PROTECTING AND CLEANING

- 3.9.1 Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Roof Consultant and Owner
- 3.9.2 Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane roofing

system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

3.9.3 Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.10 ROOFING INSTALLER'S WARRANTY

3.10.1 Reference Section 01740 "Warranties" for a copy of the Contractor's Two-Year Watertight Warranty.

END OF SECTION 07540

SECTION 07591

REROOFING REMOVALS & PREPARATION

PART 1 GENERAL

1.1 SUMMARY

1.1.1 This Section includes the following:

1.1.1.1 Existing Roof System Assembly Removals

1.1.1.2 Preparations

1.2 RELATED WORK SPECIFIED ELSEWHERE

1.2.1 Unit Prices: Refer to Division 1 Section 01025 "Measurement and Payment" for description of Work in this Section affected by unit prices.

1.2.2 Wood Blocking: Refer to Division 6 Section 06100 "Rough Carpentry" for description of Work in this Section affected by wood blocking installation.

1.2.3 Refer to Section 07540 – Thermoplastic Membrane Roofing

1.2.4 Refer to Section 07600 – Flashing and Sheetmetal

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 Roof Consultant at the SCC Main Campus with the Contractor's project foreman and project manager in attendance.

1.5 PROJECT CONDITIONS

1.5.1 Owner will occupy all 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. Provide a watchman inside the building during critical operations.
- 1.5.6 Maintain access to existing walkways, corridors and other occupied or used facilities.
 - 1.5.6.3 Do not close or obstruct walkways, corridors and other occupied or used facilities without written permission from authorities having jurisdiction.
- 1.5.7 Retain paragraph below if limiting construction loads on existing roof deck and building structure. Verify load limit combinations with structural engineer and insert maximum wheel loads (concentrated point loads) and maximum distributed load for stored or demolished materials. Revise to suit Project.
- 1.5.8 Limit construction loads on roof to 20 lbs/SF for uniformly distributed loads which includes rooftop equipment wheel loads.
- 1.5.9 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 FSM 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 Wood blocking to structural steel: Corrosion resistant, self tapping, self-drilling screw with low profile head such as TRAXX™ 4.5 by ITW Buildex where length will allow; and where greater length is required countersink head and utilize TRAXX™ 5 by ITW Buildex. Acceptable equal alternates as manufactured by Construction Fasteners, Rawl, Olympic and Tru-Fast must be submitted for approval.
- 2.1.5 Wood to Metal Screws: Shall be ITW Buildex TRAXX™ Climacoat™ flat head 12-24X2 ½" (part No. 1094000).
- 2.1.6 Carbon Steel Angle: 1-1/2" x 4-3/8"x 14ga. High rake angle, painted, 14 ga, 20' long as manufactured by MBCI
- 2.1.7 Metal Primer: High performance, corrosion resistant and fast drying metal primer such as Interior/Exterior Flat Rusty Metal Primer Paint and Primer in One, as manufactured by Rust-Oleum.

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.
 - 3.1.2.1 Contractor is responsible for disconnection of existing roof mounted equipment and electrical wiring, as well as all reconnections and testing.
- 3.1.3 Check all external roof downspouts for clear passage of storm water. Report any clogged subgrade drainage 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 (none this contract), 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 It is not anticipated that hazardous materials will be encountered in the work of this project.

- 3.1.6.1 If encountered materials are suspected of containing hazardous materials, do not disturb; immediately notify Roof Consultant and Owner. Hazardous materials not currently identified in the contract documents will be removed by Owner as a Change Order to the Contract or under separate contract with separate specialty contractor.
- 3.1.7 Storage or sale of removed items or materials on-site will not be permitted.
- 3.1.8 Utility Service: Maintain existing utilities in service and protect them against damage during the selective demolition operations.
 - 3.1.8.1 Maintain security and fire protection facilities in service during selective demolition operations.
 - 3.1.8.2 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 Roof Consultant.
 - 3.1.8.3 Verify that rooftop utilities and service piping have been shut off before commencing work which may not be safe if service is left on.
 - 3.1.8.4 Coordinate shutdown or disconnect of rooftop utilities or service piping with Owner, no less than 72 hours before shutdown or disconnect are scheduled.
- 3.1.9 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.
 - 3.1.9.1 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.
 - 3.1.9.2 Erect temporary protection where required by authorities having jurisdiction.
- 3.1.10 Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 3.1.10.1 Provide Temporary toilet facilities on site in location to be determined by Owner and Roof Consultant.
- 3.2 EXISTING ROOF SYSTEM ASSEMBLY REMOVALS:
 - 3.2.1 Retain option in paragraph below if Owner intends to authorize each day's work. Specify restrictions or limitations that will be placed on Installer to limit unscheduled delays.

3.2.2 General: Notify Owner each day of extent of roof tear-off proposed and obtain authorization to proceed from Owner's point of contact.

3.2.3 For BASE BID WORK:

3.2.3.1 RAs 1 & 2: Remove the existing rake metal flashing on each roof area complete from the ridge down to the eave.

3.2.3.2 RAs 1 & 2: Remove the existing metal eave edge trim, gutters, gutter brackets, spacers, downspouts, and downspout brackets at the eave of each Roof Area. Keep intact the subgrade drainage inlets below.

3.2.3.3 RAs 1 & 2: Cut off the existing R panel roofing flush with the vertical wall panels so that the new perimeter wood blocking will sit over and fasten into the underlying steel structure.

3.3 EXISTING ROOF SYSTEM ASSEMBLY PREPARATIONS:

3.3.1 RA 1 & 2

3.3.1.1 Protect adjacent surfaces not designated to receive new roof membrane assembly or coatings.

3.3.1.2 After removals, make all necessary repairs to existing metal R-panel roofing and existing metal flashings according to provisions in the contract documents. Secure with appropriate fasteners any missing or loose roofing panel or flashing attachment fasteners.

3.3.1.3 Install wood blocking as specified in drawings.

3.3.1.4 At the rakes of RAs 1 & 2: install one continuous section of 2x6" wood blocking along the roofing panels. Install a second continuous section of 2x6" blocking over the top of the first and fasten with two rows of fasteners at 16" OC staggered.

3.3.1.5 At the eave of RAs 1 & 2: Install one non-continuous section of 2x6" wood blocking in the pans of the existing roof. Install a second, continuous layer of 2x6" blocking on top of the first and fasten with two rows of fasteners at 16" OC staggered.

3.3.2 Application of new materials constitutes approval by the installing roofing contractor that the substrate conditions are satisfactory.

3.3.3 Confirm that all items to be removed, have been, and that appropriate substrate has been installed and appropriately attached to structure for support of the new roofing system.

3.3.4 CORRECT ALL UNSATISFACTORY SUBSTRATE CONDITIONS PRIOR TO THE APPLICATION OF NEW ROOF SYSTEM MATERIALS.

3.4 EXISTING ROOFING SYSTEM ASSEMBLIES' DISPOSAL:

- 3.4.1 Collect and place demolished materials in containers daily. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- 3.4.2 Do not burn demolished material on site.
- 3.4.3 Transport demolished materials off Owner's property and dispose of legally.

END OF SECTION 07591

SECTION 07600

FLASHING AND SHEET METAL

PART 1. GENERAL

1.1. WORK INCLUDED IN THIS SECTION

1.1.1. This Section includes furnishing, fabrication, and installation of all sheet metal items associated with the installation of metal retrofit roofing and wall assembly on variable slope roof areas of this project; including but not limited to the following:

- 1.1.1.1. New metal rake trim
- 1.1.1.2. New metal edge trim
- 1.1.1.3. New hanging gutters
- 1.1.1.4. New metal downspouts

1.2. RELATED WORK SPECIFIED ELSEWHERE

- 1.2.1. Rough Carpentry – Section 06100
- 1.2.2. Thermoplastic Membrane Roofing – Section 07540
- 1.2.3. Removals and Preparation - 07591
- 1.2.4. Sealants and Caulking – Section 07920

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 Consultant.

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.

1.3.3. Codes and Standards: The following standard references shall apply to the work of this section as indicated. Suffixes indicating issue date are omitted from the reference numerals elsewhere in the text.

- 1.3.3.1. American Society of Testing Materials (ASTM):
- 1.3.3.2. A167-99(2004) Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
- 1.3.3.3. A653/A653M-07a Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip

Process

- 1.3.3.4. B209-07 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
- 1.3.3.5. B209M-07 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]
- 1.3.3.6. B370-03 Standard Specification for Copper Sheet and Strip for Building Construction
- 1.3.3.7. B749-03 Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products
- 1.3.3.8. D412-06a Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension
- 1.3.3.9. D573-04 Standard Test Method for Rubber - Deterioration in an Air Oven
- 1.3.3.10. D624-00e1 Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
- 1.3.3.11. D746-07 Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact
- 1.3.3.12. D1149-07 Standard Test Methods for Rubber Deterioration-Cracking in an Ozone Controlled Environment
- 1.3.3.13. D1784-06a Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
- 1.3.3.14. Sheet Metal Air-Conditioning Contractors' National Association (SMACNA):
- 1.3.3.15. Provide products which comply with applicable requirements of SMACNA "*Architectural Sheet Metal Manual, 2012*" except as otherwise indicated.

1.4. SHOP DRAWINGS

- 1.4.1. Submit shop drawings in accordance with specifications.
- 1.4.2. Indicate material profile, dimensions, jointing pattern, jointing details, fastening methods, and installation details.

1.5. SUBMITTALS

- 1.5.1. Submit manufacturer's technical product data, installation instructions and general recommendations for each specified sheet material and fabricated product.
- 1.5.2. Color Selection: Where sheet metal or flashing is exposed, submit color samples for selection from manufacturer's standard range or verification of color as may be required in detailed requirements listed in Part 2 of this Section.

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. All new sheet metal work shall be closely coordinated with the installation of the new roofing membrane such that roofing membrane terminations will not be left unprotected by metal.
- 1.7.2. New TPO coated sheet metal shall be installed in concert with the membrane roofing work such that roofing membrane terminations will not be left unprotected by metal.

1.8. GUARANTEE

- 1.8.1. All new materials and workmanship covering work provided under this section of the specifications shall be guaranteed in writing by the contractor to maintain all sheet metal flashing 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 Pre-finished Metal: Smooth 0.040 aluminum, ASTM B204, primed both sides and factory finished on one side with Kynar based fluoropolymer coating. Metal to be masked with protective plastic film. Color to be selected by Owner from the manufacturer's premium color chart. Accepted manufacturers are MBCI, Pac-Clad by Petersen Aluminum.
- 2.1.2 Aluminum, Sheet: Conforming to ASTM B09. Note: Divorce from any preservative treated lumber with at a minimum one layer of 15 Lb. asphalt saturated felt.
- 2.1.3 Mill Finish Aluminum Sheet: Aluminum sheets conforming to ASTM B209. Note: Divorce from any preservative treated lumber with at a minimum one layer of 15 Lb. asphalt saturated felt.

2.1.4 METAL COMPONENT WEIGHT & FINISH SUMMARY:

2.1.4.1	Metal edge trim	.040 pre-finished aluminum
2.1.4.2	Metal rake flashing	.040 pre-finished aluminum
2.1.4.1	Gutters	.040 pre-finished aluminum
2.1.4.2	Gutter brackets	¼"x1.5" aluminum flat bar
2.1.4.3	Downspout straps	1/8"x1.5" aluminum flat bar
2.1.4.4	Downspouts	.040 pre-finished aluminum
2.1.4.5	Metal counterflashing receiver	.040 pre-finished aluminum

2.1.4.6 Metal counterflashing .040 pre-finished aluminum

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 ½" (part No. 1094000).
- 2.2.5 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.
- 2.2.6 Cleaner: For Sikaflex 1a, cleaner shall be Xylol, Toluol, Methly ethyl ketone or commercial solvent recommended by the sealant manufacturer.
- 2.2.7 Primer: Shall be as recommended by sealant manufacturer.
- 2.2.8 Flexible Vinyl Flashing: Shall be 20 mil PVC, width as required, such as that manufactured by BMCA, a division of GAF.

2.3 FABRICATION, GENERAL

- 2.3.1 Fabricate and install sheet metal sections in 10-foot lengths except where shorter lengths are required by construction.
- 2.3.2 Form sections square, true, and accurate to size, free from distortion, sharp edges, and other defects detrimental to appearance or performance.
- 2.3.3 Junctures, intersections, corners, and unions of sheet metal fabrications shall be formed with 18-inch legs.
- 2.1.1 All Sheet Metal Requirements and Details are referenced to SMACNA Architectural Sheet Metal Manual, Seventh Edition.

PART 3 EXECUTION

3.1 INSTALLATION REQUIREMENTS – GENERAL

- 3.1.1 General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with SMACNA "Architectural Sheet Metal Manual." Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units

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true to line and level as indicated. All flashing shall be securely and continuously overlapped and interlaced behind other materials in a sufficient manner and in adequately proportionate dimensions to provide a positive watershed and watertight protection from all gravity precipitated and wind-blown sources.

3.1.2 Install bolts, rivets, and screws where indicated, specified, or required in accordance with the SMACNA "Architectural Sheet Metal Manual." Space rivets at three inches on centers in two rows in a staggered position. Use neoprene washers under fastener heads when fastener head is exposed.

3.1.3 Underlayment: Where aluminum is to be installed directly on cementitious or wood substrates, install a slip sheet of red rosin paper and a course of polyethylene underlayment.

3.1.3.1 Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.

3.1.4 Where joints and seam occur, overlap 6" inches minimum. All joints and seams shall be fully bedded and thoroughly filled and sealed with manufacturer's recommended sealant.

3.1.5 Exposed flashing shall be neat and straight without buckles, dents, or other defects.

3.2 PROTECTION FROM CORROSION

3.2.1 Where required to prevent galvanic action between dissimilar metal isolate the contact areas of dissimilar metal with sheet lead, waterproof building paper, or a coat of bituminous paint.

3.2.2 Isolate aluminum in contact with dissimilar metals other than stainless steel, white bronze, or other metal compatible with aluminum by:

3.2.2.1 Painting dissimilar metal with a prime coat of zinc-chromate or other suitable primer, followed by two coats of aluminum paint.

3.2.2.2 Painting dissimilar metal with a coat of bituminous paint.

3.2.2.3 Apply an approved caulking material between aluminum and dissimilar metal.

3.2.3 Paint aluminum in contact with or built into mortar, concrete, plaster, or other masonry materials with a coat of bituminous paint.

3.2.4 Sheet Lead: Paint surfaces in contact with or built into mortar, concrete, or other lime products with a coat of bituminous paint.

3.3 NEW METAL RAKE TRIM:

3.3.1 Form and install new pre-finished metal rake in accordance with Project Drawings.

3.3.2 At RAs 1 & 2 fasten new rake flashings through new membrane roofing into new wood blocking at 3" OC. Staggered. Strip flange into flexible sheet membrane with

TPO flashing heat welded to the field membrane and adhered in contact cement over the metal flange. Finish edges with cut edge sealant.

- 3.3.3 Fasten new rake flashings through the field FSM applied over the new gable ends wood blocking with panhead SS wood screw fasteners at 6" OC staggered.
- 3.3.4 Install new foam closure to fit wall cladding profile. Foam closure shall have butyl adhesive sealant both faces.
- 3.3.5 Fasten new metal rake flashing vertical face into the existing metal wall panel ribs through new foam closures at 12" OC with washered long life hex headed fasteners.

3.4 NEW METAL EDGE TRIM AT GUTTERS

- 3.4.1 Install shop-fabricated metal eave edge trim at eave ends to be stripped in with TPO flashing over the field Flexible Sheet Membrane.
 - 3.4.1.1 Fasten top flange with pancake head stainless steel wood screws, spaced at 3" centers staggered.
 - 3.4.1.2 Form new metal eave edge trim so that vertical face of metal eave edge trim lays tight against the back wall of the gutter and is cut to fit around the gutter spacer bars.
 - 3.4.1.3 Lap joints a minimum of 3 inches and slip lock joints. Notch and lap flashing sections a minimum of 3 inches. Do not fasten adjacent sections of flashing to each other.
 - 3.4.1.4 Do not join flashing sections at end laps.

3.5 NEW HANGING GUTTERS

- 3.5.1 Fabricate hanging gutters in sections not less than ten feet long, except at ends of runs where shorter lengths are required. Minimum length of gutter sections shall be no less than 4'-0".
- 3.5.2 Building side of 8.5"x6" gutter shall be not less than 1" inch higher than exterior side.
- 3.5.3 Gutter Bead: Stiffen outer edge of gutter by folding edge over approximately 3/4-inch toward roof and down approximately 3/4-inch as shown on Project Drawings. Hem raw edge of gutter bead.
- 3.5.4 Adjust sheet metal break when forming flat bar to allow for increased thickness of gutter support brackets and spacers. Fabricated items cut by the metal break during forming will not be accepted.
- 3.5.5 Lap gutter joints 2-1/2" in the direction of flow, except at expansion joints. Seal and fasten lapped joints with a double bead of sealant and fasten with 2 rows of rivets; rows and rivets both spaced 1" apart.

3.5.6 Fit support brackets to gutters in such a manner as to allow free movement of gutter due to expansion and contraction. Do not fasten gutters to support brackets.

3.5.7 Gutter Expansion Joint:

- 3.5.7.1 Locate gutter expansion joints spaced at centers of gutter run, 50' maximum.
- 3.5.7.2 Fabricate and install lap type gutter expansion joints in accordance with Figure 1.6 of SMACNA Architectural Sheet Metal Manual, 7th Edition.
- 3.5.7.3 Lap adjacent gutter sections, at expansion joints, 2-1/2". Provide at least a one-inch expansion joint space between end baffles of gutters.
- 3.5.7.4 Install a cover plate over the space at expansion joint.
- 3.5.7.5 Fasten cover plates to gutter section on one side of expansion joint only.
- 3.5.7.6 Secure loose end of cover plate to gutter section on other side of expansion joint with a loose-locked slip joint.

3.5.8 Gutter Support Brackets:

- 3.5.8.1 Fabricate of 1/8" x 1-1/2" aluminum flat bar.
- 3.5.8.2 Fabricate to match gutter profile.
- 3.5.8.3 Drill two 3/16-inch diameter holes in anchor leg for countersunk flat head screws.
- 3.5.8.4 Fasten gutter support bracket thru pre-drilled, countersunk holes to C-joint fascia support at max. 36" centers, using 2 stainless steel, flat head fasteners per bracket. Do not fasten gutter or gutter straps to gutter support brackets.
- 3.5.8.5 Cover gutter support brackets with formed, pre-finished metal cover of finish and color to match roof panels.
- 3.5.8.6 Extend gutter support bracket covers to top of gutter and turn across top of gutter stiffener to form wind hold-down clips.

3.5.9 Gutter Spacers:

- 3.5.9.1 Fabricate of 1/8" x 1" aluminum flat bar.
- 3.5.9.2 Fasten to gutters not over 36 inches on center, midway between gutter supports.
- 3.5.9.3 Turn back leg up one inch and hook front edge to gutter bead as shown on Project Drawings.
- 3.5.9.4 Rivet and seal back leg to gutter.
- 3.5.9.5 Install gutter spacers midway between support brackets.

3.5.10 Gutter Outlet Tubes:

- 3.5.10.1 Position outlets so that 2 downspouts are installed between adjacent gutter expansion joints.

- 3.5.10.2 Form outlet tubes to connect gutters to downspout conductors of stainless steel and connect to the metal gutters. Extend into the downspout conductor three inches. Flange upper end of outlet tube 1/2-inch minimum on all 4 sides.
- 3.5.10.3 Lock and seal longitudinal seam.
- 3.5.10.4 Seal flanges of outlet tube to bottom of gutter and rivet to gutter with stainless steel pop rivets spaced at 1-1/2 centers.

3.6 NEW METAL DOWNSPOUTS:

- 3.6.1 Fabricate downspouts to be 4" x 5" in accordance with SMACNA Architectural Sheet Metal Manual (Seventh Edition) Figure 1-32B with flat lock or s-lock seams. Flair ends of downspout tube to receive higher lengths of downspout.
- 3.6.2 Downspout Straps shall be fabricated in accordance with SMACNA Figure 1-35C. At downspouts, form downspout straps from 1/8" x 1" aluminum flat bar, 1 within 18" of the gutter and one within 18" of the downspout boot and intermediate brackets spaced at ± 5 feet OC. Wrap three sides of straps with pre-finished metal matching color of downspouts.
 - 3.6.2.1 Apply sealant between flat surface of Downspout Straps and walls, prior to securing.
 - 3.6.2.2 Confirm at grade existing downspouts flow continuously unimpeded into existing sub-grade drainage or trough at lower roof area.

3.7 CLEANING AND PROTECTION

- 3.7.1 Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
- 3.7.2 Any defective flashing work and related construction damage shall be replaced at no cost to the Owner.

END OF SECTION 07600

SECTION 07920

SEALANTS AND CAULKING

PART 1 GENERAL

1.1 WORK INCLUDED

1.1.1 Caulk and seal all joints where shown on the drawings and elsewhere as required to provide a positive barrier against passage of air and passage of moisture.

1.2 RELATED WORK SPECIFIED ELSEWHERE

1.2.1 Thermoplastic Membrane Roofing - Section 07540

1.2.2 Sheet Metal Flashing - Section 07600

1.3 QUALITY ASSURANCE

1.3.1 Qualifications of manufacturer: Products used in the work shall be produced by Manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Roof Consultant and Membrane manufacturer.

1.4 PRODUCT HANDLING

1.4.1 Deliver materials to the job site in original, unopened containers.

1.4.2 Do not retain on the job site any material which has exceeded the shelf life recommended by its manufacturer.

1.4.3 Protect all surfaces from staining or damage. All damaged work shall be repaired or replaced as directed by the Roof Consultant and at no additional cost to the Owner.

1.5 JOB CONDITIONS

1.5.1 Do not apply caulking or sealants when the surface temperature is below 40 degrees Fahrenheit or above 125 degrees Fahrenheit. Do not apply materials when surface is damp or during cold, rainy, or frosty weather.

PART 2 PRODUCTS

2.1 SEALANTS

2.1.1 General: except as specifically otherwise directed by the Designer, use only the type of sealants described in the section.

2.1.2 Sealant shall be Sikaflex - 1a, manufactured by Sika Corporation; or Chem-Calk

900, manufactured by Bostik, Inc. or approved equal. Color shall be selected by Owner.

2.3 CLEANER

2.3.1 For Sikaflex 1a, cleaner shall be Xylol, Toluol, Methly ethyl ketone or commercial solvent recommended by the sealant manufacturer.

2.4 PRIMER

2.4.1 Shall be as recommended by sealant manufacturer.

2.5 OTHER MATERIALS

2.5.1 All other materials not specifically described but required for complete and proper caulking and installation of sealants shall be first quality of their respective kinds, new, and as selected by the Contractor subject to the approval of the Membrane Manufacturer and Roof Consultant.

PART 3 EXECUTION

3.1 GENERAL

3.1.1 Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

3.2.1 Metal Surface

3.2.1.1 Metal surface in contact with sealant shall be cleaned of temporary protective coatings, dirt, oil, and grease.

3.2.1.2 When masking tape is used for a protective cover, remove the tape just prior to applying the sealant.

3.2.1.3 Use only such solvents to remove protective coatings as are recommended for that purpose by the manufacturer of the aluminum work and which are non-staining.

3.5 INSTALLATION OF SEALANTS

3.5.1 General: Prior to the start of installation of each joint, verify the joint type according to the details in the drawings and verify that the required proportion of width of joint to depth of joint has been secured.

3.5.2 Equipment: Apply sealant under pressure with hand or power-actuated gun or other appropriate means. Guns shall have nozzle of proper size and shall provide sufficient pressure to completely fill joints as designed.

- 3.5.3 Masking: Thoroughly and completely mask all joints where the appearance of sealant on adjacent surface would be objectionable.
 - 3.5.4 Installation of sealant: Install the sealant in strict accordance with the manufacturer's recommendations as approved by the Owner, thoroughly filling all joints to the recommended depth.
 - 3.5.5 Tooling: Tool all joints to the profile shown on the details in the drawings. Tooling to be done immediately after sealant application.
- 3.6 CLEANING UP
- 3.6.1 Remove masking tape immediately after joints have been tooled.
 - 3.6.2 Keep adjacent surfaces clean and free from sealant as the installation progresses. Use solvent or cleaning agent as recommended by the sealant manufacturer.

END OF SECTION 07920